

(Dis)ability Workshop:  
The Effect of Growth Mindset and Universal Design for Learning on Teacher  
Understanding of Disability and Intelligence

by  
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## ABSTRACT

According to national data, there continues to be an ongoing achievement gap between students with disabilities and their non-disabled peers (USDE, n.d.b). This data is representative of a continued disparity in academic performance for students in local Arizona school districts. To address this gap, many districts have implemented inclusion models in which students with disabilities spend increasing amounts of time in general education classrooms, in some cases for the majority of or all of their school day. However, the persistence of the achievement gap suggests that general education teachers working in inclusion models may be lacking systematic instructional methods for ensuring access to the curriculum for those with disabilities and other diverse learning needs.

The purpose of this action research study was to examine the impact that a series of professional development workshops had on teacher beliefs and understanding of disability, intelligence, and accessible pedagogy. The study was conducted over the course of a school semester at a kindergarten through 8<sup>th</sup> grade school in a large, semi-rural school district in southeastern Arizona. Ten teachers from a variety of grade levels and subject areas participated in the study along with a school psychologist and two school administrators. Theoretical frameworks guiding this project included critical disability theory, growth mindset, universal design for learning, and transformative learning theory. A mixed-methods action research approach was used to collect both qualitative and quantitative data in the form of surveys, interviews, and written reflections. The workshop series included five modules that began with activities

fostering critical reflection of assumptions regarding disability and intelligence and ended with pedagogical strategies in the form of universal design for learning.

The results indicate that the innovation was successful in reshaping participant views of disability, intelligence, and pedagogy; however, changes in classroom instruction were small. Implications for future research and practice include more extended sessions on universal design for learning and a more diverse sample of participants. Workshop sessions utilized a variety of active learning activities that were well received by participants and will be included in future professional learning plans across the district.

## DEDICATION

To my wife, best friend, and lifelong companion.

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## Chapter 1

### INTRODUCTION

*Mr. Applewood walks into his 4th period English class, excited to start another year of school molding the minds of young freshmen high school students. As he makes his way to the front of the room, he already knows each child by name, making an effort to memorize faces from the class roster before school started. He takes a moment to glance at the youthful expressions staring back at him, continuously evaluating the needs of each child as he plans out the lesson in his mind. Johnny has an Individualized Education Plan for a reading disability and requires accommodations, April is a gifted learner and needs accelerated content, Javier is an English Language Learner and has yet to master much of the English language, Rachel has a 504 plan for ADHD and has difficulty sustaining focus, Emily is homeless and living in a shelter with her parents...and so it is for every child. Mr. Applewood is an excellent teacher, but he struggles with how to address such a vast set of needs. He is, however, committed to every student's success, passionate about teaching, and tenacious in meeting these challenges, so he takes a deep breath and begins.*

### **National Context**

There are three landmark federal legislative acts responsible for advancing equitable educational access for students in marginalized subgroups. These include the Elementary and Secondary Education Act, also known as the Every Student Succeeds Act (ESSA) reauthorized in 2016, the Individuals with Disabilities Education Act (IDEA)

last reauthorized in 2004<sup>1</sup>, and the Jacob K. Javits Gifted and Talented Students Education Act (USDE, n.d.a). Specifically, each law targets one or more student subgroups, including students with disabilities (SWD), students with gifts and talents (SGT), English language learners (ELLs), and students of low-income or low socioeconomic status, with the intent to ensure equitable educational access and improved academic, behavioral and social performance (Artiles, 2003). The regulatory framework enacted by these laws requires states to measure academic performance and report information back to the federal government on an ongoing basis (Bateman & Cline, 2016). Accountability data include participation rates and achievement on state-mandated assessments, development and implementation of state and district systemic improvement plans, rates of students educated in general education classrooms, and post-secondary student outcomes with respect to engagement in higher education or workplace settings (USDE, n.d.b).

With reference to students with disabilities specifically, federal and state education agencies administer mandatory accountability systems measuring compliance with federal regulations pertaining to the IDEA. Previously, these systems focused exclusively on procedural compliance driven by the Office of Special Education Programs (OSEP) within the U.S. Department of Education (IDEA, 2004). OSEP requires states to monitor a variety of indicators tied directly to specific criterion in federal regulations and report that information back to the federal education agencies (Bateman & Cline, 2016). However, recent action by the U.S. Department of Education

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<sup>1</sup> The actual title of the IDEA 2004 revision is the Individual with Disabilities Education Improvement Act (IDEIA). However, common terminology still refers to the law as the IDEA.

led to a shift in policy away from strict procedural compliance and toward a system of accountability built on student outcomes and academic performance. OSEP developed a new monitoring structure termed *Results Driven Accountability* (RDA) – tasking school districts and state education agencies with reducing the achievement gap between SWD and their non-disabled peers on state and national assessments (e.g., National Assessment of Educational Progress [NAEP], American College Test [ACT], etc.). This represents a dramatic departure from previous compliance-only oversight mechanisms and puts the focus back on student performance. The Department of Rehabilitative Services outlined RDA in a 2014 letter:

The U.S. Department of Education (Department) is implementing a revised accountability system under the IDEA known as Results-Driven Accountability (RDA), which shifts the Department’s accountability efforts from a primary emphasis on compliance to a framework that focuses on improved results for students with disabilities, while continuing to assist States in ensuring compliance with the IDEA’s requirements. (Delisle & Yudin, 2014, p. 1)

The restructuring of state and district compliance frameworks reinforces the need for local districts to evaluate instructional delivery and educational programming for students with disabilities to ensure a continuous reduction in the academic achievement gap between SWD and their nondisabled peers.

### **Movement Toward Inclusive Practices**

Classrooms continue to diversify and become more heterogeneous in composition regarding student demographics. Data indicate that a greater percentage of students with disabilities and gifts and talents are now educated in general education classrooms.

According to the National Center for Education Statistics (2015), SWD constitute approximately 12% of the total student population along with 6% for SGT. SWD spend the majority of their school day in general education settings, with over 60% of SWD included for over 80% of the day, and 90% included for 40% or more of their school day (NCES, 2015). These data suggest that general education teachers now have a greater share of the responsibility for the education and subsequent academic outcomes of SWD.

