Universal Design for Learning: A New Clinical Practice Assessment Tool Toward Creating Access and Equity for ALL Students

Diane Fogarty

Loyola Marymount University, dianefogarty1234@gmail.com

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Universal Design for Learning:
A New Clinical Practice Assessment Tool Toward Creating Access and Equity for ALL Students

by

Diane Fogarty

A dissertation presented to the Faculty of the School of Education,
Loyola Marymount University,
in partial satisfaction of the requirements for the degree
Doctor of Education

2017
Universal Design for Learning:

A New Clinical Practice Assessment Tool Toward Access and Equity for ALL students

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Diane Fogarty
This dissertation written by Diane Fogarty, under the direction of the Dissertation Committee, is approved and accepted by all committee members, in partial fulfillment of requirements for the degree of Doctor of Education.

Date

Dissertation Committee

Karen Huchting, Ph.D., Committee Member

Jill Bickett, Ed.D., Committee Member

Candace Pointdexter, Ed.D., Committee Member
ACKNOWLEDGEMENTS

Fair doesn’t mean giving every child the same thing, it means giving every child what they need.

—Rick Lavoie

Thank you to my Chair, Dr. Karen Huchting, and my committee members, Dr. Jill Bickett and Dr. Candace Poindexter. You have all been amazingly supportive through my doctoral process. You have been my thought partners, my critical friends, and my loving supporters. Your support was especially meaningful because I know that you truly love teaching and believe with all your hearts that we must create a just pathway to learning for all children.
DEDICATION

For Molly and Colleen, who fill my days with joy. You are my greatest teachers. Thank you for your love, support, and patience during the three years of my doctoral program. It is my greatest hope that you will be inspired by my journey—not only in seeking knowledge but, more importantly, in seeking knowledge so that we may create a more just and loving world.

For Mary, Regina, Jennifer, Dawn, and Kay—my soul sisters. Your support has been steadfast, and your kindness has truly wrapped around me and kept me whole during these last three years.

For Crystal, you will always be my moral compass.
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Change Section
Universal Design for Learning:

A New Clinical Practice Assessment Tool Toward Access and Equity for ALL Students

by

Diane Fogarty

To examine to what extent current general education preservice teachers within a teacher preparation program at a private institution of higher education know and understand the principles of Universal Design for Learning (UDL), expert focus groups were conducted. General education program syllabuses were examined for UDL content and found to be lacking in such content. General education preservice teachers videotaped lessons were reviewed for UDL content and were also found to be inadequate in demonstrating knowledge and understanding Universal Design for Learning principles. Focus groups comprised of university fieldwork instructors and teacher education experts were asked to review and give feedback on a current clinical observation tool being utilized. Feedback indicated that the current tool was insufficient for measuring preservice teachers’ knowledge and understanding of UDL. Further,
the current tool was not anchored to the UDL framework or any other teaching framework. In service to contributing to the field of teacher preparation, a new clinical practice tool grounded in Universal Design for Learning was created.
CHAPTER 1
INTRODUCTION

Imagine a building you have heard about since you were a toddler. You have listened to family and friends share stories about being in this building. Within the walls of this structure lies the opportunity to learn about anything you desire. After years of listening to the stories and watching children enter this building it is finally your turn. You attempt to open the doors to knowledge and learning but you cannot. You cannot make sense of the signs outside the building meant to guide your way. You try entering with other children for whom access to the building seems easy, but you watch them enter while you are left outside. You attempt to enter the structure with a teacher you see, but the teacher does not see you. This is the experience that many children within the United States have every day as they attempt to access not just the school building but the content that is being taught within its walls.

As an elementary school teacher for 25 years, I believe in the power of education. I believe that access to a quality education changes the lives of the children who enter and forms the pathway of access to higher education and eventually careers and life-long learning. Yet, during my years of experience in the classroom, I watched students struggle to learn. I taught in classrooms with low-income students, students with disabilities, English learners, and middle-class students. I taught in an impoverished area of Southern California, low-income areas of New York and New Jersey, and a middle-class neighborhood in Los Angeles. At no time during my 25 years in the classroom did I come across a group of students in which all students were successful. While I taught my students with the best intentions, I could not always make the
curriculum accessible for them. It literally hurt my heart to see children struggle to learn and, in time, lose their confidence and eventually, in some cases, their way entirely.

There were times in my teaching career when I would overhear another teacher comment that a new child she received into her classroom “didn’t know anything.” Such comments contribute to the idea that somehow when learning does not occur, the child is deficient. I believe, however, that it is more likely that the curriculum is deficient. Most often curriculum is designed for an “average” learner and predicated on an assumption that such a learner exists.

Meyer, Rose, and Gordon (2014) stated:

the fact that the curriculum was designed for the mythical average learner, adept at navigating the print environment, created significant barriers for students in the margins, for whom the print-based environment simply did not work as the single means to access and express knowledge. (p. 4)

The concept of teaching to the “average learner” was certainly present in my teaching experience. As an elementary teacher, I was trained to teach to the middle of the class—that is to say, to the “average” student. In retrospect, this of course can account for the lack of access to learning that my students may have experienced. Without intentionality, I kept the door of learning locked for some of my students. More than this, did I change the trajectory of life-long learning for some of my students? Meyer et al. (2014) have suggested:

The unnecessary barrier in traditional education extended beyond those that impeded students from accessing content and expressing knowledge. Even more important in motivating our work were the affective barriers. Students coming to school with curiosity
and a strong desire to learn found that fire quenched when they were stigmatized—not because of anything that was in their control but because of inaccessible learning environments. (p. 4)

Like some of my students, many students across the United States are, for all intents and purposes, locked outside of their classrooms. Evidence of this lack of access among all learners can be seen in the results of standardized assessment such as National Assessment of Educational Progress (NAEP, 2015). This assessment, referred to as “the nation’s report card,” is administered intermittently to a national sample of American students. The National Center for Educational Statistics (NAEP website) stated:

> NAEP results serve as a common metric for all states and selected urban districts. The assessment stays essentially the same from year to year, with only carefully documented changes. This permits NAEP to provide a clear picture of student academic progress over time.

NAEP results indicate that all students are struggling, and these statistics are especially true for students with disabilities and students of color. For example, through the Americans with Disabilities Act (ADA, 1990) and the Individuals with Disabilities Act (IDEA, 2004), many students with disabilities were able to gain entrance to their schools. These students may have had physical impairments or specific learning disabilities. They were not, however, able to gain entrance to their classrooms, or rather, access to the curriculum taught in their classrooms. In 2015, NAEP’s fourth-grade scores in reading show a 41-point deficit for students with disabilities with the average scale score for students with disabilities at 187, compared to an
average score of 228 for students without disabilities (NAEP, 2015). Fourth-grade NAEP math scores indicate an average scale score of 218 versus a score of 244 for nondisabled students, resulting in a 26-point deficit (NAEP, 2015). Eighth-grade results in reading and math NAEP scores show a 40-point chasm between those students with disabilities and those without, with average scale score comparisons of 230 to 270 and 247 to 287 for reading and math respectively (NAEP, 2015). These low achievement scores in reading and math confirm the lack of access to the curriculum for students with disabilities.

Further examination of the 2015 National Assessment of Educational Progress demonstrates that the doors of access are closed for more than just students with disabilities. Students of color have lower scores than their White peers and they have remained in the lowest achievement percentile despite national reform efforts (NAEP, 2015).

2015 National Assessment of Educational Progress

![2015 NAEP scores](image)

*Figure 1. 2015 NAEP scores.*
The figure above represents the percentage of nondisabled students at or above proficient in reading and math at the fourth- and eighth-grade levels and disaggregates scores by ethnicity. The data clearly show that even the highest achieving group of students—White students—are well below full proficiency in math and reading. While the case is clear for diverse students and students with disabilities, these data also indicate that ALL learners struggle to access the curriculum.

Such evidence appears to suggest that adjustments to the curriculum via standards-based changes have not ensured access to the curriculum for all students. The No Child Left Behind Act (NCLB, 2001) required states to report student achievement scores in the aggregate as well as the disaggregate for specific diverse groups, including students with special needs. NCLB also held the promise of highly qualified teachers whose progress in helping students achieve would be monitored. These measures did not successfully close the achievement gap but rather left closed the door of access to the curriculum. It remains to be seen if the latest legislation—the Every Student Succeeds Act (ESSA), passed in 2015—will continue to lock students out of the curriculum. What is certain is that this act will continue with additional assessments of student performance, with states required to test students in grades three through eight and in high school (ESSA, 2015).

In addition to national statistics, in the State of California, where I have spent the majority of my time as an educator, students with disabilities have the lowest achievement outcomes compared to all other states (Blume, 2014). While students with disabilities are not the only students suffering from a lack of access to curriculum, under national legislation, their
performance is measured on standardized tests, and their scores provide insight about the failure of schools to reach all students. In 2012, only 27% of third-graders with disabilities scored proficient or advanced on the California Modified Assessment; 60% of students with disabilities graduated high school (compared to 78% of students without Individualized Education Programs); the dropout rate for students with disabilities was close to 15% (11% for all students); and, approximately 32.8% of students with disabilities were enrolled in higher education programs (the goal was 50%; California Task Force on Special Education, 2015). The 2015 National Assessment of Educational Performance (NAEP) results for California show only 30% of students without disabilities at or above proficient in reading at the fourth-grade level with 31% at or above proficient in fourth-grade math (NAEP, 2015). These statistics indicate a clear need for improving educational outcomes for all learners.

Action is needed to ensure that all learners can gain full admission to the curriculum within the classroom. Rather than approach education with a one-size-fits-all mentality, and at best, adjust that curriculum to meet the needs of "non-average" learners, what is needed is a framework that encourages the mindset in teachers to create, from the beginning, lessons that provide access for all learners. This framework is Universal Design for Learning (UDL), developed by the Center for Applied Technology (CAST, 2016). The principles, guidelines, and checkpoints of Universal Design for Learning (UDL) have roots in the architectural concept of Universal Design (UD). Architect Ron Mace at School of Design at North Carolina State University created UD. Mace (1991) stated, “Universal design means simply designing all products, buildings and exterior spaces to be usable by all people to the greatest extent possible.”
The goal of Universal Design was therefore to create a barrier-free physical environment so that all users could experience the environment to the fullest. Universal Design for Learning (UDL) applies the architectural concept of Universal Design (UD) to education by advocating for educators to increase access to the curriculum for all learners when constructing lessons, rather than retrofitting the lessons later.

Universal Design for Learning became a requirement for teacher preparation programs with the passage of the Higher Education Opportunity Act (HEOA) of 2008. The HEOA called for teacher preparation programs to include Universal Design for Learning in the curriculum used to train preservice teachers. It states new teachers must:

- Understand empirically-based practice and scientifically valid research related to teaching and learning and the applicability of such practice and research, including through the effective use of technology, instructional techniques, and strategies consistent with the principles of universal design for learning. (HEOA, p. 59)

Since the passage of the Higher Education Opportunity Act (HEOA) in 2008, UDL principles are often found included in special education teacher preparation programs. It is unclear, however, if general education preservice teachers receive exposure to Universal Design for Learning. Though the HEOA expired in 2014, Universal Design for Learning continues to be an integral part of many teacher preparation programs as they await the HEOA’s reauthorization.

In the meantime, the notion of reaching all students through UDL has been affirmed in the passage of the Every Student Succeeds Act (ESSA) in December of 2015. ESSA replaced the No Child Left Behind Act (NCLB) of 2001 and represents the seventh authorization of the
Elementary and Secondary Education Act (ESEA) of 1965. The intent of the original education bill ESEA in 1965 was to improve learning outcomes for students. Thomas and Brady (2005) noted:

Enacted to offer equitable educational opportunities to the nation’s disadvantaged, this legislation provides financial resources to schools to enhance the learning experiences of underprivileged children. Since its inception, ESEA has consistently remained the single largest fiscal source of federal support for educationally vulnerable schoolchildren. (p. 51)

While ESEA was the first major legislation to focus on student achievement and provide funding to schools to support those efforts, it lacked ties to accountability for schools (Thomas & Brady, 2005). Newer iterations of the Elementary and Secondary Education Act (ESEA), such as the No Child Left Behind Act (NCLB), added accountability measures but lacked specificity in calling out a research-based educational framework for this work. The passage of the Higher Education Opportunity Act (HEOA) and, subsequently, the Every Student Succeeds Act (ESSA), brought to the forefront the scientific framework of Universal Design for Learning, solidifying the definition of UDL and calling out the principles of UDL, in effect, championing Universal Design for Learning as the framework for teachers.

The passage of the reauthorized Elementary and Secondary Education Act in the form of the Every Student Succeeds Act (ESSA) added the much-needed specificity and clarity in the use of Universal Design for Learning framework. ESSA requires the incorporation of UDL in comprehensive literacy instruction (ESSA, 2015). It additionally creates a requirement for states
to collaborate with local education agencies in order to utilize “a set of high-quality academic assessments in mathematics, reading or language arts, and science.” The assessments must be constructed, “to the extent practicable, using the principles of Universal Design for Learning” (ESSA, 2015, pp. 25–27). The Every Student Succeeds Act further encourages state educational agencies to create new, groundbreaking systems of assessment. These assessments must “be accessible to all students, such as by incorporating the principles of Universal Design for Learning” (ESSA, 2015 p. 117). The UDL requirements of HEOA and ESSA, including the newest assessment connection to Universal Design for Learning, have significant implications for teacher preparation programs in how they teach UDL and how to assess its implementation by preservice teachers.

The Current Study

Knowing that students are still locked out of the curriculum, that teacher preparation programs must include UDL training, and that there is a need in the field for a way to assess the extent to which teachers understand UDL, this study focused on measuring preservice general education teachers’ knowledge and understanding of the principles of Universal Design for Learning (UDL). The majority of research on Universal Design for Learning (UDL) has focused on how lesson planning changed after exposure to UDL professional development. For example, Courey, Tappe, Siker, and LePage (2012) researched the impact of Universal Design for Learning teacher training and measured the improvement in lesson plans following that training. Teachers incorporated UDL principles into their lesson plans after having been exposed to the UDL training. Spooner, Baker, Harris, Ahlgrim-Delzell, and Browder (2007) also researched the
effects of training in Universal Design for Learning on the development of lesson plans among teachers. Results showed that general and special education teachers in the experimental group improved their lesson plan development after the intervention. While evidence suggests that UDL training assists teachers with their lesson planning, the research lacks information about how to measure the principles of Universal Design for Learning (UDL) in the implementation of a lesson plan. Incorporating UDL into a lesson plan is certainly an improvement; however, to truly assist students in accessing the curriculum, teachers must be able to implement UDL in classrooms. As such, this study focused on creating a validated tool for measuring Universal Design for Learning in the classroom.

To provide a framework for this inquiry, I utilized the Dissertation in Practice design from the Carnegie Project based on the Education Doctorate (CPED). “The Dissertation in Practice is a scholarly endeavor that impacts a complex problem of practice” (CPED, 2016, p. 2). The use of this innovative research design pairs well with the principles of Universal Design for Learning (UDL). Rather than limit this work to specific findings within the constraints of a static design, the Dissertation in Practice model creates the opportunity for dynamic data collection and analysis, which in and in itself mirrors the concepts of Universal Design for Learning and may even lead to Universal Design for Doctoral Research.

After serving as a classroom teacher for over 25 years, I transitioned to an institution of higher education (IHE), where I direct the clinical practice (or student teaching components) of our teacher preparation program. As such, I am uniquely situated to engage this topic within a Dissertation of Practice model because my professional work directly involves assessing teacher
candidates’ knowledge and ability to teach. As Director of Clinical Partnerships and Practice, I
strive to assist preservice teachers as they work to improve their instructional practice while in
their clinical practice placements (i.e., student teaching). These preservice teachers are enrolled
in our teacher preparation program and are considered candidates because they are seeking a
teaching credential from the State of California. To that end, these preservice teachers take
graduate courses and engage in clinical practice experiences, or experiences in actual classroom
settings, where they practice being the teacher.

Preservice teachers are teacher candidates who are not yet fully credentialed and
therefore do not yet have their own classroom in which to integrate the theory and pedagogy they
are learning in their coursework. To this end, preservice teachers must be provided with
opportunities to link theory and practice within an authentic classroom setting. These classroom-
based experiences developed for preservice teachers are referred to as clinical practice and are
now mandated to be at the core of teacher preparation programs both by the California
Commission on Teacher Credentialing (CTC) and the national accreditation body Council for the
Accreditation of Educator Preparation (CAEP). The CTC’s Preliminary Multiple Subject and
Single Subject Credential Program Standard 3 states:

The program’s Clinical Practice experiences are designed to provide the candidate with a
developmental and sequential set of activities that are integrated with the program’s
coursework and extend the candidate’s learning through application of theory to practice
with TK-12 students in California public school classrooms. (p. 1)
Following suit, CAEP Standard 2 states, “Clinical experiences, including technology-enhanced learning opportunities, are structured to have multiple performance-based assessments at key points within the program to demonstrate candidates’ development of the knowledge, skills, and professional dispositions” (p. 6). Darling-Hammond concluded, “Strengthening clinical practice in teacher preparation is clearly one of the most important strategies for improving the competence of new teachers and the capacity of the teaching force as a whole” (p. 557). These experts have emphasized the importance of clinical practice in teacher preparation programs. Therefore, this study examined the clinical practice experiences of preservice teachers enrolled in this private institution.

One specific area of training for preservice teachers involves assessing their ability to meet the needs of all learners. In my daily work, I observe that the special education teacher candidates at my IHE understand the principles of Universal Design for Learning (UDL) and are able to implement those principles in their written lesson plans and in the implementation of their lessons, while general education teacher preparation candidates are not able to do this. Therefore, the focus of this study was to measure general education teachers’ knowledge and implementation of UDL. To this end, I reviewed the curriculum and current assessment practices for general education preservice teachers to ultimately create a tool for teacher preparation programs to use in their assessment of teacher candidates’ ability to implement UDL knowledge in their teaching.
Statement of the Problem

Students in the United States are not granted adequate access to the curriculum, as evidenced by stagnant results for many learners on the National Assessment of Educational Progress (NAEP, 2015). If our nation believes that all students should leave school college- and career-ready, we must bring into specific focus a research-based framework that will help teachers create viable roadmaps of access for all children.

One reason for the lack of access to the curriculum for all learners may be that the “banking” concept of education (Freire, 1970) is still prevalent in the classrooms of most students. The lack of access to the curriculum has a long history. As Kahl (2013) stated:

Neoliberal ideology epitomizes Freire’s (1970) description of the banking concept of education, in which students are seen as passive vessels that can be filled with knowledge that can be objectively known and regurgitated on objective exams. Neoliberal models of assessment do not encourage critical thought or the examination of ideas, but instead only prepare students for careers in corporations. (p. 2625)

This prevailing “banking” concept of education renders students passive recipients of information. Rather than interacting with new information presented and interpreting that information through the lens of their world, students are recipients of deposits of didactic, one-size-fits-all lessons meant to cover grade-level standards. If students have diverse needs as learners, this one-size-fits-all lesson planning will not allow them to access the content. The age of educational accountability has not guaranteed equal access to education. Orfield, Frankenberg, Ee, and Kuscera (2014) stated, “The impact of the standards and accountability era has been felt
more acutely in minority-segregated schools where a focus on rote skills and memorization, in many instances, takes the place of creative, engaging teaching” (p. 38).

As educators, we must find ways to open pathways of access for diverse learners so that they are no longer depositories of knowledge but participatory examiners of knowledge. We must strive to see the curriculum—rather than the child—as deficit. Freire (1998) stated, “To think correctly and to know that to teach is not merely to transfer knowledge is a demanding and difficult discipline, at times a burden that we have to carry with others, for others and for ourselves” (pp. 50–51).

We must then call our attention to teacher preparation programs in institutions of higher learning where teachers are first introduced to educational theory and practice. While Universal Design for Learning could have been used to support the mandates in the No Child Left Behind Act (NCLB, 2001), UDL is called out specifically in the recently authorized Every Student Succeeds Act (ESSA, 2015). This act authorized by Congress succeeds the Elementary and Secondary Education Act (ESEA, 1965) and its reauthorization, the No Child Left Behind Act (NCLB, 2001). Teacher candidates must be introduced to the framework and principles of Universal Design for Learning (UDL) within their teacher education programs. There is a specific focus on utilizing UDL to create assessments that provide better ways for students to demonstrate mastery of learned content.

To this end, we must research ways to improve teacher preparation programs to include the framework and principles of Universal Design for Learning (UDL) in order to improve lesson planning to create access for all students. We must further research how to measure the
implementation of Universal Design for Learning in the classroom. While there are some measures of UDL available (i.e., UDL Checklist [CAST, 2015]; UDL IOI (Basham, Gardner, & Smith, 2013), this research study focused on creating a validated tool to measure preservice teachers’ actual implementation of UDL in the classroom in tandem with other domains of teaching: planning and preparation, classroom environment, instruction, and professional responsibilities (Danielson, 2013).

**Theoretical Framework**

Universal Design for Learning (UDL) was the primary framework guiding this study. This framework, developed by the Center for Applied Special Technology (CAST), is based on brain research, which considers learner variability as its main tenet. The principles of Universal Design for Learning scaffold curriculum for students in ways that lead to personal pathways of access. Additionally, *practical measurement* is a new measurement framework based on improvement research, which attempts to assist classroom teachers in researching their practice toward effectiveness and reliability (Yeager, Bryk, Muhich, Hausman, & Morales, 2013). Rather than engage in theoretical scale development—without regard for the feasibility of such measures in practice—a *practical measurement* framework advocates for practitioners to develop and refine measures during their actual practice. This framework for tool creation aligns well with the *Dissertation in Practice* mindset (CPED, 2016).

**Universal Design for Learning Framework**

Teachers have a tendency to teach to the “average” learner in the classroom. Meyer et al. (2014), stated the following:
We knew that most curricula are designed and developed as if students were homogeneous, and the most common approach to curriculum design is to address the needs of the so-called “average student.” Of course this average student is a myth, a statistical artifact not corresponding to any actual individual. But because so much of the curriculum and teaching methods employed in most schools are based on the needs of this mythical average student, they are also laden with inadvertent and unnecessary barriers to learning. (p. 4)

It is, therefore, incumbent upon those entrusted with the task of training teachers to ensure that all preservice teachers are grounded in the framework of Universal Design for Learning, which ensures that learner variability is addressed.

Relying on research about three brain networks, UDL focuses on three systems of learning: recognition, strategy, and affect. The recognition network represents the “what” of learning. The strategic network denotes the “how” of learning and the affective network indicates the “why” of learning. Rose and Meyer (2002) indicated:

> The activities of these networks parallel the three prerequisites for learning described by the Russian psychologist Lev Vygotsky (1962): recognition of the information to be learned; application of strategies to process that information to be learned; application of strategies to process that information; and engagement with the learning task itself. (p. 12)

Barriers can exist for students in each of these brain network areas. Rose and Meyer further stated:
Traditionally, when teachers teach these kinds of patterns, they tend to present them in one way for the entire class. But the overt and subtle differences in how students best recognize patterns suggest that more varied means of presentation can reach more students. (p. 19)

Based on this brain research, the three main principles of Universal Design for Learning (UDL) were created. They are multiple means of representation (recognition network), multiple means of action and expression (strategic network), and multiple means of engagement (affective network).