Various groups and organizations advocating on behalf of SWD support OSEP's position on the need for integration and inclusion. The Council of Administrators of Special Education (CASE), a division of the Council for Exceptional Children (CEC)<sup>2</sup>, identifies unified (inclusive) education as a means for supporting all students, not just those with disabilities (CASE, 1997). They describe inclusion as more than placing students into a classroom or "mainstreaming" students without proper supports and services, stating, "the practice of inclusion transcends the idea of physical locations and incorporates basic values that promote participation, friendships and interaction in all aspects of education and community life" (CASE, 1997, p. 1). It can be thought of as an "alignment of educational philosophies" (Artiles, 2003, p. 165), whereby special education and general education are not seen as separate pedagogical disciplines, but complimentary and integrated components of one educational system. However, there continues to be resistance in education systems to many principles of inclusive practices (Orr, 2009) and those barriers perpetuate educational disparity for SWD (Artiles, 2003).

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<sup>2</sup> The Council for Exceptional Children is a national advocacy organization focusing on special education policy and support.



National political trends and societal changes continue to advance the movement towards inclusive practices for all students. However, state education agencies set local norms and administrative rules that govern the manner and extent to which districts must include and appropriately educate students with disabilities. For example, the Arizona Department of Education monitors local school districts and other local education agencies (LEAs) on various measures of academic and behavioral performance (ADE, n.d.a.). Such effort is designed to ensure students are provided an equitable educational opportunity compared to their non-disabled peers (ADE, n.d.a). The number of students taught in segregated classrooms entirely removed from their non-disabled peers constitutes one measure of procedural compliance known as least restrictive environment<sup>3</sup> (ADE, n.d.b). Districts that have a high number of SWD in these segregated settings (special education classrooms) may be penalized for not appropriately serving their students with special needs in the least restrictive environment as mandated by the Individuals with Disabilities Education Act (IDEA).

Federal agencies, national advocacy organizations, and state education departments all uphold a legislative duty to ensure equitable educational opportunity through the inclusion of students with disabilities in general education settings. The results of these efforts can be seen in the increasing numbers of SWD spending most or all of their school day in typical classrooms (NCES, 2015). Such increasing classroom

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<sup>3</sup> §300.114 Each public agency must ensure that: (i) To the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities, are educated with children who are nondisabled; and (ii) Special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only if the nature or severity of the disability is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily.

diversity emphasizes the need for classroom teachers to utilize a greater degree of flexibility, responsiveness, and differentiation in how they deliver classroom instruction (Bogdan, 2011). It is imperative that teachers are trained and supported in the effort to redesign their pedagogy in accordance with these changing demographics and classroom structures.

### **Situated Context**

For the past seven years I have worked in a mid-large rural K-12 school district located just outside the Phoenix-metro area. The district serves approximately 9,500 total students, 59% qualifying for free or reduced lunch, 20% ELLs, 14% identified as students in need of special education, 3.5% gifted and talented, and 1.3% of students qualifying for a 504 plan<sup>4</sup>. The District has eight K-8 schools, three comprehensive high schools, an alternative school, and a school for students with severe emotional and behavioral disabilities. District geographic boundaries cover over 800 square miles and serves communities across three different municipalities. All but two of the schools were built within the last 12 years, a result of the housing boom of the mid to late 2000's.

After spending several years as a classroom teacher and instructional coach, I was appointed as the director of exceptional student services. As director I was tasked with overseeing the provision of special education services for students with disabilities, students with 504 accommodation plans, and students identified as gifted and talented. I ground my personal educational philosophy in the belief that all children, regardless of ability, have the right to be educated with their typical peers. It is thus the responsibility

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<sup>4</sup> Section 504 of the Rehabilitation Act of 1974 requires schools provide protections and accommodations for students with disabilities. Students are eligible for section 504 plans even if they are not eligible for special education.

of educators (teachers, administrators, etc.) to ensure the environment is conducive to a variety of different learning needs. Advocating for the use of inclusive practices and the application of universally effective instructional methods was the most critical aspect of my job as special education director and continues to be a major focus for me in my current position as assistant superintendent.

An increased emphasis on standardized assessment performance has been a critical factor in measuring school and teacher effectiveness at the national and state level. This rise of the “testing culture” was originally initiated by accountability provisions in No Child Left Behind (NCLB) and continues to be sustained by the Every Student Succeeds Act (ESSA). ESSA requires states to disaggregate testing data so that targeted subgroups such as SWD, can be compared to their typical peers. Significant disparities in achievement, or achievement gaps between such subgroups, may lead to additional federal oversight for states and possible state oversight for schools. The Arizona Department of Education uses this information to determine individual teacher ratings through a formulation known as the value-added model, which uses student test scores as the primary indicator of effectiveness in teacher evaluations. Since 46% of SWD in my district spend more than 80% of their school day in a general education classroom alongside typical students, there is tremendous pressure placed on general education teachers to meet the needs of students in integrated classroom settings. In essence, the evaluation of general education teachers now depends in large part on how SWD across all content areas perform on standardized assessments.

My district has established four priority initiatives in an effort to improve academic outcomes and reduce academic disparities among targeted student subgroups.

These major district-wide initiatives frame all the instructional decisions and professional development teachers receive. They are (a) multi-tiered systems of support (positive behavior interventions and supports and response to intervention), (b) signature school programs (STEM and International Baccalaureate), (c) co-teaching, and (d) 1:1 technology integration (every student receives a computer or other device). Every school within the district is at various stages and iterations of implementation with respect to the four major initiatives. This unique context makes attempts to shape educational practices dependent on the individual school site and administrative team. To address the need for teaching classrooms with greater student diversity, professional development and training must fit within the goals and objectives of these four focused initiatives.

Together this frames my work as assistant superintendent, at times both supporting and sometimes constraining efforts to ensure effective inclusive services. However, in general, the implementation of these initiatives helped move our district away from old-fashioned educational models and towards more inclusive educational services for SWD

### **A Need in Practice**

For much of the recent past the district has relied on a traditional “pull-out” model of special education service delivery by removing SWD from general classroom settings for core content instruction and placing them in special education classrooms (resource rooms) alongside other SWD. Although resource services have been the primary method for satisfying the requirement for differentiation and specialization of core content instruction for SWD, in the past few years the district has made a shift towards providing those services in general education classrooms. Informed by data from the OSEP

indicating a continuous gap in academic achievement between SWD and their non-disabled peers and research suggesting that SWD had better academic outcomes when provided instruction in general education classrooms peers (Rea, McLaughlin, & Walther-Thomas, 2002), I made the determination that students needed to receive core content instruction primarily in the general education classroom. So, I worked to shift the district towards providing SWD greater access to general education. Even though there is significant variability in the implementation model from school-to-school, those that have a high percentage of inclusivity (e.g., proportion of special education students serviced in a general education classroom) tend to have better academic outcomes.