These three principles serve as the core of the Universal Design for Learning (UDL) framework and are designed to provide all students with varied options for learning. The implementation of these UDL principles can be found in the UDL guidelines (see Appendix B; CAST, 2014). These guidelines inform teachers regarding the variability that can be presented by learners and therefore serve as a scaffold for learners. Further support in the implementation of Universal Design for Learning in the classroom can be found in the UDL checkpoints, which indicate specific ways that teachers can increase the level of flexibility within their lessons (Meyer et al., 2014). This flexibility can then provide individual students with the access they need to the curriculum.
Practical measurement as an alternative measurement framework has, at its core, that which the Universal Design for Learning framework seeks to accomplish: an authentic, student-centered, adaptive approach to planning, implementing, and assessing student learning outcomes. Creating a new clinical practice tool for measuring the implementation of Universal Design for Learning is supported by this unique framework. Research by Yeager et al. (2016) stated that practical measurement can serve as a way of “Accelerating the field’s capacity to learn in and through practice is one key to transforming promising ideas in education into tools, interventions, and professional development initiatives that achieve effectiveness reliably at scale” (p. 2). Rather than traditional methods of scale development, practical measurement relies
on the expertise of those actually using the measure to make changes and provide a sense of the tool's validity. This framework was applied to the study to inform the creation of the measurement tool. Specifically, this framework informed the process of speaking with experts who use the tool regularly in order to develop an authentic and practical measurement.

**Purpose of the Study**

The purpose of this study was two-fold. One purpose was to understand the extent to which current preservice teachers within a teacher preparation program at a private institution of higher education know and understand the principles of Universal Design for Learning (UDL). The Higher Education Opportunity Act (HEOA, 2008) explicitly calls for teacher preparation programs within institutions of higher education to utilize and teach all candidates, including general education teacher candidates, about the framework of Universal Design for Learning (UDL). It states:

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)).

The second purpose of this study, in service of the first purpose, was to create a validated tool for measuring Universal Design for Learning in the classroom. This is a key component of
research that is currently missing from the field. Most of the research on Universal Design for Learning (UDL) has examined the effects of UDL on lesson plans; very little research examines ways to measure UDL in the classroom. Additionally, most of the research has been conducted with in-service teachers who are credentialed and already in their own classrooms.

Research Questions

The purpose of this study was to examine understanding of UDL among general education preservice teachers and to develop a tool to measure their ability to implement Universal Design for Learning in their clinical practice. The following questions guided my inquiry:

1. To what extent do general education preservice teachers know and understand the principles of Universal Design for Learning?
2. How can teacher preparation programs measure preservice teachers’ implementation of Universal Design for Learning in the classroom?

It is important to analyze whether general education preservice teachers have been exposed to the principles of Universal Design for Learning (UDL) within their preservice teacher preparation program as a starting point for this line of inquiry. If preservice teachers have strong knowledge of UDL, then the teacher preparation program will need to be able to document that knowledge. If preservice teachers do not have strong knowledge of UDL, then the teacher preparation program where the study is occurring will benefit from improving exposure to UDL within coursework. In addition, the current study assesses knowledge of preservice teachers by reviewing their ability to implement the UDL principles during their clinical practice, rather than
via a self-report test. Developing a tool to measure actual implementation of UDL may benefit other institutes of higher education attempting to embed UDL principles.

**Overview of Methods**

**Context**

This study occurred at the university where I am, at the time of this study, the director of Clinical Partnerships and Practice. This particular institution has a rich history that spans over 100 years. The private, religious university was established in Los Angeles, California in 1911, and originally served only male students. Female students became a part of the campus in 1973. Currently, the campus serves over 8,000 undergraduate and graduate students. The mission of the University is based on three tenets: the encouragement of learning, the education of the whole person, and the service of faith and promotion of justice. The School of Education is one of six schools and colleges within this urban University.

The conceptual framework of this School of Education is based on the Jesuit and Marymount traditions of the University. The theoretical framework of critical pedagogy developed by Paulo Freire also influences the School of Education’s framework. Our framework (2009) states, “We adopt as our own the Freirean notion that, though education should be available for all people and empower them, educators must be especially concerned about individuals and groups that have been historically disempowered by unjust social structures” (p. 2). To this end, a socially just education is the lens through which our teacher candidates are educated. We summarize this framework in the following four categories that align with our clinical practice evaluations:
• Respect and Value all Individuals
• Educate by Integrating Theory and Practice
• Advocate for Access to a Socially Just Education
• Lead in Order to Facilitate Transformation

Social justice, therefore, plays a critical role in how our teacher candidates are prepared, how they are assessed, and how they interact with their students. Our teacher preparation then includes state and national standards as well as a focus on advocating for a socially just education. This intentional emphasis on social justice in this private university’s teacher preparation program is directly linked to our efforts to train teachers who will help to close the achievement gap by creating access and equity. Cochran-Smith et al. (2009) suggested:

This recognition of disparities is coupled with the position that teachers can and should be both educators and advocates who are committed to the democratic ideal and to diminishing existing inequities in school and society by helping to redistribute educational opportunities. (p. 350)

Preservice teachers at this university are prepared through the lens of social justice in order to advocate for a just education for all students. The framework of Universal Design for Learning (UDL), which can help teachers create access and equity for all students, is therefore, a critical framework for meeting this social justice goal. As such, UDL constituted the framework through which this study was conducted.
Design and Procedures

To address the research questions and develop a way to measure UDL in the classroom, this study adopted the *Dissertation in Practice* model and engaged in an iterative process of refinement. This process included reviewing syllabuses, watching videos of preservice teachers giving lessons in a classroom, analyzing those lessons through the lens of UDL, reflecting on the data, and editing current assessment tools. Next, this process included seeking feedback from university personnel (i.e., fieldwork instructors, who assess preservice teachers in the program), on the tool and based on the feedback generating new language to be included on the assessment tool.

*Figure 3. Methodological Iterative Process.*
Currently, the State of California requires teacher candidates to complete four Teacher Performance Assessments (TPA) as part of the requirements for issuance of a preliminary teaching credential. The fourth TPA (TPA4) is entitled the *Culminating Teaching Experience*. In this fourth task, the candidate creates and implements a lesson, which is then videotaped. The candidate, who must indicate the strengths and challenges represented in their video, then analyzes the captured lesson. The candidate uploads the video, the lesson plan, and their analysis of the lesson, into the School of Education’s electronic platform for submitting TPAs. All preservice teachers complete the four Teacher Performance Assessments (TPA) as part of their teacher preparation program at this University.

This study examined the curriculum, lesson plans, and videos of TPA4 for general education preservice teachers from the Spring 2016 semester. First, I reviewed course descriptions and syllabuses. I then evaluated the lesson plans and watched the accompanying videos in order to analyze the knowledge of preservice general education teachers related to their implementation of UDL in the classroom. Finally, I conducted focus groups with experts in the field of teacher preparation assessment to inform the revision of an assessment tool to incorporate the required state standards and the principles of Universal Design for Learning. These experts were serving in the role of assessing preservice general education teachers and therefore were able to offer authentic and meaningful feedback to contribute to a practical measurement of UDL implementation.
Lesson Video Review Process

I started with a sample of 20 general education preservice teacher candidate videos to engage this work. I reviewed these videos in two phases. The first phase included watching all 20 of the videos in their entirety to gather an overall sense of the videos and lessons. During the second phase, I began watching all of the videos for a second time; however, findings clearly indicated very limited use of Universal Design for Learning principles within the lesson. Due to the little to no evidence of the UDL guidelines displayed in videotaped lesson plans by teacher candidates, it was determined by the researcher that saturation had been reached in terms of the sample of videos reviewed and accordingly, this phase of the iterative video review process was terminated after the 10th video examination. These 10 videos were observed, and the frequency of UDL guidelines, principles, and checkpoints were tallied.

Focus Groups

After watching the videos of preservice teachers, I brought the current preservice teacher candidate observation tool to university experts for feedback. These university personnel were experts in the field of teacher candidate evaluation. Two focus group sessions were conducted to solicit feedback on ways to embed UDL into the assessment tool. First, fieldwork instructors, whose job entails observing preservice teacher candidates in the field during their clinical practice, were consulted. Next, a committee of professors, administrators, and education experts working on revising the teacher preparation program were consulted. Feedback was analyzed to generate new language for the observation tool to capture an assessment of UDL.
Background and Role of the Researcher

I have been working in the field of education for the past 35 years. I started as a bilingual elementary school teacher in a small, urban school district in Los Angeles. I taught grades K–5 in both English and Spanish for 26 years. I completed my Educational Specialist credential and then taught in a bilingual special education special day class. I served as a resource teacher in the same small urban district. I have also served as a bilingual teacher in the states of New Jersey and New York. Upon returning to the Los Angeles area, I joined the second largest school district in the state. There, I taught in a monolingual elementary classroom and completed my administrative credential. I served as the administrator of the K–8 detention center for one year.

I left the classroom in 2009 to join the staff at the university where I conducted this study. I began my career in higher education as a fieldwork coordinator, and then moved on to a role leading the School of Education’s fieldwork team as a program administrator. I now serve dual roles as the director of Clinical Partnerships and Practice and the director of the Traditional Special Education Program. My work in the clinical practice area of the School of Education has, in part, driven the focus of my dissertation. In an effort to improve the learning outcomes for our teacher candidates and their students, I created an assessment tool that is framed by Universal Design for Learning (UDL).

Limitations and Delimitations

This study is limited by my position as both a researcher and a professional working within the teacher preparation program at the university where the study was conducted. However, given the framework of a Dissertation of Practice, I was uniquely positioned to
conduct this study, which I see as a problem of professional practice. Given the legal requirement of UDL, teacher education programs, like this one, are likely facing similar concerns with assessing teachers’ knowledge of UDL. The creation of a new assessment assists with improved practice in the field and begins to fill a gap in the literature by extending assessment of UDL beyond lesson plans to include actual lessons. Still, my dual role as a professional at the university and the researcher may have presented conflicts in how I interpreted the data and came to conclusions. Including expert feedback contributed to the content validity of the assessment tool and minimized this limitation.

Another limitation to this study includes the small number of teacher candidate lesson videos in the initial data review. The quality of the videotaped lessons limited the total number of videos available, in that 20 out of 39 videos were available for review. These videos were taken and submitted by the teacher candidates. How the videos were filmed and with what type of equipment were outside of my control. Nevertheless, I included all of the accessible lesson videos in the study, which represented a sampling of preservice teacher candidates from this private School of Education, who were set to complete their credential program. Future studies should include a larger number of preservice teacher videos, which should be reviewed over the two-year program trajectory. This more extensive review could strengthen the elementary general education preservice teacher data, further indicating a limited knowledge and comprehension of the principles of Universal Design for Learning. Secondary preservice teachers were not included in this study, which limited this researcher’s ability to generalize findings to a broader sector of preservice teachers. Furthermore, the examination of UDL was
conducted within a small, private university, which also limits the generalizability of results to larger teacher preparation programs. This stated, the purpose of this initial study was not to focus yet on whether the findings were able to be generalized to a larger institution. My goal, as director of Clinical Partnerships and Practice within this private School of Education, was to enhance the praxis of those experts supporting preservice teacher candidates, specifically in the use of the framework of Universal Design for Learning. While my dual role as professional within this School of Education and researcher for this study presents a limitation, this perceived limitation was negated when considering that the purpose was to solve a problem of practice within this institution. The findings of this study inform not only my practice as a director of clinical practice working with preservice teachers within the program but also have the potential to provide clarity on changes needed to make this program more effective. The potential for improvement in this teacher preparation program could have a significant impact on the creation of access and equity to curriculum for the students of Los Angeles.

Significance of the Study

The significance of this study is two-fold. This study began to fill a void in the literature on Universal Design for Learning. The studies to date on UDL had focused primarily on special education teacher candidates. As mentioned previously, the Higher Education Opportunity Act (2008) and the Every Student Succeeds Act (ESSA) mandate the use of the principles of Universal Design for Learning in teacher preparation programs and in classrooms. This mandate does not apply just to student with special needs but rather is meant to serve all diverse learners.
A further area of significance lies in the creation of a general education preservice teacher candidate assessment tool for clinical practice that incorporates the tenets of Universal Design for Learning (UDL) by building on existing measures used to assess teacher candidates, (i.e., observation templates and candidate formative and summative evaluations; UDL checklist [CAST, 2015]; UDL Instructional Observation Instrument [UDL-IRN, 2013]). At the time if this study, there was no extant assessment tool to measure preservice teachers’ actual implementation of UDL in the classroom.

In conclusion, I regarded the creation of an assessment tool to evaluate and measure how general education preservice teachers incorporated and implemented the principles of Universal Design for Learning was being of paramount importance. This university could benefit from the creation of such an assessment tool in assessing its teacher candidate performance and readiness for the classroom. Of even greater importance has been the impact that such an assessment tool could have on the students that would be served by our teacher candidates. The lack of access to the curriculum within the classroom that leads to an abysmal achievement and opportunity gap can only be attained through improvement in teacher preparation practices at the institutions of higher education in this nation.
Sixty years after Brown v. Board of Education (1954), many children in the United States are still not receiving an equitable education. As Scott and Quinn (2014) indicated, “The changing demographic landscape, focus on high-stakes testing and market reforms, and growing social inequality present significant challenges to revitalizing Brown’s promise” (p. 757).

While the Brown case (1954) desegregated schools, the reality is that students who live in poverty, students of color, and students with diverse learning needs are still not doing well in school. Children continue to suffer the oppression associated with a lack of access to the curriculum (Meyer et al., 2014). While this injustice can be attributed in part to the lack of equitable distribution of resources, it is not just physical buildings and textbooks from which students are prohibited access. Perhaps more significantly, these students are not afforded access to the very curriculum that is presented to them within their classrooms. The classroom environment does not provide an engaging place where students can learn. Stedman (2011) stated, “The dominant discourses of schooling must be transformed, too. Instead of thinking and talking about education in terms of standards and testing, we should be discussing how to create quality, inviting learning environments for students and teachers” (p. 10).

Evidence of this lack of access to the curriculum can be seen below in the trend data from the National Assessment of Educational Progress (NAEP, 2015) results for reading and mathematics. NAEP state assessments utilize a probability sample design so that students selected represent the diversity of students throughout the nation. The chart below confirms that
while all percentile groups for fourth-graders in the United States made some progress in mathemetic score increases from 1990 until 2003, significant growth tapered off from 2003 to 2015.

**Figure 4.** Fourth-grade NAEP math trend scores.

An even more important finding is that the fourth-graders within the highest percentile in mathematics scores remained in the highest percentile while those within the lowest performing percentile also remained within the lowest performing percentile.

National Assessment of Educational Progress (NAEP) reading trend growth for fourth-graders shows that no one group made more than a seven-point gain from 1992–2015. Additionally, the percentile rankings for reading indicate abysmal results—the highest performing fourth-graders remained in the highest-performing percentiles while the lowest performing fourth-graders stayed at the bottom of the percentile rankings. National Assessment of Educational Progress (NAEP) results below show that fourth-graders across the nation have...
made minimal gains in both mathematics and reading over the last 25 years. Of great concern is how little movement there has been for students in the lowest percentiles.

Figure 5. Fourth-grade NAEP reading trend scores.

One reason for the poor achievement results may be that the “banking” concept of education (Freire, 1970) is still prevalent in the classrooms of most students. Kahl (2013) stated:

Neoliberal ideology epitomizes Freire’s (1970) description of the banking concept of education, in which students are seen as passive vessels who can be filled with knowledge that can be objectively known and regurgitated on objective exams.

Neoliberal models of assessment do not encourage critical thought or the examination of ideas, but instead only prepare students for careers in corporations. (p. 2625)

Rather than interacting with new information presented and interpreting that information through the lens of their world, students are recipients of deposits of didactic, one-size-fits-all
lessons meant to cover grade-level standards. The age of educational accountability has not
guaranteed equal access to education. Orfield et al. (2014) stated, “The impact of the standards
and accountability era has been felt more acutely in minority-segregated schools where a focus
on rote skills and memorization, in many instances, takes the place of creative, engaging
teaching” (p. 38).

As educators, we must find ways to open pathways of access for diverse learners so that
they are no longer depositories of knowledge but participatory examiners of knowledge. We
must strive to see the curriculum as deficit, rather than the child. Freire (1998) stated, “To think
correctly and to know that to teach is not merely to transfer knowledge is a demanding and
difficult discipline, at times a burden that we have to carry with others, for others and for
ourselves” (pp. 50–51).

Utilizing the educational framework of Universal Design for Learning (UDL) can help to
overhaul the “banking” concept of education (Freire, 1998) and convert it to what it ought to be:
sharing knowledge and exchanging ideas between teacher and students. This study adds to our
understanding of Universal Design for Learning as an educational framework to combat the
“banking” model.

The purpose of this literature review is to help answer the question: How can Universal
Design for Learning create pathways of access and agency for students’ in their own education?
Specifically, the literature reviewed examines the Universal Design for Learning framework as it
has been used to make curriculum more accessible. This review begins with a historical
perspective of Universal Design on which Universal Design for Learning (UDL) is based. Next,
Universal Design for Learning is described, followed by literature that has applied UDL in classroom settings. While much of the research on UDL (CAST, 1998) has focused on the use of UDL for students with exceptional needs and suggested that this framework has been successful in opening curricular pathways for students with disabilities, for the purposes of this literature review, a broader definition of students as diverse learners will be used. In fact, the purpose of this dissertation was to examine the extent to which general education teachers understand and are able to implement UDL to reach the needs of all students in their classrooms. Issues related to teacher preparation are also highlighted.

**Universal Design**

Universal Design (UD) is known as an architectural movement that created access for all. UD was framed by Architect Ron Mace at the School of Design at North Carolina State University. Mace, Hardie & Place (1991) stated, “Universal design means simply designing all products, buildings and exterior spaces to be usable by all people to the greatest extent possible” (p.2). The goal of Universal Design was therefore to create a barrier-free physical environment so that all users could experience the environment to the fullest.

Prior to Universal Design, buildings or products were often retrofitted to meet the needs of all users. While this approach may have seemed sufficient to some, retrofitting can often be a clumsy attempt to provide access, which led to limited access at best. It is this idea of greater access that led the designers at the Center for Applied Special Technology to apply the concept of Universal Design to curriculum, known as Universal Design for Learning.
Universal Design for Learning Framework

The concept of Universal Design applied to curriculum became known as Universal Design for Learning (UDL) (CAST, 1999). Rose and Meyer explained (2002), “It seemed ironic to us that legislators and architects were working very hard to ensure that education buildings were universally accessible, but no such movement pursued universal accessibility for the methods and materials used to teach inside the buildings—the curriculum” (p. 72). In order to pursue universal accessibility, CAST began to develop various multimedia tools to help all types of students connect with the curriculum. While many of the tools developed by CAST assisted students with disabilities, they were created with a larger group of learners in mind. In the way that Universal Design removes barriers to physical access, UDL helps to remove barriers from learning so that the child who dreamt of the day he or she was able to enter school can actually access the learning that is taking place there. Much in the same way that UD calls for universal access—like the ramp and the stairs in the earlier description of a UD building—UDL calls for universal access to curriculum. Extending that example, then, a student should be afforded a chance to demonstrate his knowledge through traditional mechanisms as well as alternative ways.

Universal Design for Learning relies on brain research, specifically the three brain networks: recognition, strategic, and affective systems. The recognition network represents the “what” of learning. The strategic network denotes the “how” of learning; and the affective network indicates the “why” of learning. Each of these areas can present barriers for students. If, for example, a student is not engaged in the learning process (the affective network) then an
obstacle to accessing the curriculum exists. From these three areas, CAST developed the Universal Design for Learning Guidelines (Appendix B; CAST, 2014).

The figure below outlines the principles and guidelines of Universal Design for Learning (UDL). The three columns are headed by one of each of these UDL principles and followed by accompanying guidelines. These guidelines are divided into three main areas that are connected to the three brain networks. The first UDL principle of multiple means of representation is seen in the recognition network. Multiple means of action and expression are found within the strategic network. The third UDL principle of multiple means of engagement is aligned with the affective network of the brain.

The guidelines of Universal Design for Learning (UDL) can be found below each of the UDL principles. These UDL guidelines bring more specificity to the three principles, demonstrating for teachers what explicit areas of learning are being addressed in each principle. Having in-depth knowledge and understanding of the UDL guidelines, or zones of learning, can help teachers remove barriers that prevent their students from accessing the curriculum.

Finally, UDL checkpoints refer to even more specified information about ways that teachers can provide access to learning for all students. These checkpoints undergird each UDL guideline to provide the necessary scaffolding for students. Teachers can use these checkpoints to hone in on options for student learning in very strategic ways. When teachers are able to identify student barriers to learning and provide alternative ways to learn, students are able to unlock the door to learning in meaningful ways.
When teachers are designing curriculum or planning lessons, UDL suggests that they take into account these UDL principles, guidelines, and checkpoints. Doing so creates curriculum and lessons that limit learning barriers. In order to discover what barriers exist for students, teachers must get to know their students’ learning styles and interests and then use the UDL guidelines to create lessons that remove barriers and create access. In a similar message, Freire (1998) taught us:

The exercise of the art and practice of teaching (a specifically human art), is of itself profoundly formational and, for that reason, ethical. True, those who exercise this art and practice do not have to be saints or angels. But they ought to have integrity and a clear sense of what is right and just. (p. 63)

In seeking to remove barriers to learning for students, teachers are fulfilling part of their social responsibility as well as modeling what learning should and can look like. They are empowering students to be agents in their own education by providing multiple means of engagement. Finally, teachers are focusing on equitable distributions of resources when they seek to provide multiple means of action and expression within their classrooms.

As previously mentioned, research in the area of Universal Design for Learning (UDL) has often focused on students with exceptional needs; yet in theory, UDL should be universal and work to improve access to the curriculum for all learners. In that way, UDL overlaps with sociocultural theory, which places students at the center of learning.
Universal Design for Learning and Student-Centered Theories

While UDL serves as the primary theoretical lens for this inquiry, there is great overlap with theories of education that insist on student-centered environments, particularly critical pedagogy, as first described by Paulo Freire. In his work, Freire (2000) demonstrates the need for students to find their voice. Students must see the connections between school and their world, both on a political and economic level, in order to discover how they are being oppressed and how they can resist this oppression. Students must then take action or live in “praxis” (Freire, 2000). Educators are key to this process of educational liberation. By using Universal Design for Learning Guidelines to create pathways to accessing information and learning in the classroom, teachers are helping students to be agents of their own education.