Service delivery for special education students can range from completely inclusive to fully segregated. Some students only receive minimal services from a special education teacher and are taught fully in general education classrooms, others are taught using co-teaching, and still others have no inclusion in general education. Co-teaching directly targets integrated classrooms through collaborative teaching models. Our co-teaching framework is designed to promote shared responsibility for all students among general and special education teachers and to provide more robust special education services within the general education classroom. Still others rely on a “resource” model where students are completely removed from the general education classroom for one or more academic content areas. Two of the 13 schools in my district use the resource model exclusively, nine schools use a combination of pull-out services and some model of co-teaching or inclusion, and two schools use an inclusive-only model.

When examining district performance data on high stakes standardized assessments, there is a clear indication that an inclusive service delivery model leads to

better academic outcomes when compared with a segregated service delivery model. I came to this conclusion after examining data from one district school primarily using an inclusive model (i.e., students receiving services in the general education classroom) and a district school primarily using a segregated model (i.e., students receiving services only in a special education classroom). Data was collected for AIMS<sup>5</sup> scores in math, reading, and writing for the 2011-2014 school years. The segregated school, using a pull-out service delivery model, included 95% of SWD taught in separate classrooms; the inclusive school using a mostly integrated model included 75% of SWD taught in general education classrooms with special education services. Upon comparison there was a 20% increase in the number of SWD students meeting proficiency in reading and math for the inclusive school. In addition, the achievement gap between SWD and non-disabled peers *widened* for the school implementing the traditional pull-out model, whereas the gap *narrowed* between student groups in the inclusive school (figures 1 and 2). This district data supports the premise that inclusive models of service delivery are a more effective instructional approach for students with disabilities. This model is also in alignment with the Office of Special Education Programs initiatives for accountability as well as the intent of the IDEA (2004) mandates for least restrictive environment (LRE).

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<sup>5</sup> AIMS stands for the Arizona Instrument for Measuring Standards. This test was phased out during the 2015 school year for reading and math but remains as a testing instrument for science.

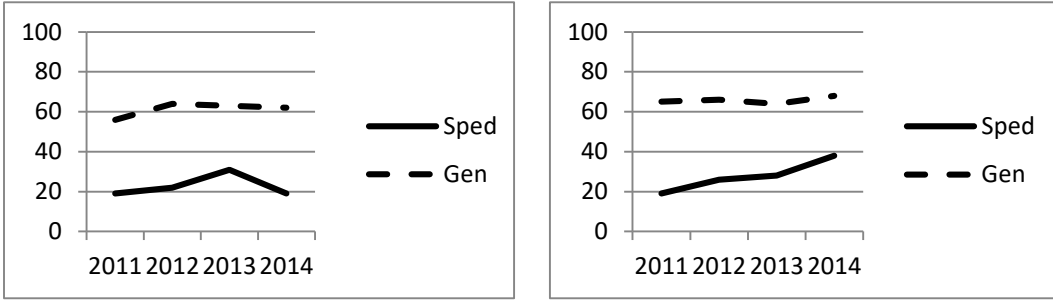


Figure 1. Graph of English Language Arts Test Scores. The left graph displays the AIMS ELA test scores for students with and without disabilities for the resource school and the right graph displays ELA scores for the inclusive school.

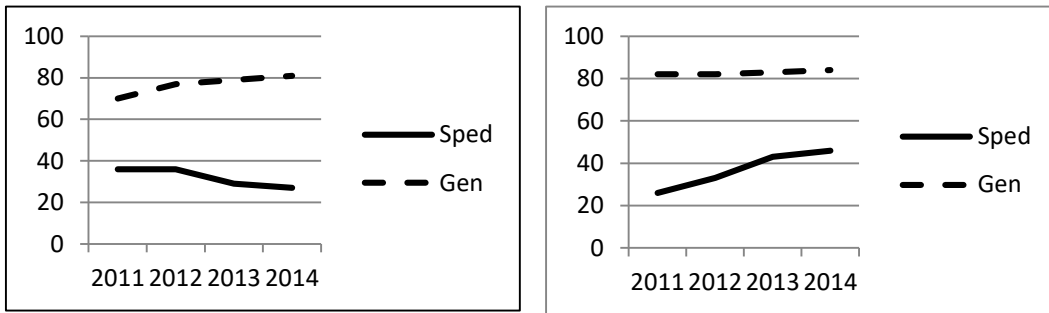


Figure 2. Graph of Math Test Scores. The left graph displays the AIMS math test scores for students with and without disabilities for the resource school and the right graph displays math scores for the inclusive school.

Despite identifying that general education classrooms typically provide greater benefit to students with disabilities, there exists a significant gap in effective instructional practices for teachers in these settings. Many teacher surveys, informal interviews, and classroom observations collected as part of my normal duties as a special education director over the last several years indicate that classroom teachers are ill-equipped to effectively teach to the diversity of student need that currently exists in their classrooms. During conversations with staff, it was confirmed that many believe ability and intelligence to be fixed assets that are unchangeable in students. Often teachers would say, “he is too low for my class” or “I have a bunch of smart kids and it’s hard for others

to keep up.” Such static terminology appears to impose a permanent judgement about intellect and ability, shaping teacher expectation about student performance. Teachers also identify disability generally, in addition to categories of specific disability, as reason for exclusion from the general education curriculum. “He has autism,” or “He can’t read because of his specific learning disability,” illustrate and reinforce the belief that students with disabilities are incapable of accessing content in typical classroom settings. This terminology also creates an “othering” where eligibility for special education immediately demarcates SWD from their peers. Teachers typically talk in fixed terms, usually with regard to a single learning characteristic as a justification for curriculum exclusion, even if that student continues to be educated in the general education classroom. This information suggests that teachers’ lack of professional knowledge about disability, learning, and intelligence leads to a fixed mindset which contributes to the continued gap in academic achievement for SWD in general education classrooms.

A second major conclusion drawn from data taken during classroom observations suggests that there continues to be inflexibility in classroom instruction and a lack of proper differentiation needed to effectively educate SWD in general education settings. The majority of classroom teachers lack instructional flexibility and pedagogical practices centered on differentiation. Although there is variation from classroom-to-classroom and school-to-school, many teachers provide monomodal instruction lacking in curriculum accessibility for students at the margins. Content tends to be delivered with very little of the differentiation or student choice fundamental to meeting the needs of all students. For example, in one classroom I observed, the teacher asked students to write about a book they recently read. Each student was required to summarize the information



on a sheet of paper and then write their own story on the back side. The only differentiation appeared to be that some students were given wider-lined paper or had to read a different story, presumably one of lower Lexile level. This left students who struggled as well as those who excelled from experiencing any substantive academic growth. Although this teacher worked hard to create an engaging and meaningful learning experience, it was clear that she was missing some crucial tools and practices to enhance her instruction so that it met the needs of all students in her classroom. Pedagogical skill in delivering accessible instruction and lesson design are critical elements for educating SWD in the general education classroom.