Sociocultural Theory and Universal Design for Learning. Sociocultural theory is a conceptual framework that is also connected to Universal Design for learning. It was first described by Lev Vygotsky as a way to understand that the student does not learn in isolation from his or her world. The context in which the student lives is in fact inextricably linked to the ways in which connections to and understanding of information take place. According to sociocultural theory, language and culture mediate learning as children interact with one another. Vygotsky (1978) posited that the strongest motivating power in learning is when there is meaningful interaction among children.

The two main tenets of sociocultural theory are mediation and meaning. Eun and Lim (2009) explained that Vygotsky’s term of mediation, “refers to the process by which socially meaningful activities transform impulsive, unmediated, and natural behavior into higher mental
processes through the use of instruments or tools” (p. 15). Eun and Lim (2009) further elaborated:

For example, in the process of development, children’s direct (unmediated) memory develops into mediated memory (i.e., remembering by means of language or other signs). In one of his experimental studies, Vygotsky (1987) was able to demonstrate that children who initially quite poorly remembered a list of words were able to perform well when they were able to use picture cards to mediate their remembering process. (p. 15)

This example of mediation facilitated by the use of pictures is a concrete example of Universal Design for Learning (UDL) in action. The use of a pictorial representation of a concept in conjunction with text mediated learning for the children in the aforementioned experiment is the personification of the UDL principle of “multiple means of representation.”

The second principle in sociocultural theory is meaning. Children do not construct meaning in isolation. They do so in within their interactions with others. Vygotsky (1978) stated: “Signs and words serve children first and foremost as means of social contact with other people” (p. 27). Vygotsky then linked mediation and meaning as explained by Eun and Lim (2009), “Vygotsky’s developmental theory emphasizes mediation and meaning because the mechanism underlying development, including linguistic development, occurs through social interaction” (p. 17). Again, a strong overlap with the framework of Universal Design for Learning (UDL) can be seen in the linkage of the mediation and meaning tenets of the sociocultural theory conceptual framework. If the interaction of mediation and meaning scaffold underlying development through social interaction, as posited by Eu and Lim’s (2009) interpretation of Vygotsky’s work,
then the UDL principle of multiple means of engagement supports this interaction. By providing multiple ways of engaging with the learning content and with each other, learning development via social interaction can be fully reinforced.

Zone of proximal development and Universal Design for Learning. This social interaction is most fully demonstrated in Vygotsky’s “zone of proximal development.” Each child must be able to learn within his or her “zone of proximal development” (ZPD) (Vygotsky, 1978). The ZPD is the space between what a learner is able to do on her own versus what he or she can do with a more knowledgeable other. The emphasis of this theory is on a student-centered environment, rather than on the more knowledgeable other. This theory is connected to UDL in as much as the educator adjusts the curriculum to fit the student’s context and needs, thus assisting the student to work within his or her ZPD.

An example of Universal Design for Learning (UDL) working in tandem with Vygotsky’s zone of proximal development would be a teacher who provides scaffolding for a third-grade student who is reading at a first-grade level. When navigating a third-grade social studies textbook, the scaffolding for the student could include pictorial cues as well as a recording of the specific text. These UDL strategies of multiple means of representation assist the student to work within his or her zone of proximal development.

A teacher working within the framework of Universal Design for Learning would first assess a student’s strengths and challenges, and then create a lesson in which the challenges were addressed by providing strategies to remove barriers. When students are able to work from their zone of proximal development, they are most able to access the content. Sociocultural theory
would require the teacher to take into account the cultural beliefs and attitudes of the students and how they can affect learning as it relates to the child’s zone of proximal development. With an overlap between UDL and sociocultural theories established, the ways in which teachers implement these concepts may be operationalized in the curriculum.

Universal Design as it Applies to Curriculum

Grounded in the theoretical overlap between UDL and student-centered theories of education, the application of the architectural concept of Universal Design to curriculum in educational settings has been well researched and demonstrates the possibility for the theoretical to be tangible. Curriculum, instruction, tutoring, and learning centers are examples of such applications as noted by Burgstahler (2012). McGuire, Scott and Shaw (2006) refer to three separate models of educational applications of Universal Design: Universal Design for Learning, Universal Design for Instruction, and Universal Instructional Design. The first of these models is Universal Design for Learning (UDL). McGuire et al. stated that UDL is “an approach to planning and developing curricula in ways that promote access, participation, and progress in the general education curriculum for all learners” (p. 169). Though Universal Design for Learning can now be seen used in higher education, it is most commonly applied in K–12 educational settings. The next model referred to by McGuire et al. is Universal Design for Instruction, which is a postsecondary initiative used at the Center on Postsecondary Education and Disability at the University of Connecticut. The work at the higher education level focuses on ways to assist college faculty in providing better access to their instruction for college and graduate students. Faculty reflection on instruction is an emphasized area in this model. The third model, Universal
Instructional Design (UID), is similar to Universal Design for Instruction, but is specific to the work at the University of Guelph in Canada about which McGuire et al. explained:

This project focused on two key objectives: (a) to enhance student learning through the application of the seven principles of UID throughout courses in this project, and (b) to conduct research studies that assess the impact of level of UID on student learning. (p. 170)

McGuire et al. analyzed this Universal Instructional Design work conducted at the higher education level and found an increase in student self-efficacy after being taught by faculty using the seven principles of Universal Instructional Design (UID). These seven principles of UID include: equitable use, flexibility in use, simple and intuitive, perceptible information, tolerance for error, low physical effort, size and space for approach and use, a community of learners, and instructional climate.

Universal Design as applied to instructional practice. To demonstrate the appropriate use of UD in the classroom, Flores (2008) described UD principles applied to instructional practices in elementary and middle school classrooms. The first of these principles is equitable use. In Universal Design, equitable refers to all potential users of a building or product having the same access. Flores maintained that the same principle applies to materials in the classroom, including equipment and technology. One example of materials that is often inaccessible in classrooms is the use of textbooks. Reading level, primary language, and processing disorders can all have an effect on the amount of accessibility students have to the information within a
textbook (Flores, 2008). To truly practice the principle of *equitable* access, teachers must think beyond the textbook for their instructional practice.

**Flexibility.** The second principle is *flexibility.* *Flexibility* of use in Universal Design can mean that a product can be used in multiple ways so that many people can benefit from its use. A wheelchair, for example, can be designed for those with intact upper body usage, or it can be designed to be motorized for those who are unable to use their upper body parts to move the wheelchair. Flores indicated that, as applied to the instructional setting, *flexibility* refers to how lessons are taught, particularly focusing on the activities to support the content of lessons. These activities should be created with a wide range of students in mind. Representing information in visual, auditory, and tactile ways would be one concrete example of this concept (Flores, 2008).

**Simple and intuitive.** In Universal Design, the principle of *simple and intuitive* means that all users of a product or building entrance are able to understand and utilize the design. Flores envisioned this principle in the classroom as students understanding a concept that has been taught no matter their prior knowledge. This means that instructors must investigate each student’s prior knowledge and experience before building the lesson, in order to meet the needs of all students.

**Perceptible information.** Next, *perceptible information* in Universal Design means that regardless of the external conditions, the design of a product should provide access to the user. An example of this would be the use of voice text on a smartphone. A user is able to send a text by voice activation if they are unable to type the text. Flores implies that all students must be able to perceive information being presented. This principle could indicate the need for
preferential seating, specific use of color coding on charts and the whiteboard, and the adjustment of the amount of time a student has to complete a task or activity.

**Tolerance for error.** The next Universal Design guideline of *tolerance for error* means that the user of a product will be exposed to minimal risks. Flores proposed that, in the classroom, students must have the opportunity to edit and reedit work. Additionally, they must be allowed to engage and reengage with information and learning activities. Teachers must therefore focus on the type and frequency of the feedback they are giving students so that they can support the student in learning. This means breaking away from the deficit paradigm of viewing students through the lens of what they do not know, rather than what they have mastered thus far.

**Low physical effort.** *Low physical effort* is the next guideline in Universal Design. This principle can be explained by a product being used efficiently and comfortably. In the classroom, Flores posed, physical effort can be decreased by the use of technology. Students who struggle with fine motor skills can utilize a keyboard when writing, to reduce fatigue or frustration with writing.

**Size and space for approach and use.** The last Universal Design guideline is *size and space for approach and use*. In the office workspace, this is demonstrated in flexible workspaces. The idea is much the same in a classroom. Flores discussed the design of the classroom setting to provide room for all students to move about and participate fairly.

The work of Flores clearly articulates how the architectural principles of Universal Design can be applied to educational settings. This line of work further implies that the
principles of Universal Design provide access to curriculum and learning in a way similar to how a well-designed ramp can increase access to a building.

Universal Design for Learning as it Applies to Lesson Planning

Teachers learn the skill of lesson planning in teacher preparation programs. They are taught to include the basics: content standard, learning objective, anticipatory set, direct instruction, guided practice, closure, independent practice, and assessment. While much emphasis is placed on confirming that the state-mandated content standard in the lesson plan is addressed, much less time, if any, is spent on taking into consideration the needs of the learners. Courey and colleagues (2012) researched the use of Universal Design for Learning (UDL) to train teachers, and measured the improvement of lesson plans following the training. These researchers at San Francisco State University examined pre- and postlesson planning with preservice teachers in a Special Education Graduate program for candidates seeking a mild/moderate credential in order to work with K–12 students with high incidence disabilities. Participants wrote a lesson plan prior to UDL training, at the end of the training, and then at the end of the semester. Courey et al. (2012) found that the UDL training was effective in improving the incorporation of UDL principles into their lesson plans. Their lesson plans reflected more student engagement, more means of representing information, and more opportunities for action and expression for students. One limitation of this study was that it focused only on preservice teachers; as such, the researchers were not able to measure how effective these lesson plans were once implemented in the classroom.
Additional research by Spooner et al. (2007) examined the effects of training in Universal Design for Learning on the development of lesson plans. A team of researchers from the University of North Carolina Charlotte examined graduate and undergraduate students in four education classes: two general education classes and two special education classes. The team used an experimental model with a control group. The intervention included a one-hour lecture on UDL. The participants were then given a posttest. The participants' ability to create universally designed lesson plans was measured before and after the intervention.

The results of the study showed that general and special education teachers in the experimental group improved their lesson plan development after the intervention. Still, a limitation of this study is that special education teachers were required to plan lessons for students with severe disabilities, limiting the ability to apply the results to all students. While students with severe disabilities would definitely benefit from lesson plans created using the Universal Design for Learning principles, the legal requirement for teacher preparation programs is to embed UDL across general and special education. All students must be engaged with the content of their learning in order to be true participants in their own education.

Universal Design for Learning and Student Engagement

Katz (2013) from the University of Manitoba examined how the use of universally designed lesson plans increased student engagement and achievement in inclusive education. The participants were drawn from five school divisions in Manitoba, Canada. Staff were given a one-day workshop on the Three Block model of Universal Design for Learning. The Three Block model helps teachers focus on creating environments that are inclusive and engaging for all
students. The model is intentionally divided into three blocks to assist teachers in managing the execution of Universal Design for Learning. The three blocks are systems and structures, inclusive instructional practice, and social and emotional learning that lead to compassionate learning communities.

Katz (2013) used a purposeful sampling to find teachers who were interested in more professional development in UDL. Those teachers received three more half days of training. Teachers not interested in further training became the control group. Teachers then implemented the Three Block model of UDL in their classrooms. Student engagement was measured by observations and surveys. The results showed that students in the treatment classes were engaged in UDL classrooms at a significantly higher level. A limitation of the study is that effects were seen among teachers who self-selected to participate in the extra professional development, which may limit the ability to generalize findings to teachers mandated to create UDL lessons. It may be that student engagement was found to increase because teachers were highly committed and interested in trying the new lessons.

Kortering, McClannon, and Braziel (2008) from Appalachian State University examined student engagement levels in high school algebra and biology classes. Twenty-two teachers—eight biology teachers, and 14 algebra teachers—participated in the study. All 22 teachers attended at least two UDL training sessions. The teachers were provided with technology-related resources to use in the implementation of their UDL lessons. Close to 300 students were surveyed after they had been exposed to the UDL intervention. The students found the UDL
interventions to be engaging and expressed interest in having more UDL interventions in their math and science classrooms.

**Danielson Framework**

Danielson (2014) developed a framework for teaching in 2007. Enhancing Professional Practice: A Framework for Teaching provides a focused approach to teaching that is demonstrated through specific concepts and practices utilized by teachers. This framework has been researched and updated several times. The most recent version was published in 2014. Danielson (2014) stated:

> The Framework for Teaching identifies those aspects of a teacher’s responsibilities that have been documented through empirical studies and theoretical research as promoting improved student learning. While the Framework is not the only possible description of practice, these responsibilities seek to define what teachers should know and be able to do in the exercise of their profession. (p. 1)

Danielson’s Framework is organized into four domains: planning and preparation, the classroom environment, instruction, and professional responsibilities. These four domains are further disaggregated into subcomponents that can offer preservice teacher candidates a roadmap to designing and assessing coherent instruction for students.

The Danielson Framework for Teaching (2014) can also be used as a conduit for constructive conversations between preservice teachers and their support providers such as master teachers and university supervisors. Danielson (2016) indicated that teacher reflection and professional conversation are crucial. “Reflective conversations about practice require teachers
to understand and analyze events in the classroom. In these conversations, teachers must consider the instructional decisions they have made and examine student learning in light of those decisions” (Danielson, 2016, p. 5).

Danielson Framework and UDL

The Danielson Framework, paired with Universal Design for Learning (UDL), may provide clear instruction and assessment that is built on student learner variability and provides the coherency and access learners need to successfully master instructional content. In Domain 1 Planning and Preparation, the subconcept area 1b Demonstrating Knowledge of Students correlates well with UDL toward the goal of knowing all learners and using that information to create engaging lessons. In Domain 2 Classroom Environment, subconcept area 2b Establishing a Culture for Learning again fits well with UDL in that it recognizes the need to create a classroom that works for all learners. Additionally, subconcept area 2e Organizing Physical Space supports UDL’s goal of removing barriers to learning; specifically focusing on classroom layout.

Domain 3 Instruction has two subconcept areas that work with Universal Design for Learning. Sub concept area 3c Engaging Students in Learning directly relates with the third UDL principle of providing multiple means of student engagement (CAST, 2014). Subarea 3e Demonstrating Flexibility and Responsiveness further correlates to UDL in providing elasticity and sensitivity in lesson planning and implementation towards student success. Finally, Domain 4 Professional subconcept area 4a Reflecting on Teaching supports the UDL framework in
calling out the importance of consistent and ongoing teacher reflection towards improving student learning.

Synthesis of UDL Literature

Three areas of research in Universal Design for Learning have so far been identified: Universal Design as it applies to curriculum; UDL as it applies to curriculum and lesson planning; and UDL and its effects on student engagement. The area of Universal Design as it applies to curriculum indicated that use of the architectural guidelines of UD in planning curriculum could help to create access for students to information and learning opportunities. The limitations of research in this area is that most research summarizes theories and applications rather than using a quantitative research approach that would allow for the study of the effects of Universal Design for Learning on classroom practice.

Research in the area of Universal Design for Learning (UDL) as it applies to curriculum and lesson planning was more methodological. All three studies reviewed used a mixed-methods approach, which gave validity to the qualitative data studied. Results in these three studies indicate that use of UDL had a positive impact on curriculum and lesson plan development that created better pathways of access for diverse learners.

In the area of student engagement, studies showed that utilization of Universal Design for Learning (UDL) in creating lesson plans and delivering interventions increased student engagement significantly. Both of these studies were conducted using mixed-methods research. The use of observation protocols and student surveys helped to capture student feedback on UDL. In addition to increased levels of student engagement after being exposed to universally
designed lesson plans and/or interventions, students showed a preference for more UDL to be used in their classrooms.

The findings of this literature, while limited in scope in some areas, do indicate that the use of Universal Design for Learning (UDL) guidelines for planning curriculum, specifically lesson plans, is successful. This is an important finding because, as indicated early in this literature review, the achievement gap for students is not narrowing. While there may be many ways to address this achievement gap, the use of UDL has been found to be effective for many students.

More quantitative research in the area of Universal Design principles as they apply to curriculum use in the classroom is suggested. There is powerful symbolism in the modifications in design made to buildings and products before they are developed. The connection that can be drawn to curriculum is important in changing mindsets to understand that curriculum is deficient, not the child. Based on the literature on UDL, it is evident that UDL can impact changes in teachers’ lesson plans and subsequently lead to higher student engagement. This line of research still lacks evidence on how UDL can apply to in-service teachers. To truly embed UD in the curriculum, teachers must be trained and committed to reaching all students, indicating that teacher effectiveness is key to student success.

The Role of Teachers

If the pathway to student success can be found at the intersection of equitable access and the curriculum then surely the classroom teacher must provide the roadmap. Teachers are uniquely positioned to influence and affect student learning outcomes in both positive and
negative ways. Darling-Hammond (2009) stated, “Teaching quality has to do with strong instruction that enables a wide range of students to learn. Such instruction meets the demands of the discipline, the goals of instruction, and the needs of students in a particular context” (p. 3). Sanders and Horn (1998) agreed that teacher quality is key to student achievement, “it is clear that teacher effectiveness is the major factor influencing student academic gain” (p. 6).

**Teacher Preparation Programs**

Within the State of California, Teacher Preparation Programs (TPPs) have separate programs for general education candidates and special education candidates. Candidates follow two distinctly different preparation pathways with program requirements specific to either the general education or special education standards. Course sequences of these programs intersect infrequently if at all.

General education teacher candidates may take one course within their sequence in which the needs of students with disabilities are addressed. This course is most often one semester long and is designed to give general education students an overview of the special education referral process along with some content on strategies to support students who have been identified as having exceptional needs. This reality of teacher preparation program coursework leaves the identification of specific learning disabilities as well as concrete definitions of each as content that general education candidates are not often exposed to in their coursework. In the future however, these same teachers will have students either mainstreamed into their classrooms or fully included in their classrooms, suggesting the importance of this time in training general education teachers to serve the needs of all students.
National educational reform movements have led to higher levels of scrutiny of teachers and teacher preparation. The reauthorization of the Elementary and Secondary Education Act (ESEA) in 2001 as No Child Left Behind (NCLB) led to measures that ultimately brought into specific focus the breadth of the student achievement gap. Meyers (2012) stated, “NCLB has been the most explicit federal effort to close achievement gaps in the history of American education” (p. 470). This highlighted students who were, in many cases, years behind their peers in terms of student learning outcomes. NCLB also brought to the forefront the expectation that all teachers be “highly qualified.” This legislation included three major benchmarks that teachers must demonstrate including, holding a bachelor’s degree; holding state certification or licensure; and demonstrating competency in the subject matter he/she teaches.

There are several options for demonstrating subject matter competency. In the State of California, for example, teachers can major in the subject they teach. Teachers can possess course credits that are equivalent to a major in the subject. They can pass a state-developed test such as the California Subject Examinations for Teachers (CSET). Teachers can also choose to use a state-developed evaluation called the High, Objective, Uniform State Standard of Evaluation (HOUSSE). Teachers can receive an advanced certification from the state or teachers can earn a graduate degree. While there are many routes to a credential, it is probable that using only one measure of subject matter competency is not sufficient to indicate that a preservice teacher is highly qualified. The criteria for assessment of teacher subject matter competency should therefore be multidimensional.
In addition to teacher qualifications, under NCLB, all states were required to adhere to regulations regarding how teachers affect student achievement. First, states were required to measure and monitor the number of highly qualified teachers working in schools, especially those who worked with students in poverty and minority students. Additionally, states were asked to develop goals and plans to ensure that all teachers were highly qualified. Finally, states were required to publicly report those plans and the progress they were making in meeting goals regarding teacher quality.

In short, NCLB called for greater monitoring of teachers within states; yet an unknown question is whether that initiative translated into more effective teachers actually working with students and, subsequently, whether the presence of more highly qualified teachers translated into increased student achievement. The Every Student Succeeds Act (ESSA) was passed in December 2015 and replaced the No Child Left Behind Act of 2001. ESSA brings even more changes to an already complex field of teacher education.

The Every Student Succeeds Act (ESSA) continues the focus on improving student achievement through standards and accountability. ESSA, however, moves the accountability measures and requirements to the state level. This provides states with more autonomy and flexibility to develop their own systems of accountability. Among the changes in accountability in the Every Student Succeeds Act is the departure from a federal definition of highly qualified requirements for teachers substituting "highly qualified" with the term "effective." As with the accountability systems for measuring student achievement, states will now define "effective" teachers by the context of their state credential and licensing requirements.
Teacher preparation programs and accountability. Institutions of higher education (IHEs) have not traditionally been held accountable for the assessment of their teacher preparation programs. Recently, however, the federal focus moved from highly qualified teachers in school districts and charter schools to the programs that produce those teachers (Norris, 2013). This new governmental effort to gather information on Teacher Preparation Programs (TPPs) brings higher education data-driven assessment into public focus. IHEs will now be held to the same standard in terms of goal setting, program review, and funding as the PK-12 sector.

College and University Teacher Preparation Programs (TPP), housed traditionally in Schools of Education, are already held accountable for state accreditation, which looks at how teacher candidates are trained. This accreditation is based on both program standards related to the Teacher Preparation Program and teacher performance standards that teacher candidates must meet. TPP program standards focus on broad areas of teacher preparation development such as subject matter competence, supervision of teacher candidates during fieldwork, and assessment of candidate readiness to teach. Teacher candidate performance standards include mastery of subject matter, planning and designing instruction, as well as maintaining effective classroom environments for learning. Schools of Education voluntarily participate in national accreditation. This type of accreditation has also relied on program and teacher candidate standards at a broader level. National accreditation standards are similar to program standards for teacher preparation programs but often require more detailed data as evidence of teacher competence.
National standards also focus on the admission requirements for teacher candidates and teacher effectiveness in the field once they are fully credentialed.

Such scrutiny is not without its advantages and disadvantages. Given the importance of educating the children of the United States, it stands to reason that teacher preparation programs should be held to high levels of standards and scrutiny to ensure they are successfully preparing effective teachers. The cost of a college education that includes a teaching credential has become increasingly expensive. To that end, the value of that credential and or accompanying master’s degree should be accounted for by the Teacher Preparation Program. Such programs should be held to higher standard to ensure that student learning outcomes are met as these students become part of the work force and hopefully contributing members of community.

While deeper examination of teacher preparation programs may be warranted, the cities in which these programs are housed are incredibly diverse. The students within these cities are the potential students enrolled in teacher preparation programs. As such, in addition to meeting program standards, teacher preparation programs must prepare teacher candidates to work with diverse populations. Diversity, in this case, refers to race, ethnicity, gender, economic background, and ability level, to name a few. Does it stand to reason then that while standards can provide a guide and foundation for teacher preparation programs, can any one set of standards for teacher preparation prepare teachers for every possible setting and every possible student: urban, low-income, second language learners, gifted and talented, students with special needs?
The current climate of accountability and focus on data-driven assessment at the higher education level has served as a catalyst for major changes in both teacher preparation program standards at the state and national level. The national accreditation bodies within the United States, the National Council for Accreditation of Teacher Education (NCATE) and the Teacher Education Accreditation Council (TEAC), have now merged into one body: Council for the Accreditation of Educator Preparation (CAEP). In August 2013, CAEP approved new teacher preparation program standards. These standards strongly reflect a change in how data-driven assessment is created and used in the preparation of future teachers in the United States.