Given the diverse set of learners across the district, it is critical that teachers provide differentiated instruction to meet the needs of all their students. As the field of education moves towards more inclusive models emphasizing the belief that “all students means *ALL* students” (Anderson, 2007; Patterson, Connolly, & Ritter, 2009), flexible pedagogy and an asset-based, growth mindset need to be integrated into all teacher practices. It was clear that for me to fulfill my responsibility as assistant superintendent, I needed to design a way for teachers to improve their instruction so that SWD as well as those all across the learning spectrum receive high quality instruction in inclusive settings. Although as a district we are moving towards integrating special education into general education settings, most teachers are ill-equipped to teach the student variability brought about by inclusive practices. They demonstrate a gap in both the mindset and pedagogical knowledge required to effectively address integrated classroom settings.

## **Purpose of the Study and Research Questions**

The purpose of this study is to evaluate the efficacy of an innovation designed to improve teacher effectiveness at instructing students with disabilities. My innovation, the *(Dis)ability Workshop*, addressed the need to provide teachers with an asset-based growth mindset and expanded pedagogical skill in designing instruction that makes the curriculum accessible for all students. The *(Dis)ability Workshop* included a series of five professional development sessions focusing on disability awareness, growth mindset, and universal design for learning. Although the focus of this study is on students with disabilities specifically, it is important to recognize the impact accessible instruction has on other groups of learners such as those with gifts and talents, English language learners, and others (Rocco, 2005). This study is designed to answer the following research questions;

- RQ1. How and to what extent do teachers' beliefs and understanding of ability and disability change after the (dis)ability workshop?
- RQ2. How and to what extent do teachers' beliefs and understanding of accessible instruction for diverse classrooms change after participating in the (dis)ability workshop?
- RQ3. How and to what extent have teachers gained the necessary confidence, insights, and skills about how to begin to incorporate UDL and growth mindset into their instructional design after participating in the (dis)ability workshop?
- RQ4. How do teachers perceive the (dis)ability workshop as a professional learning experience?

## Chapter 2

### THEORETICAL PERSPECTIVES AND RESEARCH GUIDING THE PROJECT

My action research study draws on five major bodies of literature that informed my innovation and research design. In this chapter, I detail each of the theoretical and conceptual frameworks using primary source material and related literature. Critical disability theory grounds the study, followed by literature on inclusive education, growth mindset, universal design for learning (UDL), and finally transformative learning theory. Each section outlines core concepts of the theory, followed by supporting scholarship and practical implications for the research project.

#### **Critical Disability Theory (CDT)**

Rocco (2005) conceptualized critical disability theory (CDT) following her research into critical race theory and disability studies. All critical theories examine unequal power dynamics and embedded social inequality, such as with race and gender inequality. However, prior to Rocco's work there had not yet been a melding of critical theory with disability studies. CDT challenges assumptions about persons with disabilities—namely that disability is an innate characteristic—and instead argues that the concept of disability itself is only a social construction. The ultimate goal of CDT is to forward social justice for individuals who are disabled by advocating for full societal participation and inclusion (Devlin & Pothier, 2006). As an often-marginalized population, persons with disabilities endure substantial inequality and barriers in school (Shogren, et al., 2015), post-secondary settings (Hutcheon & Wolbring, 2012), and the workplace (Malhorta, 2006). Such obstacles are reinforced by the current social system that constructs disability through a biomedical model.

The biomedical perspective identifies disability as an innate deficit, permanently affixed to a person's identity (Rioux & Valentine, 2006). CDT argues, however, that it is *society's* unwillingness to adapt to the needs of individual with disabilities that creates barriers to genuine belonging and adequate societal participation (Rioux & Valentine, 2006). Mang Ling Lee (2006) cites the World Programme description in her work on *disability as multicultural citizenship* by stating, "...that the handicap experienced by a disabled person is as much a social condition created as a result of the constraint as it is a physiological constraint" (p. 90). Lee suggests that disability is more about the intersection between social norms and individual difference than it is about a particular personal deficit. This contrasts with the biomedical model of disability by advocating a human rights approach, targeting the elimination of existing barriers through physical, economic, social, and political reforms (Rioux & Valentine, 2006). Six core principles explain CDT:

- disabled people have a unique voice and complex experience;
- disability should be viewed as part of a continuum of human variation;
- disability is socially constructed;
- ableism is invisible;
- disabled people have a right to self-determination;
- the commodification of labor and disability business (the industry that exists to care for people with disabilities such as nursing homes, step down facilities, etc.) combine to maintain a system of poverty and isolation among people with disabilities

(Rocco & Delgado, 2011, p. 7-8).

Understanding disability as a socially constructed phenomenon with implications for addressing inequities and matters of social justice provides a theoretical framework to guide this project. The theory challenges the assumption that those with disabilities require “alternative” methods of instruction and participation in education institutions. As stated by Rioux and Valentine (2006), “A critical disability theory approach offers an important lens in unravelling the inherent complexities associated with disablement and equality” (p. 47). The related literature on inclusion serves to inform the current state of inclusive practices, and although not all research examined inclusion through a CDT perspective, my study interprets the educational mindset of teachers and curriculum design as the main socially constructed barrier preventing full inclusion and participation.

### **Inclusive Education**

Two distinct discourses frame the scholarship on inclusive education—one situates inclusion as a *discourse on efficacy* and the other as a *discourse on rights-and-ethics* (Artiles, 2003). The efficacy discourse argues measurable academic achievement is the primary justification for inclusive practice; the rights-and-ethics discourse argues inclusion is a matter of social justice. Literature on each of these respective discourses serves to better inform the current state of inclusive practices and to illuminate potential barriers to implementation. Findings from this research frame my study by establishing a compelling need to promote better inclusive education.

### **Efficacy**

Peer reviewed literature and federal legislation support the placement of SWD in general education settings. Predicated on the idea that general education teachers and classrooms provide the best opportunity for individual student success, all subgroup

student categories (e.g. students with disability, English language learners, gifted, etc.) should be included in general instruction alongside typical peers. Arguments supporting “non-general” classroom placements for students (e.g., special education classroom, resource rooms, or special schools) may be less effective in meeting the goal of improved student achievement on several measures. Several decades’ worth of empirical data supports the use of inclusive schooling as a means of improving academic, behavioral, and social outcomes for all students (Erten & Savage, 2012; Marks, Kurth, & Bartz, 2014; Oh-Young & Filler, 2015). In addition, the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004<sup>6</sup> drives inclusive practices by requiring the education of students in their least restrictive environment or LRE – a mandate forcing schools to first consider the general education classroom as the most appropriate educational setting before potentially removing the student to a special education classroom (USDE, n.d.a).

Several studies have supported the use of inclusive education to satisfy the goal of improved academic and social learning for students with disabilities. Rea, McLaughlin, and Walther-Thomas (2002) compared the use of inclusive and segregated special education service delivery for a group of middle school students with learning disabilities. Researchers determined that students in the inclusive group made substantially more academic progress, had the same or fewer behavioral issues, and had more consistent school attendance than peers in pullout classrooms (Rea, McLaughlin, & Walther-Thomas, 2002).

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<sup>6</sup> The 2004 revision of IDEA.

Oh-Young and Filler (2015) conducted a large meta-analysis examining placement effects on student academic and social outcomes. Findings indicate that students in more integrated settings (i.e., inclusive settings) outperformed those educated in less integrated settings on both academic and social measures (Oh-Young & Filler, 2015). Both studies reinforce Artiles' (2003) conclusion that segregated programs fail to demonstrate greater success in providing measurable academic gains, nor do they show greater results in improving the social emotional needs of learners with disabilities.

Benefits of inclusive practices may also extend beyond the pk-12 school system. Research suggests that placement in an inclusive classroom for the majority of a student's high school career has a significant positive effect on postsecondary engagement (Rojewski, Lee, & Gregg, 2015). Students spending at least 80% of their school day in inclusive settings were up to twice as likely to be actively participating in postsecondary programs – college, gainful employment or vocational training (Rojewski, et al., 2015). In summary, a robust body of research on inclusion suggests inclusive education better meets the social, academic, behavioral, and postsecondary needs of students with disabilities.

### **Rights-and-Ethics**

Inclusion has garnered significant attention from the world community as a critical human rights issue. The United Nations Educational, Scientific and Cultural Organization (UNESCO) identifies the Education for All (EFA) movement as their platform for inclusive education (Erten & Savage, 2012; Orr, 2009; Tetler & Baltzer, 2011). EFA attempts to bring global attention to the issue of inclusion. The basis for inclusion from a right-and-ethics perspective is the belief that disability is a social

construction and that schools must adapt to individual student needs rather than forcing students to change to fit the traditional school structure (Erten & Savage, 2012). Such discourse moves away from the medical model that perpetuates the idea of disability as a deficit innate to the individual and towards a social-cultural model interpreting disability as just part of normal human variation (Rocco, 2011). The disabling condition is therefore present in the environment, not the individual, and thus the environment should be the focus of modification (Rocco, 2011).

Inclusive education institutions therefore adopt the social-cultural model of disability and reject the diagnostic medical model (Maxam & Henderson, 2013). This is closely aligned with critical disability theory (CDT), challenging the idea that the individual is disabled rather than the educational system itself. The rights-and-ethics discourse differs from the efficacy discourse by establishing social acceptance as the ultimate moral imperative rather than academic achievement. Schools, however, continue to emphasize proficiency over belonging, perpetuating segregated practices in the name of academic performance (Fruth & Woods, 2007). Inclusive education moves beyond mere quantifiable academic improvement into cultural inclusion and participation.

Several studies have examined key characteristics of inclusive schools, concluding that school culture is a major factor contributing to the adoption of inclusive practices (Buell, Hallam, & Gamel-McCormick, 1999; Orr, 2009; Tetler & Baltzer, 2011; Wallace, Anderson, Bartholomay, & Hupp, 2002). Orr (2009) engaged student teachers in a participatory action research study aimed at exploring elements of successful inclusive schools and identified a school-wide philosophy of inclusion, effective partnerships between general and special educators, and positive attitudes of general



education teachers as main themes. Orr (2009) explained, "...co-researchers in highly inclusive settings described interpersonal dynamics that exceeded mere positive attitudes between general and special educators" (p. 237). Additionally, Tetler & Baltzer (2011) studied student perceptions of inclusion and determined that inclusive schools fostered positive attitudes among students. The creation and sustaining of inclusive schools, communities, and societies, improves academic, social, and behavioral outcomes, fulfills social justice goals, and establishes positive school cultures. However, obstacles to inclusive practices are frequent and prevent adoption of the social-cultural view of disability in schools.

### **Barriers to Inclusion**

Literature suggests several common challenges to adopting inclusive practices preventing large-scale implementation of inclusion as a standard educational value and practice. Barriers include a lack of valid assessment tools for inclusion (Soukakou, 2011), collaboration between general and special education teachers (Jones, 2012), professional development (Buell, et al., 1999; Kosko & Wilkins, 2009), general education teacher self-efficacy (Orr, 2009; Savolainen, Engelbrecht, Nel, & Malinen, 2012), lack of district and school leadership (Marks, et al., 2014), and teachers' attitude towards inclusion of students with disabilities (MacFarlane & Woolfson, 2013). Maxam and Henderson (2013) found additional barriers when they examined a rural high school whose principal attempted to implement inclusive practices. This case study found the principal dealing with shortages of funds, lack of district support for inclusion, and a resistant teaching staff as significant challenges in adopting a school-wide inclusive mindset (Maxam & Henderson, 2013). The elimination of such barriers in pursuit of social equity for students

with disabilities drives this study. My focus on providing effective methodological and pedagogical teaching practices is designed to minimize obstacles to inclusive practices and maximize equitable educational access.

### **Growth Mindset**

Intellect has long been thought to be a static unchangeable trait, permanently represented by a single number (IQ), unalterable throughout a person's lifetime (Dweck, 2006). However, alternative models of intelligence and learning suggest that traits considered invariant are in fact malleable, and that intelligence, once thought of as the summative measure of potential, is vulnerable to environmental influences, expectations, and internal motivation (Dweck, 2006). Extensive research into implicit theories of intelligence, stereotype threat, student failure, and attribution theory, led Carol Dweck to conceptualize these implicit beliefs about intelligence as "mindset" to better explain how individuals learn (Dweck, 2006; Gutshall, 2014; HGSE, 2007). Dweck's theory explains that individual performance varies depending on the type of *mindset* teachers and students adopt. It is often the case that students outperform those of greater intellectual ability if they internalize the concepts identified in mindset theory (Blackwell, Trzeniewski, & Dweck; 2007).