Teacher preparation programs (TPPs) utilize myriad assessments to monitor the progress of their candidates. In general, there are five common categories of assessments relied upon by TPPs: coursework assignments and grades, candidate dispositions, clinical practice performance assessments, subject matter competency exams, and culminating portfolios (Henry et al., 2013). Teacher preparation programs use these areas to evaluate both theory of teaching and practice in the field. Though these assessment foci represent the teacher candidate assessment practices of the majority of TPPs, what is not known is how effective these assessments are in measuring the future effectiveness of teacher candidates.

Teacher preparation in California. Currently, within the State of California, there is much discussion about the ways in which teachers are prepared to serve all students. At the moment, general education teachers and teachers of special education follow separate paths during their teacher preparation programs. General education teacher candidates usually take a course on how to teach students with special needs who are mainstreamed in their classroom.
This course, however, covers specific learning disabilities in a cursory way and does not provide the general educator with enough concrete information about how students with exceptionalities learn.

Special educators are on their own specific teacher preparation track and do not usually take courses on how to work with general education students. In California, special educators may not teach general education students directly. As more and more inclusion of special education students in the general education classroom occurs, special educators will need to know how to and be qualified to work with general education classmates of their special education students. With the same token, general education teachers will need to have more training and skill development in how to assist their fully included special education students.

California is looking therefore at the pathways of teacher preparation. There is a move to create a common trunk of learning for all teacher preparation candidates—general education and special education candidates alike. This common trunk would prepare all teachers to work with all types of students, including those with mild disabilities. General education and special education preservice teachers would learn side by side, which could model what a truly inclusive classroom could look like. The Report on California’s Statewide Task Force on Special Education (2015) explicitly states this goal:

This Task Force envisions general education and special education working together seamlessly as one system that is designed to address the needs of all students—as soon as those needs are apparent. Within that system, students with disabilities receive effective services, learn in classrooms that are guided by rigorous standards alongside their general
education peers when appropriate, and are equipped to make their own way as adults. (p. 7)

Changes to the Measurement of Teacher Effectiveness

As previously mentioned, teacher preparation programs (TPPs) are being held to a higher standard of accreditation both nationally and within individual states. In light of these changes, more than likely, how educator preparation programs are evaluated will change. Specifically, these accreditation changes will impact the ways that teacher effectiveness is evaluated within all teacher preparation programs. TPPs will need to take inventory of the assessment tools they use to evaluate teacher candidates. In some cases, previously used assessments will need to be discarded and replaced by validated tools that reflect the new accreditation standards.

California’s future. At the state level, the California Commission on Teacher Credentialing (CCTC) has spent the last year focusing on streamlining and strengthening the accreditation process. The CCTC (2015) indicated:

The plan focuses on significant technical assistance to assist program sponsors in revising their programs (multiple subject, single subject, and induction), revising Common Standards, and in meeting the requirements of the revised accreditation cycle, including new procedures and requirements related to data once the data warehouse is developed.

(p. 2)

References to new procedures and requirements for data in the California Commission on Teacher Credentialing document confirm that educator preparation programs will, in fact, be held to a higher standard. The development of a CCTC data warehouse further indicates that
public transparency for these data will be a new expectation, one that teacher preparation programs have not previously had to meet.

Teacher preparation programs are guided by what are called “common standards.” These common standards are set by the state in which the TPP resides. California has seen new developments in this area as well. In late October, 2015, the California Commission on Teacher Credentialing adopted new common standards. The nine previous common standards included: educational leadership, resources, faculty and instructional personnel, admission, advice and assistance, assessment of candidate competence, field experience and clinical practice, district employed supervisors, and assessment of candidate competence. These were replaced by five newly streamlined common standards: institutional infrastructure to support educator preparation; candidate recruitment and support; coursework, fieldwork and clinical practice; and continuous improvement; and candidate assessment and program impact.

The fourth standard, Continuous Improvement (2015) shows further evidence of higher scrutiny of tools utilized to measure teacher effectiveness. It states, “Both the unit and its programs regularly and systematically collect, analyze, and use candidate and program completer data as well as data reflecting unit operations to improve programs and their services” (p. 5). Clearly the State of California is focused on making significant improvements to teacher preparation programs by focusing on the use of teacher candidate data in meaningful and authentic ways.

In line with state foci on teacher preparation program improvement, national accreditation is concentrating on the enhancement of TPPs across the United States. The Council
on the Accreditation of Educator Preparation is now the sole national body for educator preparation programs in the nation. They, too, have been examining how teachers are prepared in the colleges and universities of the United States. In 2013, CAEP released new accreditation standards for teacher preparation. CAEP Standard 4.2 Indicators of Teaching Effectiveness (2013) states, “The provider demonstrates, through structured and validated observation instruments and student surveys, that completers effectively apply the professional knowledge, skills, and dispositions that the preparation experiences were designed to achieve” (p. 13).

Again, the focus on the accreditation of teacher preparation programs—this time at the national level—indicates that internal program measures of teacher effectiveness will no longer suffice. Teacher effectiveness measurements must be created in ways that ensure validity and must be analyzed on a regular basis. Henry et al. (2013) examined the ways that most teacher preparation programs measure candidate effectiveness. The leading indicators of teacher candidate progress used by TPPs were coursework and grades, dispositions, performance assessments conducted during student teaching, subject matter competency exams scores, and culminating portfolios.

Henry and colleagues (2013) examined the above five areas of preservice teacher data collected by a teacher preparation program for a sample of 279 teacher candidates within their first five years of teaching. The team defined teacher progress through data collected on these five indicators of teacher preparation progress as follows: (a) data on course taking and grades, (b) ratings of professional behaviors and dispositions, (c) ratings of performance during student teaching, (d) Praxis I exam scores, and (e) ratings of comprehensive portfolios of the candidates’
work at the end of their program. The team further narrowed its focus by selecting the following three variables: professional behaviors and dispositions, performance during student teaching, and comprehensives portfolios of the candidates’ work. In addition to measuring teacher preservice performance data, Henry et al. (2013) correlated these data with the test score increases of the students who were taught by these preservice teachers. Within each of these areas of teacher effectiveness measurement, underlying constructs were identified (see Table 1).

Table 1

<table>
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<tr>
<th>Teacher Effectiveness Constructs</th>
<th>Coursework variables</th>
<th>Professional behaviors and disposition variables</th>
<th>Performance assessment during student teaching</th>
<th>Praxis I Exam Scores</th>
<th>Comprehensive Portfolios</th>
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<tbody>
<tr>
<td>Subject-specific content courses</td>
<td>Professional demeanor</td>
<td>Management of instructional time</td>
<td>Mathematics score</td>
<td>Candidates work sample of instructional practices</td>
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<tr>
<td>Subject-specific pedagogy courses</td>
<td>Professional commitment</td>
<td>Management of student behavior</td>
<td>Reading score</td>
<td>Classroom management</td>
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<tr>
<td>Other content courses</td>
<td>Professional interactions</td>
<td>Presentation</td>
<td>Writing score</td>
<td>Impact on student learning</td>
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<td>Other pedagogy courses</td>
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<td>Professional studies core courses</td>
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The team found low predictive validity for the above-mentioned five leading indicators of teacher candidate progress. Specifically, dispositions, student teacher evaluations, and portfolios did not measure the underlying constructs needed to show teacher effectiveness. The team found, “Overall, these findings suggest an urgent need to identify or develop valid and reliable assessment instruments to measure the performance and progress of teacher candidates” (p. 449).

In their study of the predictive validity of measure of teacher candidate programs, Henry et al. (2013) concluded that there are four areas that valid and reliable teacher preparation program (TPP) instruments would impact. They suggest first that TPP instruments should

(a) provide feedback to teacher candidates about their strengths and weaknesses that directly relate to their ability as teachers to improve student achievement; (b) should identify specific teacher candidates who need supplemental instruction, coaching, or mentoring; (c) redirect low performing teacher candidates into other fields; and track the development of teacher candidates’ knowledge, skills, and dispositions as they move through their preparation programs. (p. 449)

While some may find the changes in teacher preparation burdensome, there can be no doubt that these changes have been long overdue. Teacher candidate effectiveness is crucial to the success of the educational systems within the United States. Teacher preparation programs will need to study these accreditation changes and learn together as a professional learning community if they are to successfully implement assessments that accurately measure teacher effectiveness.
Universal Design for Learning and Teacher Preparation

The five highlighted areas of the aforementioned study of teacher effectiveness measurement (Henry et al., 2013) make no mention of the teacher knowledge or implementation of Universal Design for Learning—an interesting omission given that the Higher Education Opportunity Act (HEOA) of 2008 made UDL a public law. This law states:

The term “universal design for learning” 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.

Despite the mandated use of Universal Design for Learning (UDL) in the Higher Education Opportunity Act of 2008, UDL is not used comprehensively in teacher preparation programs. In many cases, UDL is taught to preservice special education teacher candidates but not to general education preservice candidates. The literature on Universal Design for Learning being used in teacher preparation programs almost exclusively refers to UDL being taught in programs designed for teachers of special education. The UDL framework and principles, when applied to the lesson planning of special educators, can help remove barriers for exceptional children in their classrooms. Yet, the law specifically calls for UDL to be used to guide educational practice
for all teacher candidates in order to reach all children. This preparation in UDL thus includes general education teachers.

It must be said, however, that students with disabilities are not the only students who can benefit from educator use of the Universal Design for Learning framework. Students for whom English is a second language, students who are gifted, or students who struggle with a specifically identified concept within a content area can all reap the rewards from application of UDL by their teachers to their classroom lessons. Is it possible that in attempting to level the playing field of learning for one group of students—those with disabilities—we have actually created an uneven learning landscape for other groups of students?

In addition to being a framework through which teacher preparation programs should develop their curriculum for ALL teacher candidates, Universal Design for Learning should be used when assessing the competency and effectiveness of both general education and special education preservice teachers. Review of lesson plans and observations of the implementation of those lessons by all preservice teachers should be viewed through the lens of Universal Design for Learning (UDL). It is not enough that each preservice teacher can write a lesson plan that includes correct subject matter content if said content does not translate to actual student learning. Equal time must be spent on how learning will take place within the classroom—specifically how each child, whether s/he is economically disadvantaged, disability challenged, or an average learner, can find his or her entry point into the lesson. Each and every child must be able to secure access to all content that is presented. The utilization of the framework of Universal Design for Learning by preservice teachers when creating their lesson plans must be
followed by close observation of UDL principles in action within the implementation of the lesson. If teacher preparation programs are to effectively include UDL as the lens through which each preservice teacher creates instruction, it must also ensure that it utilizes assessment tools that reflect and measure Universal Design for Learning.

With all the standards-based testing and accountability measures that have been developed in the name of closing the achievement gap, we appear to have forgotten those who are languishing in the chasm of that achievement gap. Further, what if there are students who do not live within the confines of the stated achievement gap but still struggle to find access to learning? What if all this focus on achievement has led us to lose our focus on the children themselves? Children fundamentally want to learn and want to be engaged. They are, by nature, curious about the world. Before ever entering a classroom, children observe their world, explore their world by seeing, touching, and hearing all that is around them. They are engaged learners from the start. Then, they become school aged and, for some, the joy of learning goes away.

The children who cannot find access to the joy of learning within the confines of a classroom are the very children who lack access to the curriculum. This lack of access can occur for many types of learners. There are those who cannot access learning because of a learning disability. There are others who cannot access the classroom content because it is not relevant to the context of their lives and therefore does not make sense. There are those that cannot access the learning taking place within the classroom because it is presented in a language incomprehensible to them. And there are yet others who are not able to access the curriculum of their classroom because they are tired and hungry.
As educators, if we believe that all children have a right to education, and if we believe that all children can learn, then we must believe as well that all children must have access in order to learn. These beliefs then become the foundation for the imperative of every educator—it is not enough to present knowledge to students and hope that they learn. We are called, we are chosen, and we are responsible for ensuring the success of every child. We must then find a way to create the elusive access to learning that all children seek and deserve. This is a difficult journey to be sure but it is not an impossible one. The destination is clear—access for all children. Universal Design for Learning provides the framework, or the roadmap, for this journey.
CHAPTER THREE

METHOD

Students in the United States do not have consistent access to the curriculum, which has led to significant achievement gaps, as evidenced by stagnant standardized test scores. This evidence can be seen in the National Assessment of Educational Progress (NAEP) results for California, where reading and math proficiency levels for general education students in fourth grade are only 30 and 31%, respectively (NAEP, 2015). This lack of access must be addressed through specific focus on teacher preparation programs and the research frameworks used within those programs. Universal Design for Learning (UDL) is both suggested for teacher preparation programs and grounded by literature to be effective in increasing access to the curriculum. To that end, this study focused on the development of a clinical observation assessment tool to measure preservice teacher candidates’ ability to implement UDL in the classroom. The focus of the study was to embed the framework of Universal Design for Learning, which has been shown to effectively increase student access to the curriculum (Meyer et al., 2014), and to encourage that it be embedded in Teacher Preparation (Higher Education Opportunity Act, 2008).

Research Questions

The research questions guiding this study were formulated based on a specific problem of practice within teacher preparation. This problem of practice is the current inability to assess preservice teachers’ knowledge of Universal Design for Learning and connect that knowledge to aspiring teachers’ ability to implement a UDL lesson in the classroom. Specifically, the study
examined the ability to implement the Universal Design for Learning framework among elementary preservice teachers. There were two research questions for this study:

1. To what extent do general education preservice teachers know and understand the principles of Universal Design for Learning?

2. How can teacher preparation programs measure preservice teachers’ implementation of Universal Design for Learning in the classroom?

Context

This research study was conducted within the School of Education at private Jesuit University in Southern California. This School of Education enrolled 250 undergraduates and 1,500 graduate students. There were two teacher credentialing programs: general education and special education. This School of Education was founded on the core value of social justice. Teacher preparation candidates were taught through the Freirean framework of critical pedagogy which encouraged teachers to awaken their critical consciousness. Darder (2015) noted:

Freire’s pedagogy of love invites educators to embrace the struggle for critical consciousness and social transformation as a road yet to be made, which, because it is unknown, must be traced out step-by-step, in our organic relationship with the world and in the process of our labor as educators, activists, and revolutionary leaders. The struggle for change begins, then, at the moment when human beings become both critically aware and intolerant of the oppressive conditions in which they find themselves and push toward new ways of knowing and being in the world. (p. 80)
This School of Education challenges teacher candidates to live out their social justice mission. Within the teacher credentialing programs teacher candidates must find ways to make learning equitable for all students. The framework of Universal Design for Learning aligns with this critical view of education by assisting preservice teacher candidates in awakening their critical consciousness toward creating access and equity for all students.

As of the time of this study, this private university did not embed Universal Design for Learning in its general education teacher preparation program. Due to efforts by the special education faculty following the passage of the Higher Education Opportunity Act in 2008, the special education program utilized UDL throughout its program. The department received a grant through the Department of Education. Part of that grant work included training for faculty on the use of UDL. This training was provided by the experts from the Center on Applied Specialized Technology (CAST). Some general education faculty participated in segments of this training but did not adopt UDL within their teacher preparation program.

However, the teacher preparation programs of this School of Education are currently going through intense redesign efforts of their programs. These teacher preparation reform efforts provided this researcher with the opportunity to capitalize on expert feedback from members of the redesign teams. It further provided space to discuss the School of Education’s accreditation status as it applied to teacher preparation requirements including the use of the UDL framework. These interactions and conversations with administration, faculty, and staff of this School of Education regarding redesign and accreditation efforts provided a baseline for further expert focus group data.
Design

The framework for this study was explicitly aligned with the Dissertation in Practice model of research (CPED, 2016). This uniquely designed model of research lent itself to the methodology needed in this study because I am currently the director of Clinical Partnerships and Practice at the University where the study took place. The major problem of practice I face in my role is the ability to determine whether general education preservice teachers know and understand UDL and are able to incorporate UDL in their teaching practice. To provide formative feedback to candidates, and to inform the teacher preparation program housed in the School of Education at this University, the current study tackled the problem of practice by attempting to review the clinical observation tool.

In practice, the design process of this dissertation utilized institutional video data submitted by preservice teacher candidates. This video evidence is one part of the California state requirement of Teacher Performance Assessments (CalTPA, 2016). Four assessments must be completed and passed during the Teacher Preparation Program. TPA4 is the culminating assessment of teacher practice and performance. It intentionally seeks to capture preservice teacher candidate’s lesson planning capability as well as the implementation of that teaching within the classroom. Once these documents are uploaded to the system, trained CalTPA assessors evaluate teacher candidates. These CalTPA assessors are credentialed teachers with a background in the specific content area being assessed. Assessor training includes mastery of TPA4 content as well as specific training in recognition of assessor personal bias. These assessors utilize a scoring rubric that has four performance levels that range from a low of 1 to a
high score of 4. The minimum passing score for TPA4 is a 3, which indicates the level of evidence provided is appropriate and accurate.

Sources of Data

I examined the TPA4 videos submitted by elementary preservice teacher candidates at this university to study implementation of a lesson. I analyzed the lesson videos of these preservice elementary teacher candidates through the filter of Universal Design for Learning framework. Next, I reviewed course syllabuses for preservice elementary teacher candidates. Finally, I conducted focus groups with two sets of experts in the field of teacher preparation: fieldwork instructors and School of Education experts (i.e., professors, administrators). Their feedback helped generate recommendations for revisions to the observation tool. Seeking feedback from these experts also aligned to the dissertation in practice framework because these experts are the individuals who will actually use the observation tool in the future.

An additional source of data utilized was the Center for Applied Specialized Technology (CAST). As the CAST organization authored Universal Design for Learning, it became an expert source of data on UDL and its application and use within teacher preparation. The CAST UDL Checklist authored by CAST outlines the UDL principles, guidelines, and checkpoints along with suggested examples of each. The CAST UDL Checklist became this researcher’s measurement tool while viewing general education preservice video-taped lessons.

Video Lessons

There were a total of 20 TPA4 lesson video samples from the Spring 2016 student teacher cohort (N = 39) available for review. Preservice teachers, who completed a year and half
of teacher preparation coursework, submitted their final TPA4 lesson video to the university in order to be considered for a state credential. These preservice teachers completed a clinical practice culminating experience (i.e., student teaching within a classroom setting) during their final semester in the program, and were required to video record a teaching lesson to submit as TPA4. Within the setting of this final clinical experience, the preservice teachers were referred to as student teachers. These preservice teachers were all adults and range in age and gender. Out of the 39 students in the cohort, 20 preservice elementary teacher candidate lesson videos were reviewed.

Program Outcomes, Course Descriptions, and Course Syllabuses

Preservice elementary teacher candidates in the School of Education program had to take nine general education courses to meet requirements toward their credential. The courses included four prerequisite courses, including: Cultural Paradigms of Education, Applied Educational Psychology for the Childhood and Adolescent Years, Theories and Policies of Second Language Acquisition, and Teaching Culturally/Linguistically Diverse Students with Exceptional Needs. The five other courses taken in the general elementary credential program were: Methodology in English Language Development (ELD) and Specially Designed Academic Instruction in English (SDAIE) for Elementary Educators, Elementary School Curriculum and Methods, Teaching Reading for Today's Learners, Health Education, and Elementary Directed Teaching. The program outcomes, course descriptions, and course syllabuses for these courses were reviewed for Universal Design for Learning content.
This same School of Education had nine credential courses in the teacher preparation program for special education preservice teachers. These courses included: Evidenced-Based Assessment Practices to Promote Student Learning, Language and Literacy in Culturally and Linguistically Diverse K-8/Secondary Settings, Creating and Maintaining Effective Environments in Support of Student Learning, Elementary/Secondary Instructional Design and Methodology (Math, STEM, Social Studies), Developing Collaborative Partnerships for Inclusive Schooling, Developing as a Professional Educator, Clinical Supervision I, Clinical Supervision II, and Directed Teaching with Students with Mild/Moderate Disabilities. The program outcomes, course descriptions, and course syllabuses were examined for evidence of UDL.

Focus Group Experts

Two sets of experts were consulted for feedback. First, fieldwork instructors, who are responsible for the supervision of preservice general education teachers during their clinical practice experience, were invited to participate in a focus group to review the current clinical observation tool. This tool is utilized by fieldwork instructors while they observe teacher candidates implementing a lesson in a classroom. A total of four fieldwork instructors participated in this expert group, and collectively had expertise in teaching, content-specific coaching, counseling, and administration. Additionally, this group of experts all served as fieldwork instructors in this private School of Education. To this end, this expert group of fieldwork instructors contributed feedback to the problem of practice outlined in this research study.
The second group of experts included administration, faculty, and staff members of the School of Education of this private institution. The second expert group also included academic program directors of both of this institution's teacher preparation programs (general and special education). A total of 15 experts participated in this second focus group. These internal School of Education experts were also able to contribute to solving this problem of practice by offering their feedback about the clinical observation tool.

Procedures

Figure 4, below, illustrates the iterative procedures utilized in this dissertation in practice to generate feedback and review the clinical observation tool to assess preservice elementary general education teacher candidates' knowledge of UDL in the classroom.
As seen in the figure above, the procedures unfolded over five phases of review, starting with curriculum analysis and ending with feedback from experts being incorporated on the tool. True to any practical measurement, the figure above indicates that these procedures are iterative, in that while findings from this dissertation in practice provide a revised tool, it is expected that the procedures will continue; next steps include the revised tool being applied to a new set of video lessons (see Phase 3), a new review of syllabuses will occur to document curriculum changes, and so on, so that continuous improvement is implemented.
Phase 1

Phase 1 of the study included a review of teacher preparation curriculum at this private university, including program outcomes, course descriptions, and course syllabuses, for language specific to Universal Design for Learning (UDL). These UDL guidelines were explicitly taught to preservice special education teacher candidates at this university. Review of the elementary preservice general education and special education curriculum was therefore examined for explicit instruction of UDL guidelines.

There were a total of nine credential courses in the teacher preparation program for general education teachers. These courses included: Cultural Paradigms of Education, Applied Educational Psychology for the Childhood and Adolescent Years, Theories and Policies of Second Language Acquisition, Teaching Culturally/Linguistically Diverse Students with Exceptional Needs, Methodology in English Language Development (ELD) and Specially Designed Academic Instruction in English (SDAIE) for Elementary Educators, Elementary School Curriculum and Methods, Teaching Reading for Today’s Learners, Health Education, and Elementary Directed Teaching. For this phase of the study, I read through each syllabus and course description and noted whether Universal Design for Learning was mentioned as specific content in the course.