There are two types of mindsets: *fixed mindset* (entity theory of intelligence) and *growth mindset* (incremental theory of intelligence) (Haimovitz, Wormington, & Corpus, 2010). Fixed mindset individuals, also called "entity theorists" (HGSE, 2007), see failure and performance outcomes (positive or negative) as part of their identity and perceive intelligence to be a fixed personal trait. Entity theorists ascribe this inalterability to many other behavior-based characteristics such as being smart or dumb, good or bad (Dweck,

2006). Individuals with fixed mindsets internalize failures, and view such failing as a summative judgment on ability (Dweck, 2006). It is not “I failed” but “I am a failure” (Dweck, 2006). Failure to those with fixed mindset constitutes “evidence of their own immutable lack of ability” (HGSE, 2007, p. 2). Effort, for those with fixed mindsets, represents inability, something to be avoided; if one is intelligent they shouldn’t have to put forth effort (Dweck, 2006). Individuals with fixed mindsets also take less risk, are less persistent, and avoid instances of potential failure since this would attack their personal identity as a “smart person” (Dweck, 2006).

Most concerning is that the appropriation of fixed mindset is not bound by grade level, and students as young as third grade are susceptible to the negative impact of fixed mindset beliefs (Haimovitz, et al., 2010). Growth mindset offers an alternative understanding of intellect than posed by the entity theory.

Growth mindset embodies the antithesis of the fixed mindset. Those with a growth mindset see intelligence, ability, and performance as mutable skills, alterable with effort and feedback (Dweck, 2006; HGSE, 2007). Failure is not something to be avoided, but opportunity for feedback and improvement (Dweck, 2006; HGSE, 2007).

Growth mindset correlates consistently with higher student outcomes when ability is perceived to be changeable (Claro, Paunesku, & Dweck, 2016). People with a growth mindset seek out challenge, display persistence, and learn from their mistakes (Dweck, 2006, 2010). Mistakes are considered informational nuggets that students with growth mindset mine for improvement (Dweck, 2010). Strong evidence suggests more than a mere correlation, growth mindset may have a causal role in student achievement and success, even acting as a countervailing force to the effects of poverty (Claro et al.,

2016). More desirable student outcomes for those with growth mindsets even holds true at every socioeconomic level (Claro et al., 2016).

Growth mindset promotes internal motivation, leading to improved student performance (Duckworth & Seligman, 2005; Dweck, 2006). For instance, self-discipline (one of the characteristics of growth mindset) was found to be twice as likely to predict academic performance than was IQ, correlating with higher GPA, standardized assessment, and competitive school admission (Duckworth & Seligman, 2005).

Duckworth (2016) conceptualized this internal persistence to continuously improve as *grit*. The grittier the student, the more likely they were to overcome personal setbacks and have positive long-term outcomes (Duckworth, 2016).

In addition, growth mindset is shown to be durable overtime and can improve student performance when used as an intervention (Blackwell et al., 2007). Researchers applied a growth mindset intervention to a group of middle school students in an experimental study, comparing a mindset (intervention) group with a control group (not receiving the intervention). Results confirmed that it was not only possible to teach students a growth mindset, but mindset interventions led to improved academic performance and motivational patterns (Blackwell et al., 2007). In addition, the effects persisted long after the original intervention was terminated (Blackwell et al., 2007). Such evidence supports the application of growth mindset interventions as a means for improving academic outcomes.

### **Growth Mindset and Learning Goals**

Personal learning goals are essential components of educational achievement. Research into student performance and goal setting suggests that goal-directed behavior

directly correlates with mindset type (Grant & Dweck, 2003). There are two goal models that serve to differentiate learner behavior: *performance goals*, which the learner uses to validate ability; and *learning goals*, which the learner uses to improve, to gain new knowledge, and to acquire new skills (Grant & Dweck, 2003). Performance goals tend to be outcome focused (achieve success) and adopted by entity theorists or those with fixed mindsets (Grant & Dweck, 2010; Mangels et al., 2006). Even when individuals with fixed mindsets do develop learning-goals, they are often avoidance-learning goals designed to “avoid looking stupid” (Burnette et al., 2013). Such goals emphasize ability over all else and can lead to considerable setbacks for learners when they receive negative feedback (Grant & Dweck, 2003).

Learning goals tend to be process focused (striving for competence) and primarily adopted by incremental theorists who have a growth mindset (Grant & Dweck, 2010). The adoption of learning goals corresponds to increases in persistence, motivation, and performance, particularly when students experience obstacles (Grant & Dweck, 2010). Individuals with a growth mindset who adopt learning-type goals tend to display greater gains in knowledge as well as respond favorably to corrective feedback when making errors (Burnette et al., 2013; Mangels et al., 2006). Those with growth mindset are more apt to adopt mastery-oriented learning goals, are less likely to have aversive experiences in their pursuit of their goals, and are more likely to exhibit a positive expectation of success (Burnette et al., 2013).

### **Teacher Behavior and Implicit Bias**

Mindset also influences pedagogical practices among teachers (Gutshall, 2013, 2014; Osterholm, Nash, & Kritsonis, 2007; Rattan, Good, & Dweck, 2012). A teacher’s

implicit theory of ability (mindset) influences their behavior, instructional approaches, and self-efficacy (Gutshall, 2013). Teachers who attributed fixed mindsets to students for example, offered them less support than teachers who attributed growth mindsets (Gutshall, 2014). Perhaps not surprisingly, older teachers are more likely to express a fixed mindset, possibly due to outdated models of learning in which they were trained (Gutshall, 2013). Teachers who adopt a growth mindset gave greater support and offered more explicit instruction to students (Gutshall, 2014). In addition, growth mindset teachers resist implicit bias regarding gender or disability status, as their expectations are not diminished due to these characteristics (Gutshall, 2013).

Implicit bias regarding disability status remains a barrier to equitable educational access. The identification and labeling of a student as learning disabled (LD) often signals to others they are someone with impaired ability. Osterholm et al. (2007) determined that the label was associated with lowered expectations and acceptance of negative stereotypes. Such implicit bias corresponds with fixed mindset regarding intellectual ability, creating a self-fulfilling prophecy with respect to student performance (Osterholm et al., 2007). Expanding growth mindset in educators may help to encourage teachers to promote growth mindsets in students and counter existing implicit biases.