There were a total of nine credential courses in the teacher preparation program for special education preservice teachers. These courses included: Evidenced-Based Assessment Practices to Promote Student Learning, Language & Literacy in Culturally and Linguistically Diverse K-8/Secondary Settings, Creating and Maintaining Effective Environments in Support of
Student Learning, Elementary/Secondary Instructional Design and Methodology (Math, STEM, Social Studies), Developing Collaborative Partnerships for Inclusive Schooling, Developing as a Professional Educator, Clinical Supervision I, Clinical Supervision II, and Directed Teaching with Students with Mild/Moderate Disabilities. For Phase 1 of the study, I reviewed all syllabuses and each course description for the special education credential program.

**Phase 2**

Phase 2 began with a review of 20 Teaching Performance Assessment (TPA) videos submitted by preservice, general education, and elementary teacher candidates enrolled in the teacher preparation program. These videos were submitted by all teacher preparation candidates in accordance with California Commission on Teacher Credentialing (CTC) requirements. The State of California approved several versions of Teaching Performance Assessments. This private university used the California Teaching Performance Assessment (CalTPA).

CalTPA was designed to align with California’s Teaching Performance Expectations (TPEs), which are extracted from the California Standards for the Teaching Profession (CSTP). Preservice teachers seeking their credential completed four Teaching Performance Assessments (TPAs): TPA 1 Subject-Specific Pedagogy, TPA 2 Designing Instruction, TPA 3 Assessing Learning, and TPA 4 Culminating Teaching Experience. The fourth and final TPA assessment required the candidates to film themselves teaching a lesson during their field experience. These 20-minute video-taped lessons were then submitted toward the end of their teacher preparation program.
Teaching Performance Assessment (TPA) trained assessors reviewed the teacher candidate videos in order to determine the readiness of these elementary, general education, preservice teachers to enter the field. The videos were scored utilizing the CalTPA Task 4 scoring rubric for the Culminating Teaching Experience Task. The rubric focused on the following areas, which were passed on the Teaching Performance Expectations (TPEs): Planning Instruction and Designing Learning Experiences for Students, Creating and Maintaining Effective Environments for Student Learning, Engaging and Supporting Students in Learning, Making Subject Matter Comprehensible to Students, Assessing Student Learning, and Developing as a Professional Educator.

For this second phase of the study, 39 elementary preservice videotaped lessons were made available for review through the university’s online assessment collection portal. Attempts were made to review all lesson videos; however, not all videotaped lessons were functional within the assessment portal, which led to a final 20 videos being viewed in their entirety. Viewing of the videos was accomplished utilizing a purposeful, iterative process designed to yield new data during each phase of the process.

This second phase of the iterative review process included watching this sample of 20 videos in their entirety and was undertaken in order to capture initial impressions of the use of the Universal Design for Learning (UDL) principles in the lesson implementation of each teacher candidate. This first phase of review further served to acclimate the researcher to the video technology, variance in quality, and various general education elementary level lessons submitted by candidates. All teacher preparation candidates were coded with pseudonyms so that
identities of the candidates and their specific school placements would not affect the interpretation of the first viewing of the recorded lessons.

Phase 3

The third phase of video review took place while utilizing the Universal Design for Learning (UDL) Guidelines Checklist developed by the Center for Applied Special Technology (CAST) (CAST, 2015). This checklist is one of several tools developed by CAST to assist teachers in examining their curriculum and ensuing lesson plans in order to reduce barriers to learning. Specifically, the CAST UDL Guidelines Version 2.0 (2011) describe this checklist as:

The UDL Guidelines, an articulation of the UDL framework, can assist anyone who plans lessons/units of study or develops curricula (goals, methods, materials, and assessments) to reduce barriers, as well as optimize levels of challenge and support, to meet the needs of all learners from the start. They can also help educators identify the barriers found in existing curricula. (p. 4)

As such, the UDL checklist was used while viewing each video with the intention of capturing evidence of teacher knowledge and understanding of the Universal Design for Learning principles.

The 20 elementary general education lesson videos were then organized to be viewed again, this time using the Universal Design for Learning Checklist. Of the 20 teacher lesson videos, only 10 were ultimately viewed as it became clear that saturation in data had been reached. This saturation was demonstrated by minimal evidence of UDL in any of the first 10
video-taped lessons. All 10 video-taped lessons were labeled with each teacher candidate pseudonym.

The checklists were utilized as each teacher lesson video was reviewed. Tally marks were placed in sections of the UDL checklist to indicate the frequency with UDL principles, guidelines, and checkpoints, were observed during the lesson. UDL principles include: multiple means of representation, multiple means of action and expression, and multiple means of student engagement. Next, I looked for the presence of UDL guidelines, which include: providing options for: perception, language, mathematical expressions, and symbols; providing options for comprehension, physical action, expression and communication; providing options for executive functions, recruiting interest, sustaining effort and persistence, and self-regulation. Finally, I noted whether UDL checkpoints, such as offering ways of customizing the display of information, illustrating through multiple means, using multiple tools for construction and composition, optimizing individual choice and autonomy, and fostering collaboration and community were present in the lesson. These data allowed me to answer the first research question as to the extent to which preservice elementary teacher candidates know and understand UDL.

Phase 4

Following a review of the elementary teacher candidate lesson videos, two expert focus groups were conducted to solicit feedback on the actual clinical observation tool in alignment with UDL. The first expert focus group was conducted with university fieldwork instructors who supervised preservice teacher candidates during their fieldwork experiences. The second expert
focus group was conducted with internal faculty, staff, and administrative experts within the school of education. Both of these groups reviewed and gave feedback on the current clinical observation tool, thereby addressing the second research question. These feedback sessions were recorded and transcribed. The transcribed data were then reviewed multiple times resulting in preliminary coding. This early coding was subsequently analyzed to streamline results into specific feedback categories.

The focus groups were conducted during two separate sittings. The fieldwork instructor focus group met first. During this session, the fieldwork instructors were given the following materials: the current observation tool, the formative/summative assessment tool, the Universal Design for Learning Guidelines (CAST, 2011), and the CAST UDL Checklist (CAST, 2015). The fieldwork instructors introduced themselves, stating their backgrounds as experts in the field. They also stated how long they had been serving as fieldwork instructors for the university. Following introductions and the establishment of expertise, the rationale for the focus group session was discussed. Fieldwork Instructors were asked to review the current clinical observation tool with a focus on updating standards and adding Universal Design for Learning. Next steps of the focus group included a review of each section of the current observation tool. Feedback from the Fieldwork Instructor experts was gathered both verbally (and audio recorded) and in written form on their copies of the tool. These recordings and written feedback were then analyzed and coded.

The second focus group took place at a regular meeting of the Teacher Education Committee. This committee was comprised of internal experts from this private university’s
School of Education. These experts were administrators, faculty, and staff from the School of Education. The internal focus group did not include introductions, as the expertise of each member present was already noted by this researcher. These areas of expertise included: elementary and secondary education, math education, literacy education, special education, leadership education, urban education, and accreditation. The rationale for the need for a new clinical observation tool was reviewed through the lens of updated standards and the addition of Universal Design for Learning. Utilizing a Power Point presentation, this expert group conducted a review of the current observation tool section by section. The members of the committee were given the current observation tool, the formative/summative evaluation, the Universal Design for Learning Guidelines, (CAST, 2011), and the CAST UDL Checklist, (CAST, 2015). Feedback about the tool was solicited in both written and verbal forms. The session was recorded and later transcribed.

In addition to specific feedback related to UDL, both expert groups provided feedback in the following areas: candidate and support provider demographics, specific areas of lesson plan content, identification of a unit outcome goal, and other unit outcomes addressed within the lesson. Suggestions for improvements in the clinical observation tool were also sought in the following areas: alignment to Interstate Teacher Assessment and Support Consortium (InTASC) standards, California Teacher Performance Expectations (TPEs), California Standards for the Teaching Profession (CSTPs) as well as the Universal Design for Learning (UDL) Guidelines (CAST, 2011).
Phase 5

Following Phase 4, in which expert groups provided feedback, data were then categorized and coded for specific feedback about the measurement tool. This coded feedback was analyzed in order to make concrete decisions about the new clinical observation tool. Specific feedback about what should remain on the observation tool included: candidate demographics, classroom management, instruction, learning environment, differentiation, assessment, and reflection. Since the majority of these areas aligned with the already validated Framework for Teaching Evaluation Instrument (Danielson, 2013), the four main domains of this framework: Domain One-Planning and Preparation, Domain Two-The Classroom Environment, Domain Three-Instruction, and Domain Four-Professional Responsibilities will be utilized in the new instrument. The subcategories of these four domains, include other areas confirmed by the expert focus groups, including: assessment (found in Domains 1 and 3), classroom management (found in Domain 2), differentiation (found in Domains 3 and 4), and reflection (found in Domain 4) (Danielson, 2014).

Analytical Plan

Data from the five phases listed above were analyzed during their corresponding phase of iterative data collection. Specifically, Phase 1 analysis included a review of documents, which was conducted by identifying UDL term word frequency, such as “multiple means of representation,” “multiple means of action and expression,” and “multiple means of engagement” on the course documents and syllabuses. During Phase 2, general impressions were noted while watching videos in their entirety. No formal coding occurred during this phase.
During Phase 3, coding occurred by using the *a priori* categories aligning to the UDL Checklist (CAST, 2011) for principles, guidelines, and checkpoints. These themes were tallied based on frequency and were noted as evidence of implementation of the Universal Design for Learning (UDL) framework. Feedback from the experts, solicited during Phase 4 of the study, were reviewed and categorized. Using these categories assisted with Phase 5 of the study, which included embedding feedback in a revised tool. The five phases of the aforementioned iterative process were viewed in light of the need to embrace continuous improvement. It was anticipated that the newly revised tool would go through the phases again, starting over with Phase 1.

**Validity**

A limitation of the study design is that I conducted the coding of the preservice general education teacher videos on my own by tallying observed frequency of UDL principles, guidelines, and checkpoints. To conduct these observations, I utilized an existing UDL checklist developed by CAST (2011). Furthermore, I have extensive knowledge of UDL. I have participated in two separate Universal Design for Learning trainings conducted by the experts at the CAST organization. I have additionally created and conducted multiple trainings on UDL for student teachers and fieldwork instructors at this private university. I have also served as UDL consultant for a private school. During the two years, I served as a consultant at that school, I trained all staff and faculty on UDL. Furthermore, I trained and supervised UDL coaches who worked with the faculty at that site. Still, a different researcher or a different educator may have coded the videos for the presence of UDL differently. However, this limitation is inherent in observational research where only one researcher is coding the data. To minimize this limitation,
I was mindful to engage additional experts from the field during Phase 4 to create the new observational tool. As such, content validity (Cronbach & Meehl, 1955) of the new tool was assessed to a degree by engaging professional experts in the field of teacher candidate evaluation and tool creation. These experts were asked to compare the content measured by the existing clinical observation tool to the content of the framework of Universal Design for Learning (UDL). These experts were also knowledgeable of Universal Design for Learning and compared the existing tool to the UDL guidelines (CAST, 2015) as the main reference for feedback. This method allowed for more than just my review of the tool alone. In addition to confirming specific elements of content validity, the educational experts assisted with the affirmation of proper teacher evaluation content to be included on the tool. This method contributed to the creation of an authentic and practical measurement to be used by these very experts in the future.

This chapter provided a detailed review of the iterative procedures used to analyze the various sources of data to answer the research questions. Given my expertise in Universal Design for Learning as well as my collaboration with the Special Education Program faculty on embedding UDL into their teacher preparation program, some bias may have existed as I examined the videotaped lessons of general education elementary preservice teacher candidates. The following chapter provides a sense of the findings from this first attempt through all five phases.
CHAPTER 4

FINDINGS

Study Background

Universal Design for Learning (UDL) is a conceptual framework that underscores the need for universal access to education (Rose & Meyer, 2011). In congruence with a social justice framework for educational leaders, UDL emphasizes the need for educators to create classroom environments in which all children can access the concepts and the materials, and can display their knowledge and understanding of the material. However, the question remains as to whether general education teachers are able to create UDL conditions within their classrooms.

Under the Higher Education Opportunity Act of 2008, institutes of higher education are required to include UDL in the training of teachers. While this act expired in 2014, the passage of ESSA (2015) further calls out the need for UDL to be included in teacher preparation. Beyond any legal requirement, institutions claiming a social justice approach to education might especially be interested in incorporating the tenets of UDL in the training of educators. As such, this study was conducted within a small private school of education at a university in Southern California, whose mission is that of social justice. The study attempted to investigate the extent to which preservice teachers, nearing the completion of their general education elementary teaching credential program, understand and are able to implement the tenets of UDL in their teaching practice.

To determine whether preservice teachers understand and are able to implement UDL in their teaching practice, the first step along this line of inquiry was to review program outcomes,
course descriptions, and course syllabuses from both the general and special education teacher preparation programs. This review found little evidence of Universal Design for Learning within the program outcomes, course descriptions, and course syllabuses of the general education program. A plethora of UDL evidence, however, was found within the program outcomes and course syllabuses of the special education teacher preparation program.

To further conclude whether preservice general education teachers comprehend and implement UDL, examples of actual teaching by preservice candidates, who were near the end of their training, were reviewed for the presence of UDL. This review of elementary general education preservice teacher videotaped lessons was conducted in conjunction with the use of the CAST UDL checklist (CAST, 2011). The use of this detailed UDL checklist while watching each videotaped lesson led to comprehensive frequency data indicating limited, if any, use of Universal Design for Learning principles, guidelines, or checkpoints.

Then, a review of the actual measurement tool used by university fieldwork instructors in their evaluations of teacher candidates from this university occurred to inform ways of capturing the implementation of UDL throughout their training. The university requires fieldwork instructors, who were expert teachers and served as coaches to preservice teachers in the training program, to observe candidates teaching in a classroom setting and provide feedback to the candidates on a clinical observation tool. This tool was used to document lesson observations of preservice elementary teacher candidates. Prior to this study, this tool did not include an assessment of UDL. Therefore, the purpose of this study was to develop a meaningful and practical clinical observation tool utilized by university fieldwork instructors to authentically
reflect the framework of Universal Design for Learning (UDL). The research questions guiding this study were:

1. To what extent do general education preservice teachers know and understand the principles of Universal Design for Learning?

2. How can teacher preparation programs measure preservice teachers’ implementation of Universal Design for Learning in the classroom?

To address these questions, higher education teacher preparation institutional data were examined. Due to the use of institutional data and the researcher's professional position as director of Clinical Practice within the school of education's teacher credentialing program, a Dissertation in Practice (CPED, 2016) model was used in the design of the methodology for this study. Specifically, this study sought to solve an existing problem in teacher preparation: that of creating a valid clinical observation tool that measures UDL implemented by teacher preparation candidates. To measure UDL, experts must assess points of access and equity within the classroom, and the tool must align with the framework of Universal Design for Learning.

Overview of Key Findings

A review of the syllabuses and course descriptions suggested that preservice elementary teacher candidates do not receive a thorough review of UDL in their coursework. A review of video-recorded lessons, submitted by pre-service, elementary teacher candidates, further indicated that these preservice candidates did not possess a great deal of knowledge related to Universal Design for Learning. Finally, expert focus groups provided feedback indicating the current clinical observation tool does not measure the implementation of Universal Design for
Learning (UDL) guidelines. They further suggested ways in which UDL feedback could be measured. These findings are discussed in detail in this chapter.

Research Question 1

To address the first research question about the extent to which preservice general education teachers know and understand the principles of UDL, the current syllabuses and course descriptions for the general education teacher preparation program were reviewed to first determine the amount of exposure to UDL these teacher candidates received during their preparation. Next, TPA4 videos of teachers giving actual classroom lessons were reviewed in order to document the use of the Universal Design for Learning (UDL) framework in the video-captured lessons. The CAST UDL Checklist (CITE) was the primary observation tool for the video lessons, and the frequency of the principles, guidelines, and checkpoints were tallied to determine implementation of UDL. Findings broadly showed little understanding or usage of UDL principles by elementary general education preservice teachers.

Program outcomes, course descriptions, and course syllabuses review. Program outcomes, course descriptions, and course syllabuses from both the general education and special education teacher preparation programs were reviewed in detail to ascertain whether there was any focus on Universal Design for Learning. The general education program outcomes did not contain any reference to UDL. Conversely, the special education teacher preparation program outcomes indicated one outcome dedicated solely to Universal Design for Learning. This program outcome is stated as: “Candidates will utilize Universal Design for Learning (UDL) guidelines to create access to learning for all students” (p. 1). Neither the general education nor
the special education teacher preparation program course descriptions included any reference to Universal Design for Learning principles, guidelines, or checkpoints.

Course syllabuses were scrutinized for confirmation of Universal Design for Learning principles, guidelines, and checkpoints. General education teacher candidates took nine courses within their teacher preparation program: Cultural Paradigms of Education, Applied Educational Psychology for the Childhood and Adolescent Years, Theories and Policies of Second Language Acquisition, Teaching Culturally/Linguistically Diverse Students with Exceptional Needs, Methodology in English Language Development (ELD) and Specially Designed Academic Instruction in English (SDAIE) for Elementary Educators, Elementary School Curriculum and Methods, Teaching Reading for Today's Learners, Health Education, and Elementary Directed Teaching. Syllabuses revealed only one incidence of UDL. UDL content was present only in the special education for general educators course entitled: Teaching Culturally/Linguistically Diverse Students with Exceptional Needs. References to UDL were found for two class sessions of this special education for general educator’s course.

On the other hand, special education teacher preparation program course syllabuses revealed myriad examples and references to Universal Design for Learning in almost every course. Within the literacy methods course, for example, reference to UDL could be seen in the readings for the course and in multiple class sessions. There was additional reference to learning how to utilize a UDL lesson plan. The elementary and secondary instructional design and methodology courses included a Universal Design for Learning. A search for UDL within these syllabuses revealed in-depth instruction of UDL and multiple course assignments where
utilization of UDL was mandatory. Application of the UDL checklist was taught in both of these courses and included in the signature assignment that served as an assessment of candidate mastery of the course content. Comparing the general education teacher preparation coursework to the special education teacher preparation coursework at this IHE suggests that more work can be done to embed UDL in the training of general education teachers.

After review, the course descriptions for both general and special education teacher preparation programs at this University did not reveal evidence of Universal Design for Learning. The program outcomes for both teacher preparation programs were also examined. The general education program outcomes did not refer to or reflect UDL. In contrast, however, the special education program had a specific program outcome dedicated to Universal Design for Learning. That goal was stated as: “Candidates will utilize Universal Design for Learning (UDL) guidelines to create access to learning for all students.”

Video lesson review. In order to ascertain preservice elementary teachers’ level of knowledge and understanding of Universal Design for Learning (UDL), lesson implementation videos were reviewed. Specifically, evidence of candidate use of the following main tenets of the UDL principles was analyzed: multiple means of representation, multiple means of action and expression, and multiple means of engagement. The Higher Education Opportunity Act (HEOA) of 2008, and the ESSA (2015) both indicate that teacher preparation should train teacher candidates to provide these three options to students.

The candidates’ lesson plan implementations were captured as video evidence as part of the California Teaching Performance Assessments (TPA). There are five sanctioned TPA
systems that can be used in the state of California. This private university utilized the CalTPA system. Four CalTPA assessments were completed by preservice general education teachers throughout the course of their teacher preparation program. The Teaching Performance Assessments were implemented by approved teacher preparation program sponsors in accordance with California Education Code. The purpose of these TPAs is to assess the following four areas of teacher development: knowledge of subject-specific instruction, planning instruction and lesson design, implementing effective classroom environments, and assessment of learning. The final CalTPA assessment includes the submission of a lesson plan as well as video evidence of a 20-minute portion of the lesson implementation.

The second phase of video review was conducted while utilizing the Universal Design for Learning (UDL) Guidelines Checklist developed by the Center for Applied Special Technology (CAST) (CAST, 2015). This checklist was one of several tools developed by CAST to assist teachers in examining their curriculum and ensuing lesson plans. The checklist is divided into the three areas that encompass the framework of Universal Design for Learning. The three main categories of the checklist represent the principles of UDL: multiple means of representation, multiple means of action and expression, and multiple means of student engagement. In the list below, the subcategories under each UDL principle signify the guidelines of Universal Design for Learning, which outline more specific ways to accommodate learner variability. The categories below the UDL guidelines are the checkpoints of UDL. These checkpoints list precise examples of how to provide each type of option for learner variability. The tool aids teacher candidates in removing barriers to learning and creating increased options for access to content.
Principle I. Provide Multiple Means of Representation

Guideline 1: Provide options for perception

Checkpoint 1.1: Offer ways of customizing the display of information [3]
Checkpoint 1.2: Offer alternatives for auditory information [4]
Checkpoint 1.3: Offer alternatives for visual information [5]

Guideline 2: Provide options for language, mathematical expressions, and symbols

Checkpoint 2.1: Clarify vocabulary and symbols [6]
Checkpoint 2.2: Clarify syntax and structure [7]
Checkpoint 2.3: Support decoding of text, mathematical notation, and symbols [8]
Checkpoint 2.4: Promote understanding across languages [9]
Checkpoint 2.5: Illustrate through multiple media [10]

Guideline 3: Provide options for comprehension

Checkpoint 3.1: Activate or supply background knowledge [11]
Checkpoint 3.2: Highlight patterns, critical features, big ideas, and relationships [12]
Checkpoint 3.3: Guide information processing, visualization, and manipulation [13]
Checkpoint 3.4: Maximize transfer and generalization [14]

Principle II. Provide Multiple Means of Action and Expression

Guideline 4: Provide options for physical action

Checkpoint 4.1: Vary the methods for response and navigation [15]
Checkpoint 4.2: Optimize access to tools and assistive technologies [16]

Guideline 5: Provide options for expression and communication
Checkpoint 5.1: Use multiple media for communication [17]

Checkpoint 5.2: Use multiple tools for construction and composition [18]

Checkpoint 5.3: Build fluencies with graduated levels of support for practice and performance [19]

Guideline 6: Provide options for executive functions

Checkpoint 6.1: Guide appropriate goal-setting [20]

Checkpoint 6.2: Support planning and strategy development [21]

Checkpoint 6.3: Facilitate managing information and resources [22]

Checkpoint 6.4: Enhance capacity for monitoring progress [23]

Principle III. Provide Multiple Means of Engagement

Guideline 7: Provide options for recruiting interest

Checkpoint 7.1: Optimize individual choice and autonomy [24]

Checkpoint 7.2: Optimize relevance, value, and authenticity [25]

Checkpoint 7.3: Minimize threats and distractions [26]

Guideline 8: Provide options for sustaining effort and persistence

Checkpoint 8.1: Heighten salience of goals and objectives [27]

Checkpoint 8.2: Vary demands and resources to optimize challenge [28]

Checkpoint 8.3: Foster collaboration and community [29]

Checkpoint 8.4: Increase mastery-oriented feedback [30]

Guideline 9: Provide options for self-regulation

Checkpoint 9.1: Promote expectations and beliefs that optimize motivation [31]
Checkpoint 9.2: Facilitate personal coping skills and strategies [32]


As such, the UDL checklist was used while viewing each video with the intention of capturing evidence of teacher knowledge and understanding of Universal Design for Learning. Tally marks were placed in sections of the UDL checklist to indicate the frequency with which the particular UDL guideline or checkpoint was seen within the teacher candidate video. Additionally, notations about specific teaching strategies were made next to the tallied sections to specify how the teacher candidate was utilizing a UDL guideline or checkpoint (see Table 1, below). Therefore, the data collected from this second iterative phase were calculated by counting the frequency with which each preservice general education elementary teacher implemented an element on the Universal Design for Learning (UDL) Guidelines Checklist.