In a series of studies with undergraduate and graduate students, Rattan, et al. (2012) determined that math instructors were more likely to attribute student's poor performance to low ability rather than just poor performance if they had a fixed mindset. In addition, they determined that fixed mindset led instructors to use "comforting" instructional strategies for those students which reduced subject matter engagement and lowered expectations for improvement (Rattan, et al., 2012). By contrast, instructors with

growth mindset provided more strategy-based instructional support leading to higher expectations and greater academic engagement (Rattan, et al., 2012).

Growth mindset may be prevalent in many new teachers, but there are a significant number who continue to enter the profession with a fixed mindset. Gutshall (2014) explored pre-service teachers' mindsets before and after completion of a pre-service program. Results indicate that most teachers (74%) expressed a growth mindset in the beginning of their program and continued that mindset throughout. However, there was little evidence to suggest that those with a more fixed mindset changed to a growth mindset after completing the preservice program. These findings suggest that there are still many teachers entering the profession with a static view of ability and intelligence who may benefit from in-service training designed to promote the adoption of a growth mindset.

### **Changing Mindsets**

There are several strategies that assist in fostering a growth mindset in others; emphasizing challenge not success, giving a sense of progress, and providing feedback on growth (Dweck, 2010). Growth mindset activities and psychological interventions may have lasting effects on student motivation and performance (Haimovitz et al., 2010) and may persist long after the intervention is removed (Blackwell et al., 2007). The challenge is how to apply these interventions at scale with a large number of students.

Paunesku (2015) demonstrated that growth mindset interventions are scalable given appropriate structure and support. Researchers applied a growth mindset intervention in a study of 1,500+ students across 13 different schools with only a single 45 minute session and found a positive improvement in student performance, particularly

among poorly performing students (Paunesku et al., 2015). Scaling up mindset interventions must be included as part of systems change efforts across schools and districts.

Fostering a growth mindset by reforming implicit theories of intelligence integrates with critical disability theory to create a powerful innovation designed to disrupt traditional understanding of learning, ability, and disability. Principles of growth mindset and an incremental theory of intelligence imbues each part of the innovation I apply in this study as a way to re-conceptualize intelligence. Combined with universal design for learning, which is described in the following section, teachers should be positioned with the mindset and instructional skills to improve learning for *every* student, but specifically those on the academic margins.

### **Universal Design for Learning**

Universal Design for Learning (UDL) is a framework for developing and delivering instruction that is accessible to all students (Hall, Meyer, & Rose, 2012). Rather than piece together ad hoc accommodations to meet the needs of one student or another, UDL research demonstrates that developing curriculum and instructional practices from the beginning with entry points into the lesson for *every* student is more effective and efficient than other methods of differentiation. The concept in architecture known as Universal Design (UD) created the foundational principles from which UDL was derived. UD arose as a response by architects to costly and aesthetically displeasing retrofits of existing structures mandated to provide access for individuals with physical disabilities (Rose & Meyer, 2000a). Architects soon realized that making buildings accessible for those in wheelchairs after construction was not only more expensive but



degraded the overall visual design of the building. Instead, UD offered a better framework to guide building design by integrating accessibility features for all individuals from the beginning, creating more visually appealing and functional structures (Rose & Meyer, 2000a). Curb cuts represent an everyday example of the concept of UD. Originally designed to assist those in wheelchairs in getting on and off sidewalks, curb cuts are now essential as they provide use for many with and without disabilities, such as those with sight impairments using canes, children, parents with strollers, those with bicycles, and others (Meyer & Rose, 2003).

The concept of UD was then applied to instructional design as means of adapting pedagogical approaches to increase the efficacy of teaching to a diverse population of students and a wide variety of educational need (Rose & Meyer, 2000b). A group of researchers working in a clinic for children with disabilities adopted the concept of UD and applied it to their instructional efforts (Rose & Meyer, 2000a). They found that the universality in structural design could effectively be applied in curriculum design to better service students who did not fit typical learner characteristics (Rose & Meyer, 2000a). The conceptual framework for instructional design was then renamed Universal Design for Learning (UDL).

### **Creating the Framework**

Advancements in the field of neuroscience led to the identification of three essential neurological networks or brain systems used in accessing and learning new information (CAST, 2011): the *recognition* network, the *strategic* network, and the *affective* network (CAST, 2011; Hall, Meyer, & Rose, 2012; Meyer & Rose, 2003; UDLCenter, 2014). The recognition network senses and recognizes patterns among

information, ideas, and concepts – essentially, how we gather facts (Hall, et al., 2012, p.3) or the “what” of learning (UDLCenter, 2014). Strategic networks govern the ability to plan, organize, or otherwise engage executive functioning skills – the “how” of learning (Hall, et al., 2012). Finally, affective networks provide emotional connection to content – the “why” of learning (Hall, et al., 2012). Identification of these three neural networks suggests that instruction must be tailored for students’ individual learning preferences, as “each system is marked by a set of educationally relevant characteristics that vary among individuals” (Meyer & Rose, 2000a, p. 40).

Using the three networks, researchers developed a general framework for UDL, illustrated by a set of broad principles tied directly to the previously defined brain systems. *Principle I: provide multiple means of representation* corresponds to the recognition network, *principle II: provide multiple means of action and expression* corresponds to the strategic network, and *principle III: provide multiple means of engagement* corresponds to the affective network. Each broad principle is then further refined into *guidelines* outlining the various sub-areas, and finally refined again into *checkpoints* that are specific instructional practices (UDLCenter, 2014). See Figure 3 for an outline of the principles, guidelines and checkpoints described in more detail below.