These principles, guidelines, and checkpoints of the UDL checklists for all 10 teacher videos were then summarized to show how frequently (or infrequently) general education preservice teachers were incorporating Universal Design for Learning in their lessons (see Tables 4, 5, and 6, below).

The UDL Checklist is presented below by each guideline, beginning with Multiple Means of Representation.

Multiple means of representation. The first principle of UDL is to offer multiple means of representation of content to students. According to UDL, providing multiple means of representation of content would allow all students to access the content in more robust ways. Examples of the implementation of this principle include use of charts, projections using
document cameras, and video displays of content. The video lessons were observed for frequency in terms of how often teachers attempted to provide multiple means of representation of content for students during the lesson.
### Table 2

*Frequency of Multiple Means of Representation Present in Videotaped Lessons*

<table>
<thead>
<tr>
<th>Universal Design for Learning principles</th>
<th>Universal Design for Learning guidelines</th>
<th>Universal Design for Learning Checkpoints</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide Multiple Means of Representation</td>
<td>Provide Options for Perception</td>
<td>Offer ways of customizing the display of information</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offer alternatives for auditory information</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offer alternatives for visual information</td>
<td>17</td>
</tr>
<tr>
<td>Provide options for language,</td>
<td>Clarify vocabulary and symbols</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>mathematical expressions, and symbols</td>
<td>Clarify syntax and structure</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Support decoding of text, mathematical notation, and symbols</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Promote understanding across languages</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Provide options for comprehension</td>
<td>Illustrate through multiple media</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Activate or supply background knowledge</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Highlight patterns, critical features, big ideas, and relationships</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Guide information processing, visualization, and manipulation</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Maximize transfer and generalization</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

*Note. Table based on Universal Design for Learning Checklist (CAST, 2011).*
As seen in the table above, while teachers were low overall on their implementation of the Multiple Means of Representation principle of UDL in the lessons, the checkpoint of "offer alternatives for visual information" had the highest number of summary tallies, with 17 instances of this checkpoint seen in teacher videos. It is important to note that the 17 instances of the Universal Design for Learning checkpoint "offer alternatives for visual information" does not indicate one-to-one correspondence of 17 instances to 17 teachers. Rather, this number indicates a cumulative total of observations of this UDL checkpoint, with several preservice teachers showing knowledge, understanding, and use of this checkpoint several times within the same lesson.

For example, PreService Teachers 2, 3, and 7 indicated the highest utilization of the UDL checkpoint "offer alternatives for visual information," with frequencies of 4, 3, and 3 respectively. To meet this UDL checkpoint, these teachers used concept charts, graphic organizers, PowerPoint slides, and video clips. Teacher 2 used a premade chart to highlight the concepts being taught in the lesson. This provided a visual reference for the students not only during the lesson, but also following the lesson while students continued to process the new conceptual information. Teacher 3 used a graphic organizer to assist students in categorizing the information being learned in the lesson. By modeling the use of this graphic organizer as another way to show the new information being learned, Teacher 2 modeled for students how to use such an organizer in the future.

Frequency of use was then followed by Preservice Teachers 8 and 9 with two instances of use each. Preservice Teachers 1, 4, and 5 used "offer alternatives for visual information" once
during their lesson. These teachers generally offered projected images of text and graphics using a document camera. While this provided additional representation of conceptual information for the lesson, it was the only method of offering an alternative for visual information used by these teachers. Preservice Teachers 6 and 10 did not address that UDL checkpoint at all.

The UDL guideline “provide options for perception” shows limited knowledge and understanding of Universal Design for Learning as can be seen in the first two UDL checkpoints: offer ways of customizing the display of information and offer alternatives for auditory information with low tallied observed numbers of three each. When this was observed, albeit infrequently, teachers used charts or projected displays of information. One teacher used an auditory version of text being read by students.

Findings further indicated that there is little knowledge or understanding of the Universal Design for Learning guideline “Provide options for language, mathematical expression, and symbols.” Tallied UDL checkpoints within this guideline indicated only one measured observation in the area of “clarify vocabulary and symbols” and two measured observations in the “illustrate through multiple media” checkpoint. The third UDL guideline “provide options for comprehension” indicated a slight increase in knowledge of UDL in the UDL checkpoints “activate or supply background knowledge” with five observations and four observations for the UDL checkpoint “guide information processing, visualization, and manipulation.” When teachers met this checkpoint, they provided their students with support in processing concepts being taught through pictorial representation and/or the use of hands-on activities. No
observations of the checkpoint “maximize transfer and generalization” occurred within any of the teacher videos.

**Multiple means of action and expression.** The numbers in the tables below reflect the degree to which videotaped lessons of elementary general education preservice teachers demonstrated knowledge and understanding of the Universal Design for Learning (UDL) principle of “multiple means of action and expression.” This tenet of UDL has three guidelines: provide options for physical action, provide options for expression and communication, and provide options for executive functions. Again, little observation of knowledge and understanding of this UDL principle and its underlying guidelines and checkpoints were evident in the preservice teacher videos.
Table 3

*Frequency of Multiple Means of Action and Expression Present in Videotaped Lessons*

<table>
<thead>
<tr>
<th>Universal Design for Learning Principles</th>
<th>Universal Design for Learning Guidelines</th>
<th>Present in lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide multiple means of action and expression</td>
<td>Universal Design for Learning Checkpoints</td>
<td></td>
</tr>
<tr>
<td>Provide options for physical action</td>
<td>Vary the methods for response and navigation</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Optimize access to tools and assistive technologies</td>
<td>0</td>
</tr>
<tr>
<td>Provide options for expression and communication</td>
<td>Use multiple media for communication</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Use multiple tools for construction and composition</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Build fluencies with graduate levels of support for practice and performance</td>
<td>3</td>
</tr>
<tr>
<td>Provide options for executive functions</td>
<td>Guide appropriate goal setting</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Support planning and strategy development</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Facilitate managing information and resources</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Enhance capacity for monitoring progress</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note.* Table based on Universal Design for Learning Checklist (CAST, 2011).
As seen in the table above, within the UDL guideline “provide options for physical action,” the checkpoint “vary the methods for response and navigation” yielded only four observations. When teachers met this checkpoint, they allowed students to come up to show answers to a question. Teachers in this group also allowed students to respond using a whiteboard versus individual or choral responses. “Optimize access to tools and assistive technologies” was not noted in any teacher video observations.

These findings further suggest minimal implementation of the associated UDL guideline “provide options for expression and communication” where there are three checkpoints: use multiple media for communication, use multiple tools for construction and composition, and build fluencies with graduate levels of support for practice and performance. The UDL checkpoint “use multiple media for communication” was observed only once in the preservice teacher videos. “Use multiple tools for construction and composition” was also evidenced only one time in the videotaped teacher lessons. Three observations were noted for the UDL checkpoint “build fluencies with graduate levels of support for practice and performance.” When teachers met this checkpoint, they provided either teacher or peer assistance as scaffolded assistance for lesson mastery.

The last Universal Design for Learning (UDL) guideline connected to the principle of multiple means of action and expression is “provide options for executive functions.” This guideline was supported by four UDL checkpoints: guide appropriate goal setting, support planning and strategy development, facilitate managing information and resources, and enhance
capacity for monitoring progress. There was only one observation noted during the preservice teacher videos in the checkpoint “facilitate managing information and resources.” None of the other aforementioned checkpoints connected to UDL guideline “provide options for executive functions” was observed during the review of the elementary, preservice, general education teacher videos.

**Multiple means of engagement.** The guidelines undergirding the multiple means of engagement tenet of UDL include: provide options for recruiting interest, provide options for sustaining effort and persistence, and provide options for self-regulation. The UDL guideline “provide options for recruiting interest” is supported by three UDL checkpoints: optimize individual choice and autonomy, optimize relevance, value and authenticity, and minimize threats and distractions.
Table 4

<table>
<thead>
<tr>
<th>Provide Multiple Means of Engagement</th>
<th>Universal Design for Learning Guidelines</th>
<th>Present in lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide options for recruiting interest</td>
<td>Provide options for sustaining effort and persistence</td>
<td>Universal Design for Learning Checkpoints</td>
</tr>
<tr>
<td>Optimize individual choice and autonomy</td>
<td>Heighten salience of goals and objectives</td>
<td>1</td>
</tr>
<tr>
<td>Optimize relevance, value, and authenticity</td>
<td>Vary demands and resources to optimize challenge</td>
<td>1</td>
</tr>
<tr>
<td>Minimize threats and distractions</td>
<td>Foster collaboration and community</td>
<td>0</td>
</tr>
<tr>
<td>Optimize relevance, value, and authenticity</td>
<td>Increase mastery-oriented feedback</td>
<td>0</td>
</tr>
<tr>
<td>Minimize threats and distractions</td>
<td>Promote expectations and beliefs that optimize motivation</td>
<td>0</td>
</tr>
<tr>
<td>Optimize individual choice and autonomy</td>
<td>Facilitate personal coping skills and strategies</td>
<td>2</td>
</tr>
<tr>
<td>Minimize threats and distractions</td>
<td>Develop self-assessment and reflection</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note. Table based on Universal Design for Learning Checklist (CAST, 2011).*
As seen in the table above, the UDL checkpoint “optimize individual choice and autonomy” was detected only once during the viewing of the teacher videos. The “optimize relevance, value, and authenticity” UDL checkpoint was likewise only observable in one teacher video. Examples of how these were implemented in the lessons include: providing students with options for completing an assignment as well as connecting prior knowledge of the students to the current lesson content. There were no observations of the UDL checkpoint “minimize threats and distractions.” While it is possible that teachers attempted to minimize distractions during their teaching, it was never observed during the recorded video lessons.

The Universal Design for Learning (UDL) guideline “provide options for sustaining effort and persistence” supports four UDL checkpoints: heighten salience of goals and objectives, vary demands and resources to optimize challenge, and community, and increase mastery-oriented feedback; these checkpoints were not observed in any preservice teacher videos. However, the UDL checkpoint “foster collaboration and community” was seen eight times. This finding did not indicate that the “foster collaboration and community” UDL checkpoint was seen in eight videos but rather that it was seen eight times, multiple times in some teacher videos. When this occurred, teachers tended to provide opportunities of students to work in small groups and frequently monitored those groups to deliver additional support toward collaboration.

Finally, the UDL guideline “provide options for self-regulation” has three UDL checkpoints: promote expectations and beliefs that optimize motivation, facilitate personal coping skills and strategies, and develop self-assessment and reflection. There was minimal
evidence of preservice teachers’ knowledge and understanding of these UDL checkpoints. Two observations were noted in the UDL checkpoint “promote expectations and beliefs that optimize.” When this occurred during lessons, teachers posted standards or behavioral expectations for their students. No evidence was present in the recorded teacher videos for the other two UDL checkpoints.

Conclusion for Research Question 1. Comprehensive examination of preservice elementary general education teacher lesson videos indicated negligible knowledge and understanding of the Universal Design for Learning (UDL) principles, guidelines, and checkpoints. Lack of complete knowledge and understanding of Universal Design for Learning principles, guidelines, and checkpoints was confirmed by the lack of embedded content reflecting Universal Design for Learning in the curriculum, as measured by course descriptions and syllabuses of the elementary teacher education program. Findings from the iterative process of video review demonstrate that elementary general education preservice teachers at this private University do not have mastery knowledge and understanding of the Universal Design for Learning (UDL) framework. The data showed no comprehensive understanding of UDL through implementation of such within the videotaped lessons. As previously noted, the highest incidence of UDL checkpoint evidence was within the checkpoint “offer alternatives for visual information.” Though aggregate data revealed 17 instances of this checkpoint, disaggregated data further specific to this UDL checkpoint were used by only three preservice teachers (out of ten) with frequencies of three to four uses, respectively. Thus, the observations of the video lessons coincided with the data from the course syllabuses, indicating that these general
education preservice teachers did not receive much exposure to UDL content during their coursework, and subsequently did not demonstrate that knowledge in their lessons.

Little usage of Universal Design for Learning principles was noted during phase 2 of the methodology. An example of indication of limited evidence of UDL could be seen in Preservice Teacher #5’s video, in which the majority of the videotaped lesson showed the teacher lecturing students with little interaction or engagement. Another illustration of a lack of UDL evidence during the viewing of videotaped lesson plans can be seen in Preservice Teachers #12 and #17’s videos, in which they used the document camera as only one way to provide options for perception.

Taken together, institutional data from the teacher preparation program at this private university, including course descriptions and syllabuses, revealed that UDL guidelines are not taught to elementary preservice general education teachers. By focusing on learner variability, the Universal Design for Learning can provide preservice teachers with a framework to create lessons that are accessible to all students. By not teaching the UDL framework to the general education elementary preservice teachers at this university, they will have limited, if any, strategies for providing increased access to the curriculum for all students.

Elementary preservice teacher candidate videos confirmed that Universal Design for Learning (UDL) principles, guidelines, and checkpoints were not taught to or implemented by these teachers in their lessons. This absence of UDL knowledge and the lack of ability to implement UDL can significantly impact student learning outcomes in the classroom. Preservice
teacher candidate understanding of Universal Design for Learning as it applies to learner differences and access to the curriculum can lead to the inclusivity of all students.

Students who are taught content using multiple mean of representation are more likely to have access to the content, as they can access it via the representation strategy best suited to them (e.g., images, recordings, physical examples). This is because knowledge about the students will be used to create lessons that are demonstrating content in ways they are able comprehend. Further, because lessons planned using the Universal Design for Learning framework are based on the teacher’s knowledge of the students, the lessons will be more engaging and provide increased opportunities for action and expression of the content being learned. Data in this study showed that, to date, elementary general education teacher candidates were not being given the UDL knowledge and strategies needed to provide this type of personalized learning and access for all students they may encounter.

Research Question 2

The second research question focused on how to best measure UDL implementation by preservice teacher candidates. Beyond changes to lesson plans to indicate that teachers might use UDL, teacher preparation programs must be able to measure preservice teachers’ implementation of Universal Design for Learning in the actual classroom. During their teacher preparation program at this IHE, general education elementary preservice teachers are observed multiple times during the course of their culminating clinical practice experience or student teaching. Fieldwork instructors conduct these observations and utilize the university’s current clinical
observation tool. This tool has not been updated to include Universal Design for Learning (UDL) principles, guidelines, and checkpoints.

As such, the current clinical observation tool did not provide the fieldwork instructors with concrete information about how preservice teachers were providing access to content for all students. The current tool also did not provide a way to monitor teacher candidate progress toward mastery of teaching skills over time. Not having the ability to indicate to teacher candidates where they stand in the acquisition of content knowledge and pedagogy, certainly impacts their ability to improve their practice. This inadequate tool also limits the extent to which fieldwork instructors can model the use of Universal Design for Learning techniques with and for their teacher candidates.

Data from this study indicated a clear need to redesign the current clinical observation tool. To that end, the researcher consulted with multiple experts from the field and the teacher preparation program to determine how UDL could be incorporated into the current tool. A revised clinical observation tool is critical to the progress monitoring of preservice teacher candidates in order to ascertain their mastery of content knowledge and methodology.

Expert feedback. To gain insight as to how to incorporate the principles of Universal Design for Learning (UDL) in the systematic review of teacher candidates enrolled in this University, two groups of experts were consulted. The first expert group consisted of fieldwork instructors employed by this university’s School of Education. These fieldwork instructors monitored preservice teacher candidate progress by conducting multiple lesson observations and debriefs throughout the semester in which the culminating clinical practice experience or student
teaching took place. The other expert group was comprised of teacher education experts from this university. These experts included both general and special education teacher preparation faculty. It also included administrative staff, who worked with teacher preparation candidates, the teacher preparation assessment director, the director of educational leadership program, and various assistant, associate deans of the School of Education.

Data from both expert focus group sessions indicated that specific changes needed to be made to the current clinical observation tool. Themes that emerged from the data included monitoring progress of teacher candidates and updating standards. The specific content areas of the current clinical observation tool were discussed and feedback was gleaned regarding the nine areas assessed on the form (see Appendix C): candidate information, candidate reflection, classroom management, learning environment, instruction, differentiation, assessment, and recommendations for change. Finally, specific feedback was shared related to the use of technology to improve the tool’s accessibility and incorporating Universal Design for Learning. Specific findings are organized below based on general tool revision feedback and concluding with specific feedback related to incorporating UDL.

**Monitoring progress.** Both expert groups, Fieldwork instructors and internal School of Education experts, indicated that monitoring teacher candidate progress over time was an important change needed in the current clinical observation tool. Feedback shared by the experts specified that each observation of teacher candidates should include a numeric checkpoint of candidate progress in the acquisition of content and pedagogy. For example, a fieldwork instructor commented, “You still want to do a narrative with it to support it, but having some
kind of span of numbers would provide that data.” The “span of numbers” referred to in this comment was offered as a way to capture progress of the candidate from one observation to the next. Another Fieldwork Instructor noted, “The scale would help too because the first observation would be a zero. Then you’re going to be a two or a five.” In this comment, the fieldwork instructor was again referencing how the numbers might change from one observation to the next in order to capture growth by the candidate. These expert fieldwork instructors determined that a progressive numeric scale, or rubric, in addition to an explanatory narrative, would be necessary to increase the rigor and frequency of teacher candidate feedback and to track growth over time.

The National Council for the Accreditation of Teacher Education (NCATE) Report of the Blue Ribbon Panel on Clinical Preparation and Partnerships for Improved Student Learning (2010) stated clearly that monitoring teacher candidate progress was crucial. As such it has listed the following as one of its clinically based preparation 10 design principles:

A candidate’s progress and the elements of a preparation program are continuously judged on the basis of data: Candidates’ practice must be directly linked to the InTASC core teaching standards for teachers and Common Core Standards, and evaluation of candidates must be based on students’ outcome data, including student artifacts, summative and formative assessments; data from structured observations of candidates’ classroom skills by supervising teachers and faculty, and data about the preparation program and consequences of revising it. (p. 5)
The Blue Ribbon Panel Report’s call to utilize teacher preparation program candidate observation data confirmed the expert feedback gathered in this research.

**Updating standards.** The report commissioned by the accreditation body National Council for the Accreditation of Teacher Education (NCATE) specified the importance of teacher candidate practice being linked to national content standards. The two national accreditation councils for teacher preparation, NCATE and Teacher Education Accreditation Council (TEAC), merged into one national body in 2013. This new, sole accreditation body, the Council for the Accreditation of Educator Preparation (CAEP), designed new accreditation standards in 2013, reinforcing the need for teacher candidate clinical practice connected to standards.

Both expert panels provided feedback in alignment with this specification. The groups highlighted the need to measure not only national standards but California Teacher Performance Expectations (TPEs). In addition to verbal feedback, the groups gave written feedback by using the current clinical observation tool to make suggestions. Review of the written data in this area showed the need to tag standards throughout the observation tool. That is to say, in each section of the tool used to observe teacher candidates, both expert groups recommended including drop down menus, allowing faculty and fieldwork instructors to indicate which standard was being addressed by the teacher candidate. Comments such as “tag specific skills/strategies,” “pop up TPE language to help remind [us] what to look for/capture here,” and “link meaning to TPEs” demonstrated the experts call for clear linkage to standards throughout the clinical observation tool.
Content areas. At the time, the clinical observation tool used by fieldwork instructors from this university to provide feedback to general education preservice teachers, included nine specific content areas. Data from the two expert groups delineated clear recommendations and clarifications within these eight areas: candidate information, candidate reflection, classroom management, learning environment, instruction, differentiation, assessment, and recommendations for change (see Appendix C).

Candidate information. In the area of candidate information, feedback indicated that the time range of the lesson should be added to the tool. Additionally, data showed that a single line for subject and grade level were insufficient to capture this information accurately. Fieldwork instructors noted that teacher candidates may be teaching multiple grade levels and content areas. Data from the focus groups suggested that utilizing technology within the observation tool could provide more accurate candidate information in this area. One fieldwork instructor commented, “The only thing I would say is if there’s a way to do a pull down like on grade, that could be added in. That’s the one thing I think you could do a pull down. Maybe on subject as well.”

Another expert commented on the importance of knowing in what phase of their program each candidate is:

Maybe if there could be some type of field where we could indicate where they are at in their program. So, if they are at the very beginning of the program or if it’s later, but even with student teaching as we have it right now. Maybe there would be some way to report or query based on; this is the very beginning of student teaching versus at the very end and being able to see our people generally in the same place.
Data on where candidates are in the program would be significant to comparing individual candidate progression and comparing all candidates in their progress. Such feedback coincides with the earlier request for a numeric scale to track progress over time.

Candidate reflection. The section of the tool reserved for candidate reflection was also discussed by experts. During the focus groups, experts discussed the importance of when and how preservice teacher reflection is conducted. In other words, the timing of the reflection matters. One expert commented, “You reflect immediately after your lesson. You should be doing that as you drive home at the end of the day, going what was my day like?” For that to occur, experts suggested then that the candidate reflection portion of the tool should be completed after the lesson, rather than before. However, another fieldwork instructor noted how, “Sometimes I want the candidate to really think about it ahead of time and project.” While there was debate as to the timing related to completing this section of the tool, the data unanimously indicated that experts agreed on the importance of teacher candidate reflection to their practice and its connection to continuing that practice throughout their career. Still, the data did not show conclusively when this reflection should take place. Additional feedback from the fieldwork instructors indicated that they will need more training and guidance in the area of teacher candidate reflection as it relates to mentoring.

Classroom management. Feedback regarding the classroom management portion of the clinical observation tool ranged from concerns about what classroom management system was being utilized by the teacher candidates’ schools, to the State of California’s new Teacher Performance Expectations’ focus on the social emotional well-being of students. Experts
indicated that in their previous classroom observation of candidates, the school-wide or mentor teacher system of classroom management had practice implications for the preservice teacher in that placement. One expert said, "What I also found was for example, say District X, District X uses a certain discipline. They really can’t use anything else." Discussions with experts resulted in the need to denote such a system in the narrative for this section while using a rubric to score this area for classroom management.

Further data on classroom management indicated that a common definition for classroom management (as well as for the other terms used on the clinical observation tool) must be developed. The experts described classroom management as reward system or points, competition,” and “transitions,” to name a few. Expert data delineated a check-off system of agreed-upon classroom management techniques with space for additional accompanying narrative would be needed on the updated clinical observation tool. Data from the feedback sessions also indicated that the use of technology to enhance the functionality of the form would assist the users of the form in specificity of classroom management strategies.

*Learning environment.* Experts agreed that the physical features of the learning environment were part of what should be captured in this section of the observation tool. These concepts included: “physical structures”; “motivational posters”; and room orientations, such as describing students, “sitting in groups or rows.” Data also showed interpretation of the learning environment as including interaction of the students in the classroom. One expert commented, “Sometimes I see and encourage student helpers and student responsibilities in the classroom, whether it’s distributing material, collecting material, turning off lights, whatever that might be.”
Alignment of the California Teacher Performance Expectations (TPEs) in the area of learning environment was also suggested. The variance in the feedback on the meaning of learning environment again reinforces the need for common definitions for the terms utilized in the observation tool.

**Instruction.** For the area of instruction, expert feedback indicated that there were multiple ways that preservice teacher candidate instruction could be reflected on the current clinical observation tool. Experts noted the following areas within instruction: “provided direct or guided instruction”; “make use of strategies”; “socialized learning” “different modalities”; and “student engagement.” Furthermore, the discussion during the focus group revealed that fieldwork instructors used myriad ways to denote the area of instruction on this tool. Some fieldwork instructors used scripting of the lesson in paragraph form. Others utilized bullets to list the instructional components of the lesson. Therefore, to provide space for personal preferences related to how to script a lesson, findings suggested adding a checklist to capture instructional areas, in addition to providing a narrative space. The use of technology to increase the form functionality was again shared by experts in this area.

**Differentiation.** Feedback regarding the area of differentiation on the observation tool indicated that documentation of differentiation occurred in several sections of the clinical observation tool. For example, the current tool had a check box entitled, “Observed working with English learners.” Experts agreed that it was not clear if this box was to be used to show how teacher candidates were differentiating for English learners. Data also showed that differentiation was captured in the learning environment, instruction, and differentiation areas of the clinical
observation form. Experts discussed how the examples offered in the parentheses (i.e., English language learners, special needs, and GATE) could limit candidates in their focus. One expert noted:

On the same line of this might be limiting what people are thinking about for differentiation. If we do have bullet points for us to check, will that limit people’s thinking? That’s all the candidates need to do. Is that too limiting?

Another expert recommended that the term “students with special needs” be changed to “students with disabilities.” This expert commented:

Also, it may not be relevant here necessarily, but special ed division is not using the term “special needs” anymore, “students with disabilities.” That’s the federal law. All federal law is used. So, if we can move away from using “special needs” that would be great.

Finally, experts suggested including Multi-Tiered System of Supports (MTSS) in the area of differentiation as the use of MTSS is now required by the State of California and is called out in the new Teacher Performance Expectations (TPEs).

Assessment. Data on the area of assessment showed the need for teacher candidates to utilize multiple measures of student learning. Specifically, data indicated that experts felt that formal and informal means of assessment be identified on the clinical observation form. Checking for understanding was another term that experts recognized as part of informal assessment. Data also indicated that evidence of the use of various assessments by teacher candidates was critical. Suggesting a way for candidates to utilize technology to link their assessments to other areas on the clinical observation form, one expert noted:
For assessments I can imagine, not just the Fieldwork Instructor, but also the candidate can scan in or link it to one of the assessments they use. They use different assessments to kind of create a portfolio also, but an opportunity for an observer to go back and look at it.

This comment reflects the desire of experts to have evidence of student assessment to accompany the observation record. Use of technology surfaced again in the data as a way to capture artifacts in this area.

**Recommendations.** The final area of the current clinical observation tool was recommendation for change. Data in this area demonstrated a strong desire by experts to have teacher candidates reflect on these recommendations in each area of the observation, rather than a separate area at the end of the form. One written comment indicated that recommendations were to be “embed throughout” the clinical observation form. The data from experts also showed that recommendations for change be automatically populated to the next observation record. An expert suggested:

> Could it even be like [the forms] prepopulate each other? So, if I had an observation today and there were recommendations for change today and my field instructor comes to do my next observation, this box shows up at the very top.

In addition to these recommendations for change being carried over from one form to the next, expert data suggested the need to call out specific targets or outcomes to be demonstrated by the teacher candidate during the next observation.
Universal design for learning. In addition to the general feedback offered to revise the current clinical observation tool, data provided by experts indicated that Universal Design for Learning was not clearly captured in the current clinical observation tool. The three UDL principles: multiple means of representation, multiple means of action and expression, and multiple means of engagement were discussed. Some experts called for UDL to be captured specifically in the “learning environment” section of the current observation tool linking this to “multiple means of representation.” For example, the data showed a preference for Universal Design for Learning principles to be tied to the learning environment. This indication by experts would confirm the classroom environment as critical to multiple means of representation, multiple means of action and expression, and multiple means of engagement.

Yet another fieldwork instructor connected candidate instruction with “multiple means of representation” and assessment of learning with “multiple means of action and expression.” One focused on access of content for classroom students: “The access is going to be the key word, I think across the board.” Another expert used the term “inclusive” in relationship to the area of differentiation, which led to the discussion of the use of Universal Design for Learning (UDL) principles. A suggestion was offered that the term “inclusivity” be utilized rather than "differentiation" in order to support embedding UDL. This discussion among experts suggested that UDL could also be captured in this section of the clinical observation tool.

As such, feedback on embedding tenets of UDL in the clinical observation tool focused on ways to link UDL guidelines with current sections already offered on the tool. In fact, experts did not suggest that the tenets of UDL be added as unique elements on the observation tool to be
assessed separately from other aspects of teaching, rather feedback overwhelmingly pointed to keeping the current sections on the tool and allowing reviewers to indicate instances of UDL in teaching, within those elements.

Technology. The strongest example of this feedback was found in the data regarding Universal Design for Learning (UDL) being incorporated into the observation tool under the technology section of the observation tool. The experts suggested that Universal Design for Learning be captured in alignment with technology as a way to create access for students in the classroom, thus creating connection to all three UDL principles. The use of technology was further seen in the data in expert recommendations to create an electronic clinical practice tool with drop down menus listing the Universal Design for Learning principles. The Center for Applied Technology (CAST) UDL Checklist was shared with the experts during the feedback sessions. This checklist is currently used by preservice special education teacher candidates but it is not in use in the general education program. One stated:

But, it’s here. Visual information, color, contrast, layout. It’s duh! If I’m doing my lesson plan and I have this next to me. You have the special ed teachers doing it already. So, we just have to train the regular teachers to do the same thing. I wouldn’t mind at all having this available as part of what I need to do with students. This would be a great resource.

The data show clearly how experts saw the need to integrate technology as a way for teacher candidates to create access points for students in the classroom. Additionally, these experts found that technology should be integrated into the clinical observation tool in the form (i.e., the use of drop down menus). In this way, the experts felt that Universal Design for Learning could be
measured throughout the preservice teacher candidate lesson observation. Experts further implied that incorporating the use of the Center for Applied Technology (CAST) UDL Checklist into with the technologized clinical observation tool would solidify links between candidate instruction and implementation of Universal Design for Learning principles. To that end, experts suggested the combined use of the updated clinical observation tool and the CAST UDL checklist to be utilized during candidate observations.

Conclusion for Research Question 2. Overall, expert data revealed that the current clinical observation tool did not explicitly incorporate the principles of Universal Design for Learning. Without an explicit connection of UDL to the tool, the measurement is not a valid measure of UDL. As such, the observation tool must now include ways to observe the principles, guidelines, and checkpoints of Universal Design for Learning (UDL). This can be accomplished in part by utilizing the newly updated clinical observation tool in conjunction with the Center for Applied Technology (CAST) UDL Checklist.

Additionally, significant changes in this tool were deemed necessary by these experts to improve the utility of the form and the ability to properly capture effective teaching by preservice candidates. These changes included updating the tool to reflect a more precise measurement of teacher candidate progress at each conducted observation. This clinical observation tool must also be updated to reflect new content and accreditation standards so that teacher candidate instruction is aligned with these standards. This will also aid this teacher preparation program in measuring teacher candidate growth throughout the program. Technology must be employed to recreate a clinical tool that provides greater functionality for candidates and
their mentors. Areas of the current clinical observation tool, including: candidate information, candidate reflection, classroom management, learning environment, instruction, differentiation, assessment, and recommendations for change all need updating to include Universal Design for Learning, monitoring of candidate progress, and use of technology.

Benefits of these data included an accurate accounting of the presence of Universal Design for Learning in preservice elementary general teacher candidate practice. Another benefit of this data collection was affirmation from experts that the current clinical observation tool does not accurately capture all areas of teacher candidate growth. Expert feedback from fieldwork instructors and school of Education experts was beneficial to alignment of the programmatic goal of teacher candidate assessment with the current clinical observation tool. Alignment of goals will be beneficial to implementation and ongoing continuous improvement of this clinical observation tool.

Challenges with the feedback include the lack of a broad definition of clinical practice and its various levels within the body of experts working with teacher preparation candidates in this private University School of Education. Fieldwork Instructors demonstrated a different understanding of clinical practice than internal teacher education preparation experts. Fieldwork instructors working with student teacher candidates interpreted the term “clinical practice” as the culminating student teaching experience they supervised in the final semester of the candidates’ program. Internal teacher preparation experts also focused on this culminating student teacher experience as clinical practice. Neither expert group focused on various forms of early clinical practice need in teacher candidate programs. Candidates must be in classrooms early in their
program experience with myriad opportunities to connect theory and practice. This can be seen in the National Council for the Accreditation of Teacher Education (NCATE) Report Transforming Teacher Education through Clinical Practice: A National Strategy to Prepare Effective Teachers (2010) Design Principle 2:

- Clinical preparation is integrated throughout every facet of teacher education in a dynamic way: The core experience in teacher preparation is clinical practice. Content and pedagogy are woven around clinical experiences throughout preparation, in course work, in laboratory-based experiences, and in school-embedded practice. (p. 5)

Development of a new clinical observation tool that utilizes a common lexicon and definitions for multiple levels of clinical practice will align experts and teacher candidates in the use of their language toward candidate progress. Experts were able, to some degree, to assess the lack of Universal Design for Learning present in the current clinical observation tool. An additional challenge noted, however, is the need for more in-depth training in the Universal Design for Learning principles, guidelines, and checkpoints for both fieldwork instructors and School of Education experts.

New Clinical Observation Tool

Based on the findings, I created a new clinical observation tool that is situated in the Universal Design for Learning framework, is aligned to state and national teacher preparation and professional standards, and allows for ongoing monitoring of teacher candidate progress.
Universal Design for Learning in the New Clinical Observation Tool

As mentioned previously, the current clinical observation tool was not aligned to the Universal Design for Learning principles, guidelines, and checkpoints. Below is a portion of the current tool that is used to provide teacher candidate feedback on instruction. As can be seen, this current tool does not show any written link to UDL strategies in the area of classroom management. This applies to the other areas of the tool as well which are: candidate reflection, learning environment, classroom management, differentiation, assessment, and recommendations for change. Contrasted with the current clinical observation tool section on instruction is the part of the new tool’s section on instruction. As shown below in the fourth column of the instruction section, Universal Design for Learning principles are labeled. In the technological version of this new clinical observation tool, this UDL section will present as a drop-down menu. This will enable teacher candidate support personnel to indicate candidate progress in UDL principles, guidelines, and checklists. This also eliminates the need for teacher candidates or fieldwork instructors to use the UDL checklist as a separate document as it will now be embedded within the new clinical practice tool.
This new clinical observation tool is aligned with the Danielson Framework for Teaching (Danielson, 2014). Danielson stated:

The Framework for Teaching is a research-based set of components of instruction, aligned to the INTASC standards, and grounded in a constructivist view of learning and teaching. The complex activity of teaching is divided into 22 components (and 76 smaller elements) clustered into four domains of teaching responsibility: planning and preparation, classroom environment, instruction, and professional responsibilities. (p. 1)

The alignment of this new clinical observation tool with the Danielson Framework for Teaching (Danielson, 2014) ensures that national teaching standards for the profession in the form of the Interstate Teacher Assessment and Support Consortium (InTASC) standards are being addressed. It additionally ensures that Common Core State Standards (CCSS) are aligned, in that the Danielson Framework was last updated in 2013 in order to encompass the CCSS.
In TASC, standards are further aligned in each section of the new tool along with the California Teacher Performance Expectations (TPEs), and this private university’s School of Education framework based on REAL: respect, educate, advocate, and lead.

As can be seen above, teacher preparation candidate progress is also called out in the new tool. Each section of the tool has a rubric score of 1–4 with 4 being the highest level. The levels are associated with the following indicators: $4 = \text{Exceeds Expectations}$, $3 = \text{Meets Expectations}$, $2 = \text{Developing}$, $1 = \text{Emerging}$. These indicators are aligned with other rubrics utilized at this private university. The signature assignment rubric allows for a score of zero if an area is not met. In contrast, the new clinical observation tool utilizes a $\text{Not Observed}$ score rather than a score of zero: $\text{N/O} = \text{Not Observed}$.

This decision was made in order to provide multiple attempts for a teacher candidate to show progress in a particular area of the tool. The tool will be used by multiple teacher candidate
support personnel and will be used multiple times throughout the semester. In this way, the teacher candidate may not be observed in a particular area during one lesson observation but could be observed in that area at a later date. The use of this rubric area of the new clinical observation tool will provide concrete evidence of teacher candidate progress over time. The current clinical practice tool allows for recommendations for change in one area at the end of the tool.

Figure 7

*Current Clinical Observation Tool Recommendations for Change Section*

Expert feedback indicated that section of the current clinical observation tool limited the amount of written comments and suggestions that could be given to teacher candidates. Based on expert group feedback, the new clinical observation tool allows for comments and suggestions in each area of the tool.

This section provides teacher candidates with specific and targeted feedback in all areas of teaching standards. Multiple areas for this feedback also allow teacher candidate observers to
use The Universal Design for Learning principle of multiple means of representation. Having many sections allows the observer to write, chart, or sketch feedback for the teacher candidate.

### Table 7

*New Clinical Observation Tool Planning and Preparation Section*

<table>
<thead>
<tr>
<th>Planning &amp; Preparation</th>
<th>Standards Mapping</th>
<th>Candidate Progress</th>
<th>Universal Design for Learning</th>
<th>Comments/Suggestions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Demonstration of Knowledge of Content and Pedagogy</td>
<td>4 3 2 1 N/O</td>
<td>Multiple Means of Representation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPE 3</td>
<td></td>
<td>Multiple Means of Action and Expression</td>
<td></td>
</tr>
<tr>
<td></td>
<td>InTASC 4, 7</td>
<td></td>
<td>Multiple Means of Engagement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>REAL 2.5, 2.6, 2.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demonstration of Knowledge of Students</td>
<td>4 3 2 1 N/O</td>
<td>Multiple Means of Representation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPE 1, 4</td>
<td></td>
<td>Multiple Means of Action and Expression</td>
<td></td>
</tr>
<tr>
<td></td>
<td>InTASC 1.2, 3, 7</td>
<td></td>
<td>Multiple Means of Engagement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>REAL 1.1, 1.3, 1.4, 1.6, 3.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Setting Instructional Outcomes</td>
<td>4 3 2 1 N/O</td>
<td>Multiple Means of Representation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TPE 3</td>
<td></td>
<td>Multiple Means of Action and Expression</td>
<td></td>
</tr>
<tr>
<td></td>
<td>InTASC 6</td>
<td></td>
<td>Multiple Means of Engagement</td>
<td></td>
</tr>
</tbody>
</table>

**Summary and Conclusion**

The first research question attempted to gauge the extent to which general education preservice teachers knew and understood the principles of Universal Design for Learning and was answered conclusively in this research study. This private School of Education teacher preparation program for elementary general education candidates did not explicitly address Universal Design for Learning (UDL) principles. The absence of UDL principles, guidelines,
and checkpoints in the teacher preparation curriculum was initially evidenced in examination of course descriptions and syllabuses. Since the content of the teacher preparation program did not intentionally focus on the framework of Universal Design for Learning, preservice teacher candidates did not demonstrate knowledge and understanding of UDL.

Elementary general education teacher candidates’ lack of knowledge and understanding of Universal Design for Learning (UDL) was also evidenced by the data collected in the iterative video lesson review process. These data revealed little utilization of UDL principles, guidelines, or checkpoints. One section of the data within the UDL checkpoint of “offering alternatives for visual information” yielded the highest number of observations within the teacher lesson videos. This result, however, did not indicate that 17 preservice teachers had been observed implementing this UDL checkpoint. It showed, rather, that a few specific preservice teacher candidates were well versed in providing varying visual representations of content for students.

The second research question attempted to assist teacher preparation programs in measuring preservice teachers’ implementation of Universal Design for Learning in the classroom. The current clinical observation tool, which is utilized by this university’s fieldwork instructors, was scrutinized by that same group of experts. Data from these experts, who were intimately familiar with this tool, showed that the tool itself does not specifically focus on Universal Design for Learning. As such principles, guidelines, and checkpoints of UDL were not captured during preservice teacher candidate observation sessions conducted by fieldwork instructors.
Fieldwork instructor experts provided feedback to address the second research question and provided concrete and specific changes for embedding Universal Design for Learning (UDL) within the clinical observation tool. With this revision, teacher candidates and fieldwork instructors were to be intentionally focused on the framework of UDL during each lesson observation and debrief. These data further contribute to the backward mapping of the teacher training program course content, in that the updated clinical observation tool will inform the curriculum of the teacher preparation program. Other feedback indicated that updates to the clinical tool, such as alignment with standards and monitoring of candidate progression throughout the program, were needed. Use of technology in order to create a clinical observation tool with more functionality serves to make the tool itself reflective of Universal Design for Learning principles.

School of Education expert feedback data aligned with the feedback in so far as the lack of specific callouts of the principles of Universal Design for Learning on the tool. Some of the data from School of Education experts indicated similar changes to the clinical observation tool such as alignment with standards and candidate progression throughout the program. Technology was another similar point of feedback between both the Fieldwork Instructors and School of Education expert groups. Meanwhile, the intentional focus on the updated California Teacher Preparation Expectation (TPEs) was feedback offered only by the School of Education expert focus group.

There were significant obstacles encountered within the teacher education expert group methodology. One such obstacle was the absence of comprehensive knowledge of the Universal
Design for Learning principles, guidelines, and checkpoints. This deficiency existed despite a specific effort several years ago that was focused on detailed training on UDL. The Special Education Program received a grant from the United States Department of Education’s Office of Special Education and Rehabilitation in 2008. This grant was entitled: Project REAL: Retaining Highly Qualified Teachers who Provide Evidence-based Instruction. A portion of this grant funded the aforementioned series of Universal Design for Learning trainings in 2010 and 2011. These training sessions were conducted by experts from the Center for Applied Specialized Technology (CAST) who, as mentioned previously, were the authors of the UDL framework.

Though several general education faculty members of this teacher education expert group attended the aforementioned UDL trainings, they did not accept Universal Design for Learning as a critically needed framework called out in the Higher Education Opportunity Act (HEOA) of 2008. As such, UDL was not added to general elementary education teacher preparation coursework. Furthermore, this rejection of Universal Design for Learning as critical to teacher preparation coursework severely limited exposure and modeling of UDL by general education faculty for their teacher preparation candidates.

An unintentional shared data result between both the fieldwork instructors and School of Education expert groups was the clear need for both groups to have in-depth training in Universal Design for Learning (UDL). While data provided by both groups indicated the lack of UDL evident in the current clinical observation tool, the feedback was not specific to the more detailed areas of the Universal Design for Learning guidelines and checkpoints.
Taken together, both research questions were thoroughly examined through the lens of evaluating the preservice elementary general education teacher candidate. These research questions were been scrutinized through the lens of those who teach and mentor these teacher candidates. Both teacher candidates and the educators of teacher candidates must intimately know and understand the principles, guidelines, and checkpoints of Universal Design for Learning for a teacher preparation program to be successful. Teacher preparation program personnel—faculty, administration, staff, fieldwork instructors, and mentors cannot successfully measure preservice teachers’ implementation of UDL in the classroom without significant changes to the assessments used in the program. Data clearly showed that this tool must be updated in myriad ways, the most significant of which is to include ways to capture the principles of Universal Design for Learning. Data further suggested that the numerous updates indicated the need for a completely new tool which will better support preservice teacher candidates in their growth throughout their teacher preparation program.
CHAPTER 5
DISCUSSION AND IMPLICATIONS

This research study was conducted for two specific reasons related to teacher preparation of elementary general education teacher candidates. First, I sought to determine the extent to which general education preservice teachers know and understand the principles of Universal Design for Learning (UDL). Second, I sought to tackle the problem of practice faced by University professionals related to measuring UDL among teacher candidates by creating a new clinical observation tool to include an assessment of UDL.

Knowing whether general education teacher candidates understand UDL is significant because the definition and use of UDL in teacher preparation programs was called out in the Higher Education Opportunity Act (HEOA) of 2008. HEOA states:

The term ‘Universal Design for Learning’ 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 with disabilities and students who are limited English proficient. (p. 12)
This legislation by the United States government inaugurated a common federal definition of Universal Design for Learning (UDL) while also making it a requirement of teacher preparation programs. Additionally, the passage of the Higher Education Opportunity Act (2008) established Universal Design for Learning as a valid scientific framework for teacher preparation toward a new approach for educating all students. The Center for Applied Specialized Technology (CAST), the organization that authored the framework of Universal Design for Learning (2011), stated:

Universal Design for Learning (UDL) is a framework that addresses the primary barrier to fostering expert learners within instructional environments: inflexible, “one-size-fits-all” curricula. It is inflexible curricula that raise unintentional barriers to learning. Learners who are “in the margins”, such as learners who are gifted and talented or have disabilities, are particularly vulnerable. However, even learners who are identified as “average” may not have their learning needs met due to poor curricular design. (p.4)

CAST’s focus on Universal Design for Learning (UDL) as the framework teachers should use to remove barriers to learning provided the rationale for my first research question: “How well do elementary general education teacher candidates know and understand the principles of Universal Design for Learning?” The answer to this research question is important as Schools of Education design teacher preparation programs that meet the standard set in the Higher Education Opportunity Act (HEOA) of 2008. Even more substantial is training teacher candidates to recognize and remove barriers to learning in service to creating access and equity in learning for ALL students.
If the use of Universal Design Learning (UDL) as a framework for creating access and equity of content for all students is crucial to effective teacher preparation, then teacher preparation programs must be able to measure preservice teachers’ implementation of UDL in the classroom. To that end, the ultimate purpose of this study was to create a clinical observation tool for teacher preparation programs at institutions of higher education to include ways to capture Universal Design for Learning principles, guidelines, and checkpoints in elementary general education preservice teacher lessons.

Discussion of Findings

Institutional data from this private institution’s School of Education were collected and analyzed in order to answer the following research questions:

1. To what extent do general education preservice teachers know and understand the principles of Universal Design for Learning?

2. How can teacher preparation programs measure preservice teachers’ implementation of Universal Design for Learning in the classroom?

Primary sources of data included syllabuses and course descriptions of the general education teacher preparation program, preservice elementary school teacher candidate lesson videos, and focus group feedback from fieldwork instructors and university professionals within the School of Education (i.e., professors, administrators, education experts). The data were analyzed and coded in order to understand teacher candidate knowledge and understanding of Universal Design for Learning (UDL) and ways to revise the current clinical observation tool to measure the implementation of UDL in teacher candidate lessons.
A total of 20 videos of actual lessons given by elementary general education teacher candidates were reviewed initially, from which ten video lessons were coded for evidence of UDL. These teacher candidates were near the end of their teacher preparation program and were submitting these videos for assessment related to the state’s credentialing requirements. As such, these teachers theoretically served as an indication of the extent to which the School of Education at this university trained these elementary general education teacher candidates in the concepts of UDL. A review of these videos led to conclusive evidence: these teachers have limited knowledge and understanding of the principles, guidelines, and checkpoints of the Universal Design for Learning framework. This finding was corroborated by a review of syllabuses and course descriptions for teacher candidates at this university. Taken together, this finding suggests that the School of Education general education preparation program for elementary teachers had yet to embrace the HEOA (2008) legislation of embedding UDL as a framework for teacher preparation.

Research has indicated that using the UDL framework can create points of access to content for all students (Maryland State Department of Education, 2011); therefore, the lack of knowledge and understanding of Universal Design for Learning limits the extent to which these teacher candidates create lessons that are successful in reaching all students. The Universal Design for Learning Guidelines (2011) states:

These [UDL] Guidelines should be carefully selected and applied to the curriculum as appropriate. The UDL Guidelines are not meant to be a “prescription”, but rather as a set of strategies that can be employed to overcome the barriers inherent in most existing
curricula. They may serve as the basis for building in the options of flexibility that are
necessary to maximize learning opportunities. (p. 12)

Failure of general education teacher candidates to use UDL to eliminate barriers to
learning inherent in the curriculum will most certainly limit access to that curriculum for all
learner types. This lack of use of Universal Design for Learning will not only limit equitable
access to learning, but could also diminish life changing opportunities for students. Meyer et al.
(2014) noted, “The education community began to recognize that many students—not just students
with disabilities-faced barriers and impediments that interfered with their ability to make optimal
progress and to develop as educated and productive citizens” (p. 5). It is, therefore, critical for all
students to be able to access the curriculum not only to learn but also to meet the ultimate goal of
a fulfilling life. This failure by general education preservice teachers to embed UDL in their
teaching lessons, however, points to the lack of training offered by the preparation program.

As such, the second research question engaged School of Education professionals in the
redesign of a tool to measure UDL among teacher candidates. Such a tool would allow for
formative feedback to candidates during their training program and might also remind and
encourage university personnel of the need to embed UDL in coursework and training
opportunities. This formative feedback is a necessary component to candidate reflection.
Harrison, Lawson, and Wortley (2007) noted, “In acknowledging the systematic nature of
reflection in relation to professional training it is therefore crucial to consider how the training of
mentors might be developed to impact on and improve the critical reflection on practice by
beginning teachers” (p. 289). Both fieldwork instructors and candidates will be able to utilize the new clinical observation tool toward more succinct reflection of practice.

With that need, participants in the second phase of data collection, who were invited to provide feedback on the clinical observation tool, were university fieldwork instructors (i.e., field experts and teacher candidate coaches) and School of Education experts. These teacher candidate professionals provided feedback regarding the current clinical observation tool. Given their professional background as expert teachers, mentors, and veteran practitioners, their feedback was essential in revising the tool they would then use to assess teacher candidates’ knowledge and understanding of UDL. Feedback from these groups was categorized into two areas: (a) Recommended changes in specific sections of the observation tool related to ease of use and clarity, and (b) Additions that need to be made to the tool in order to incorporate Universal Design for Learning principles, guidelines, and checkpoints. Ultimately, the clinical observation tool changes needed indicated that a new tool—not a revised tool—was necessary.

First, findings from these expert groups clearly indicated the need to update and reorganize the existing tool used for candidate observations in order to provide more effective feedback for teacher candidates. The teacher education experts indicated the need for a tool that would more efficiently monitor candidate progress throughout their clinical practice experiences, including the use of Universal Design for Learning principles, guidelines, and checkpoints. The literature confirms the importance of observation data and feedback in building the skills of preservice teachers. Hill and Grossman (2013) stated:
Central to the idea of using observation data for improvement is the notion that feedback based on observation protocols can inform practice. In this sense, observation instruments become high stakes not just for personnel decisions but also for efforts to improve instruction. (p. 379)

This institution’s teacher preparation experts aligned with the literature in their feedback on areas for improvement in the observation tool. Expert input on adding numeric checkpoints in order to monitor candidate progress in each of the clinical observation tool content areas was a specific example of how protocols can inform practice by monitoring changes over time. Additionally, these professionals indicated the need to update the current tool to be more closely aligned with new state and national standards. This suggestion mirrors the literature on teacher evaluation in the age of changing standards and accreditation. Goe, Biggers, and Croft (2012) suggested:

As states develop and implement teacher evaluation systems in response to federal and state priorities, they should consider designing systems that include using evidence gathered through evaluation to inform professional growth. Adding this component to teacher evaluation systems from the very beginning will ensure that implementation decisions support the collection and use of evidence for the purpose of informing professional growth. (p. 1)

A new clinical observation tool should, then, reflect the teacher evaluation linkage to professional development that teacher candidates will experience as new teachers in their first classrooms.
Second, the expert focus groups provided data to address my second research question: “How can teacher preparation programs measure preservice teachers’ implementation of Universal Design for Learning (UDL) in the classroom?” Both expert groups confirmed that UDL is present in the current clinical observation tool, only not named as such. These professionals suggested that Universal Design for Learning principles be added to the observation tool in the form of a drop-down menu for each of the identified areas of the tool (i.e., provided options for perception, provided options for comprehension, or provided options for physical action). These teacher preparation experts also indicated the need to make the tool more user-friendly, including the use of technology as a way to increase accessibility for teacher candidate support providers. Interestingly, this suggestion of using technology to improve accessibility of the tool actually captures the notions of UDL. Finally, these experts concluded that use of a revised clinical observation tool in combination with the CAST UDL Checklist would be the most effective way to capture teacher candidate use of Universal Design for Learning. In this way, fieldwork instructors will be able to provide targeted feedback regarding UDL principles, guidelines, and checkpoints toward ongoing improvement in the knowledge, understanding, and implementation of Universal Design for Learning.

The literature aligned with the teacher preparation expert findings in the area of Universal Design for Learning and its benefits in creating curriculum that provides options for students in the classroom. Meyer et al. (2014) stated:

We have developed the UDL Guidelines to help educators design, choose, and implement effective teaching strategies and tools. Built upon the three UDL principles, the
Guidelines offer insight into specific kinds of systematic learner variability and specific ways to build curricular flexibility around this variability. (pp. 13–14)

By adding Universal Design for Learning to the current clinical observation tool and pairing the tool with the CAST UDL Checklist, teacher candidate support providers (i.e., fieldwork instructors) will be able to zero in on assisting teacher candidates in their acquisition of knowledge and understanding of UDL. Additionally, teacher candidates will be provided with specific recommendations for improving the implementation of Universal Design for Learning in the classroom, thus providing PK–12 students with increased access to learning.

Limitations

While findings above shed light on areas to improve UDL knowledge and understanding, the findings are considered in light of limitations to the study design. Limitations to this study include the small number of teacher candidate lesson videos in the initial data review. However, all of the available lesson videos from the total number of general education elementary teacher candidates seeking a credential in spring of 2016 were included in the study, capturing the sample of preservice teachers from this university who were near the end of their teacher training program. Still, increasing the number of videos viewed over several semesters of the teacher preparation program could solidify the data that showed elementary general education preservice teachers lack knowledge and understanding of the principles of Universal Design for Learning. This study was also limited to an examination of teacher candidates at the elementary level, restraining generalizability of findings to the secondary level. In the future, the sample of videos could also include secondary teacher candidates, thus providing evidence of UDL knowledge,
understanding, and implementation for middle and high school students. Additionally, this study is limited to an examination of UDL within one School of Education at a small, private, liberal arts university. Results of the study are not indicative of other teacher preparation programs, including those within larger institutions. Yet, as a problem of practice that I face in my current role as the director of Clinical Practice at this institution, the generalizability of findings was not the major purpose of this study. Rather, I sought to understand how to better improve the professional practice of School of Education experts working with teacher candidates in their formation related to UDL. While my positionality, as both the researcher studying a program where I am also a practitioner may be seen as a limitation, the purpose of this study was to improve a problem of practice that I face daily in my role overseeing preservice teachers' clinical training. To that end, findings inform my immediate daily practice, providing an ideal opportunity for the research to affect needed changes in our teacher preparation program.

Limitations were present in the teacher education expert group as they were not as familiar with the Universal Design for Learning framework as the experts in the Fieldwork Instructor group. More in-depth knowledge and understanding of the Universal Design for Learning principles, guidelines, and checkpoints is needed for both faculty and staff that work with preservice elementary teachers.

**Future Research**

Capitalizing on my dual role as researcher and professional—and in light of limitations—future research can continue this line of inquiry by embedding the feedback into the clinical observation tool and testing its use in actual assessments of pre-service teacher candidates. In an
iterative process, the continual improvement of the tool would occur through formalized feedback sessions with the fieldwork instructors and teacher preparation experts, so that the tool remains user-friendly, practical, aligned to current standards, and accurate in terms of content areas that need to be measured, such as UDL. Additional studies might include replicating this process of revision at other institutions of higher education, so that together the community of experts working with teacher candidates can share ways of tackling this problem of practice.

This study only examined elementary level teachers; future studies might include an assessment of secondary level teachers, so that a sense of UDL content at the various levels of teacher training could be examined. Finally, this study focused on general education teachers; the data revealed that special education teacher candidates receive Universal Design for Learning in their coursework. Still, measuring special education teachers’ knowledge of UDL implementation would assist the coursework of the special education teacher training program and might even lead to a comparative study examining UDL content knowledge between general and special education teachers, to further understand whether contextual differences play a role in how teachers embed the tenets of Universal Design for Learning.

Implications

Theoretical Implications

This study advances the theoretical framework of UDL by discussing a concrete way that the framework can be measured. Additionally, this study demonstrates a clear theory into practice link; I examined the UDL framework and revised a tool that can now demonstrate how UDL is implemented by teacher candidates and measured by their fieldwork instructors.
Borrowing the principles, guidelines, and checkpoints of UDL was an important component of this work because these tenets provided specific ways to measure the theory. First, I utilized the principles, guidelines, and checkpoints to measure knowledge of UDL among teacher candidates by tallying how often these occurred during their lesson videos. This framework was an easy-to-use approach for practical measurement. Next, the language of UDL found that the CAST UDL Checklist also resonated with experts in the field as an easy-to-use approach for providing feedback to teacher candidates, suggesting that the UDL theoretical framework can be measured appropriately by practitioners. That said, professional experts also shared during focus group sessions that the language of UDL often felt similar to other areas already on the clinical observation tool—for instance, fieldwork instructors mentioned that multiple means of representation was typically noted under learning environment—suggesting further work is need to distinguish aspects of UDL from other common areas of assessment of teacher candidates.

Perhaps there is no need to distinguish UDL language from other common areas of teacher preparation (i.e., classroom management, assessment, etc.) and, as suggested by fieldwork instructors, simply embed UDL within those areas. Either way, those interested in the UDL framework may benefit from the feedback shared by experts, indicating some confusion about how UDL differentiates from other areas of feedback offered to teacher candidates.

Implications for Practice

The most immediate implication for my practice is to change the clinical observation tool to align to the feedback shared by teacher preparation experts. These changes will include offering the tool electronically to improve accessibility for fieldwork instructors and accessibility
of the evaluation to teacher candidates. Further, the electronic version will make data collection over time more efficient by automatically providing data on each candidate in spreadsheet format. Additionally, these changes will include adding in drop-down boxes for UDL language to be showcased. As such, assessment of teacher candidate knowledge of UDL should be easier and more efficient for those working with the preservice teachers (See new tool in Appendix D, Fogarty 2017).

An additional change to current practices in this School of Education is already underway and includes a comprehensive review of the curriculum offered to general education preservice teachers to ensure that UDL is included. This School of Education can begin this work by examining the curriculum currently offered to teacher candidates in the special education program, who receive a great deal of UDL training. Perhaps there are ways to capitalize on that work, already underway, and offer those experiences to general education preservice teachers.

Other practitioners may also experience issues with knowing whether their program is properly embedding UDL in the training of their candidates. They might benefit from this study and could engage in a similar study in order to ascertain how well their candidates know and understand the principles, guidelines, and checkpoints of Universal Design for Learning. Replicating this study could also determine the degree to which candidates in their program are implementing UDL in their lessons.

**Practical measurement implications.** In order to successfully implement teacher preparation standards and the Universal Design for Learning principles, guidelines, and checkpoints, teacher candidate progress must be measurable. Further, teacher candidate progress
must be measured over time to show progress toward mastery of content knowledge and pedagogy. The current observation tool did not enable fieldwork instructors and other support personnel that work with teacher candidates to truly measure progress. Additionally, this tool did not allow for specific feedback to candidates in each target area. The new clinical practice observation tool provides ways to measure knowledge of UDL as well as progress in mastery of national and state teacher standards.

The newly created clinical practice observation tool can be used to support both general and special education teacher preparation candidates. One major finding that leads to a direct implication is that the elements of Universal Design for Learning that were previously present in coursework for special education teacher candidates will now be available to all teacher candidates. Since general education elementary teacher candidates did not formerly get exposure to UDL, it stands to reason that their students were not exposed either. This new tool can be used as springboard for general education faculty to update their teacher preparation program to include Universal Design for Learning and to be aligned with state and national standards. This tool can be utilized to backward plan these necessary changes to the curriculum.

The use of this tool with both general and special education candidates aligns with the California Commission on Teacher Credentialing’s move to begin to train general and special education candidates together as part of a common trunk. The Report of California’s Statewide Task Force on Special Education (2015) states, “This Task Force envisions general education and special education working together seamlessly as one system that is designed to address the needs of all students.” To that end, general and special education faculty at this private university
must work together to create teacher preparation programs that intersect in meaningful ways and utilize common tools such as this new clinical practice observation tool.

In addition to measuring teacher candidate progress in a more authentic and accurate way, this new clinical tool can be tied to other candidate progress indicators. The lesson plan template that teacher candidates use should be aligned with this new clinical practice observation tool. Areas of Universal Design for Learning as well as teaching and professional standards should be present and aligned in both tools. The formative and summative evaluations of teacher preparation candidates should also be aligned with this new clinical practice observation tool. There should be a direct association between the new clinical observation progress monitoring and how the candidate is scored in formative and summative assessments. In this way, teacher candidate progress will be monitored by multiple tools that are aligned and consistent throughout the teacher preparation program.

Policy Implications

The Higher Education Opportunity Act (HEOA, 2008), which first called out the use of Universal Design for Learning principles in teacher preparation programs, expired in 2014. A reauthorization of HEOA, requiring even more explicit use of Universal Design for Learning in teacher preparation programs, could strengthen teacher preparation programs and would align with UDL specificity in the Every Student Succeeds Act (ESSA, 2015). Teacher preparation programs must build their curriculum with Universal Design for Learning at the core so that future teachers are able to create curriculum that all students are able to access. Further, teacher preparation faculty must themselves be able to use UDL principles, guidelines, and checkpoints
in their own teaching practice so that they create access for higher education students and therefore model the use of Universal Design for Learning. Funding for professional development should be approved by national and state legislators so that teacher preparation programs and school districts can work together in the successful implementation of UDL.

**Recommendations**

There are multiple recommendations for improvement in the use of Universal Design for Learning (UDL) within this School of Education. An immediate review of curriculum in all programs within the School of Education is warranted. While teacher preparation programs are tasked with instructing teacher candidates in the use of UDL, all educators that work with PK–12 students should know, understand, and be able to utilize the principles, guidelines, and checkpoints of Universal Design for Learning. School administrators, counselors, and psychologists will all benefit from specific instruction in UDL so that they are able to create points of access and equity for the students with whom they work. This School of Education has taken steps to expose its faculty and staff to the principles of UDL. In order to achieve the aforementioned goal, more specific professional development in Universal Design for Learning is needed.

The updated clinical observation tool must be reviewed again by the expert groups within this School of Education. Further review by outside experts and partners in teacher education should also be sought. A final draft of the observation tool should then be constructed utilizing these final data. Fieldwork instructors will need to be trained in the use of the new clinical tool, and subsequently the tool should be piloted with a targeted group of general education preservice
teachers over the course of a semester. Following the semester pilot of the new clinical tool, a review of that data should be conducted along with another expert feedback group session with the fieldwork instructors. The data from the expert feedback session should be incorporated into updating the tool.

Per the initial expert feedback group recommendations, in addition to the use of the new clinical observation tool, Fieldwork Instructors should also begin to use the CAST Universal Design for Learning Checklist (CAST, 2015). The new assessment tool and checklist should be used in tandem during preservice teacher candidate observations in order to evaluate teacher candidate implementation of UDL within their lessons in the field. Once this new procedure is implemented, additional review of teacher candidate TPA4 videos should be conducted as a post-step to ascertain if knowledge and understanding of Universal Design for Learning framework is increasing.

Another recommendation for this teacher preparation program would be the sharing of data collected from the new clinical observation tool with directors and faculty in the program. Review of the teacher candidate UDL data will be critical to the effective implementation of Universal Design for Learning elements within the teacher preparation program. In this way, directors and faculty will be able to maintain a continuous improvement cycle that updates coursework and assessments in response to candidate data. Faculty and staff practices can also be improved by reviewing UDL data on a regular basis in an effort to monitor candidate progress more effectually across the length of teacher preparation program. These regular data reviews will also provide accurate data toward faculty, staff, and candidate professional development
needs. These data should additionally be reviewed with partners in the field toward collaboration of teacher preparation.

**Conclusion**

If UDL is embedded in teacher training programs, the door to the classroom that was once locked for many students is more likely to open wide for all learners. The principles of UDL inherently create greater access for all learners. Therefore, the dreams of learning and possibilities of children entering the classroom can be realized for the first time. The key, both literally and figuratively, to creating access to learning for our PK–12 students can be found in the research-based principles, guidelines, and checkpoints of the framework of Universal Design for Learning. The banking concept of learning coined by Freire can be voided via the implementation of UDL.

However, to create access to the curriculum for PK–12 students, general education teachers must be able to implement UDL. Teacher preparation programs must begin to incorporate the framework of Universal Design for Learning as the theoretical framework on which their programs are based. In particular, this private university can pair its framework of social justice with the framework of Universal Design for Learning. These two frameworks are well suited to support in tandem the greater purpose of this university—to advocate for the marginalized. Cochran-Smith et al. (2009) reminded us:

> teaching for social justice is defined in part by the moral and ethical values to which it is attached and by its strong commitments to improving the life chances of all students,
ensuring that all students have rich learning opportunities, and challenging aspects of the system that reinforce inequities. (p. 372)

Then, to marry the frameworks of social justice and Universal Design for Learning is to create a symbiotic union that holds at its core the key to access and equity to the curriculum for ALL students.

It was not enough for children of color to be granted access to public schools with the passage of *Brown v. Board of Education* in 1954. It was insufficient to provide access for students with disabilities to the entrances of general education schools after the passage of the Americans with Disabilities Act (ADA). And, it was inadequate to support access to the curriculum through the passage of Public Law 94-142 in 1975 and its reauthorization in the Individuals with Disabilities Act (IDEA) in 2004 for exceptional students. These historic acts provided a small window to the classroom for students of color and students with disabilities. It was, however, with the passage of the Higher Education Opportunity Act (HEOA) in 2008 and the reauthorization of the No the Child Left Behind Act (NCLB) in the form of the Every Student Succeeds Act (ESSA) in 2015 that true access for ALL learners was provided. Through HEOA and ESSA, the framework of Universal Design for Learning is named, defined, and mandated to be utilized by teacher preparation programs and PK–12 educators in order to ensure that all students can, in fact, access the curriculum.

The framework of Universal Design for Learning assures curriculum will be labeled as deficient, not children. UDL ensures that students can enter the school and open the door to learning. Universal Design for Learning, coupled with social justice, can create access and equity
to learning and give a voice to all children. Every child a seat at the table. Every child a voice at the table.
Appendix A

Definition of Terms

Universal Design for Learning (UDL)

Universal Design for Learning (UDL) is a framework created by the Center for Applied Special Technology (CAST) that can increase and augment teaching and learning for students in the PK-20 classroom. It is a framework based on brain research that indicates that there is a wide range of learner variability as opposed to an “average” learner to which all teachers should gear their lessons.

Pre-service teachers

Pre-service teachers are candidates in college or university teacher preparation programs who are not yet credentialed.

Access to the curriculum

Access to the curriculum indicates that a student in a classroom is able to understand and learn the content that is being presented by the teacher.
Appendix B

Universal Design for Learning Guidelines
Appendix C

Observation Record
# LMU LA
School of Education

## Clinical Support Services

### Observation Record

**Date**

**Term** Fall 2016

**Observation Number**

**Program**

**Cohort**

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<td>On-Site Support Provider / Master Teacher Information</td>
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**Unit Outcome Goal**

- Observed working with English Learners

**Candidate Reflections:**

**Evidence:** A minimum of one strategy per category is required.

Successful strategies were found in the following areas:

**Classroom Management:**

**Unit Outcome**

157
Assessment (informal / formal):

Recommendations for Change:

---

Fieldwork Instructor Signature (type your full name)  Date

I acknowledge that by typing my name, I am signing this form, which is as binding as a live signature. My signature also verifies that I have discussed this evaluation with the candidate and that he/she is fully aware of the results.

When you are finished:
1) Use the SAVE function to save the data for your records.
2) EMAIL Observation as an attachment to LMU.
## Appendix D

### Clinical Practice Observation Tool

**Clinical Practice Observation Tool**

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- Candidate First Name: 
- Candidate Last Name: 

**School Site Information:**
- School Name: 
- School District: 
- Grade Level: 

**Fieldwork Instructor Information:**
- FI First Name: 
- FI Last Name: 

**District Endorsed Support Provider Information:**
- SP First Name: 
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<th>3</th>
<th>2</th>
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<th>Multiple Means of Action and Expression</th>
<th>Multiple Means of Engagement</th>
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(D. Fogarty, 2017)
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<th>Communicating with Families</th>
<th>(4 \quad 3 \quad 2 \quad 1 \quad N/O)</th>
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<tr>
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<tr>
<th>Participating in the Professional Community</th>
<th>(4 \quad 3 \quad 2 \quad 1 \quad N/O)</th>
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<th>Growing and Developing Professionally</th>
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<th>Showing Professionalism</th>
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Clinical Observation Tool aligned with The Danielson Framework for Teaching (Danielson, 2014) and Universal Design for Learning (CAST, 2015)

4=Exceeds Expectations 3=Meets Expectations 2=Developing 1=Emerging N/O=Not Observed

Universal Design for Learning-Circle UDL principles present in lesson

(0. Fogarty, 2017)
REFERENCES


Loyola Marymount University School of Education Special Education Program Outcomes (2016).


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