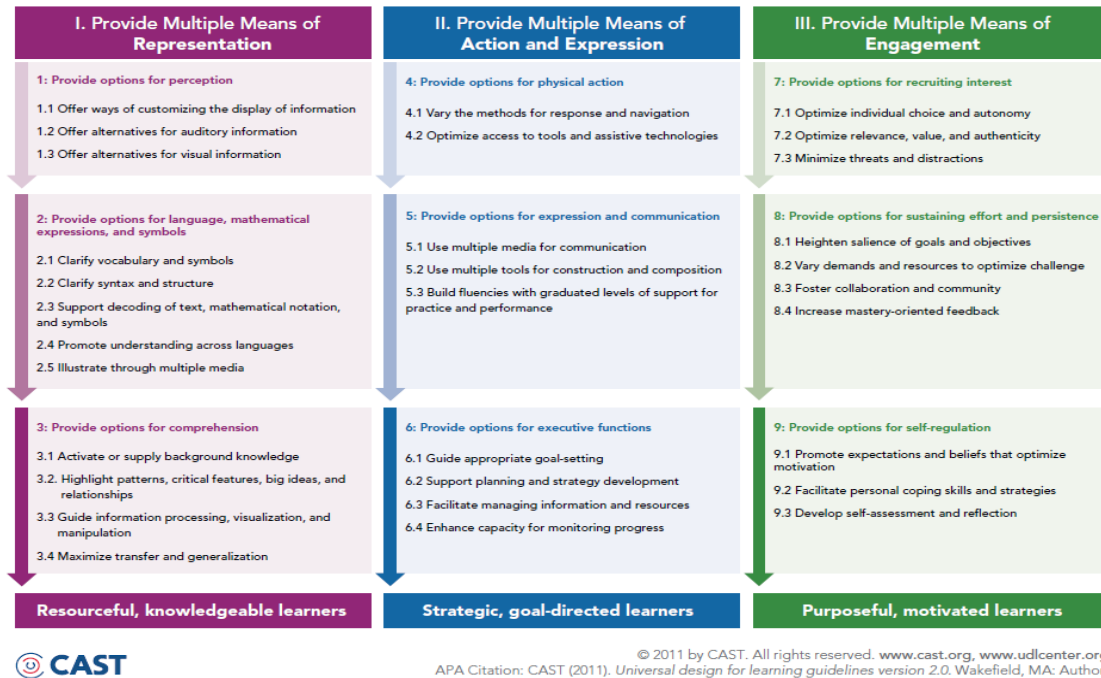


Figure 3. UDL Graphic Organizer for Principles, Guidelines, and Checkpoints (CAST, 2011).

### Principle I: Provide multiple means of representation

Individuals vary in their ability to interpret both linguistic and non-linguistic information, to perceive information from a variety of sources, and to recognize patterns among concepts (CAST, 2011; Lapinski, Gravel, & Rose, 2012). No single mode or medium is suited to the facility of all learners, and therefore a variety of representational forms should be used during instructional delivery (CAST, 2011). Without representational options many learners may fail to adequately perceive the content of the lesson due to various learning differences in how they access information. Guidelines for principle I provide options for perception, for language, and for comprehension (Lapinski, et al., 2012).

### Principle II: Provide multiple means of action and expression

Just as individuals differ in their ability to recognize and interpret environmental information, they also require varied methods for demonstrating acquired knowledge (CAST, 2011). The ability to plan and execute actions for expression are enhanced by providing multiple methods and alternative ways of “showing what they know.” Guidelines for principle II include providing options for physical actions, for expression and communication, and for executive functions (Lapinski, et al., 2012).

#### Principle III: Provide multiple means of engagement

Individuals vary significantly in their motivations to engage with content and learn materials based on a variety of personal factors including background knowledge, personal relevance, culture, neurology, novelty of tasks, and learning preferences (CAST, 2011; Lapinski, et al., 2012).

Incorporating multiple instructional methods to improve learner engagement is a critical feature of effective teaching (CAST, 2011).

Guidelines for principle III include providing options for recruiting interest, for sustaining effort and persistence, and for self-regulation (Lapinski, et al., 2012).

### **Literacy and UDL**

While UDL is still a relatively new educational practice and conceptual framework for designing instruction, recent literature highlights how UDL can be applied in practice to improve educational outcomes for a variety of learners. Rao, Ok, and Bryant (2014) conducted a meta-analysis of UDL research and identified the use of UDL

principles “for a range of purposes and examined factors as varied as learning processes, testing accommodations, technology-based learning environments, professional development, and classroom practices” (p. 162). For example, several studies looked at the application of UDL to enhance literacy instruction (Dalton, Proctor, Uccelli, Mo, & Snow, 2011; Hall, Cohen, Vue, & Ganley, 2015; Kennedy, Thomas, Meyer, Alves, & Lloyd, 2014). The following studies lend empirical support for UDL as an educational design framework.

Dalton, et al. (2011) created a web-based instructional tool for teaching vocabulary and comprehension strategies to a group of fifth grade monolingual and bilingual students. Their *improving comprehension online* (ICON) strategies incorporated elements of UDL from the three broad principles such as providing text-to-speech options, hyperlinked vocabulary, multiple response options, varied level of instructional texts, and multiple options for student choice (Dalton, et al., 2011). Both monolingual and bilingual students who received instruction with the online tool ICON outperformed the group who were taught using traditional teaching methods in vocabulary and comprehension skills (Dalton, et al. 2011).

The UDL framework proved effective in designing literacy instruction beyond the English class by improving vocabulary performance in a social studies classroom for students with learning disabilities (Kennedy, et al., 2014). Researchers developed a multimedia-based tool called *content acquisition podcasts* (CAPs), individual modules designed around UDL principles to provide vocabulary instruction. Students taught with CAPs outperformed similar peers taught in the “business as usual (BAU)” condition on measures of performance and growth (Kennedy, et al., 2014).

In a study combining UDL, reciprocal teaching, curriculum-based measurement, and sociocultural theory, Hall, et al. (2015) used a web-based interactive reading tool, *strategic reader*, to increase curriculum access and instructional flexibility for students with and without disabilities. Researchers used customizable digital versions of books along with embedded reciprocal teaching questions, ongoing progress monitoring, and a student-to-student and student-to-teacher online forum to provide multiple means of representation, expression, and engagement (Hall, et al., 2015). While some variability across settings was evident, authors concluded that “The overall impact was improved access, participation, and progress in achieving standards-based results” (Hall, et al., 2015).

Reading ability is a core area of deficit for many students struggling to access the general curriculum, with only 16% of low-income students and 8% of students with disabilities reading at grade level (Gordon, Proctor, & Dalton, 2012). UDL offers an approach designed to provide high quality literacy instruction and meaningful learning experiences through a multi-dimensional experience (Brand & Dalton, 2012).

### **Interdisciplinary UDL**

Principles of UDL continue to be supported in many areas beyond reading and mathematics for planning (Courey, Tappe, Siker, & LePage, 2012), instruction (King-Sears, et al., 2015; Marino, et al., 2014), and assessment (Dolan, Hall, Banerjee, Chun, & Strangman, 2005). The following section illustrates the flexibility inherent in the UDL framework to enhance academic outcomes.

For example, several studies demonstrate the benefits of UDL when applied to lesson planning. Courey, et al. (2012) taught pre-service teachers how to incorporate

UDL into lesson planning activities through a three-hour online training. Lesson plans developed after the training included a significant increase in UDL elements. Results also demonstrated maintenance of this skill overtime and that students continued to utilize more UDL in lesson design throughout their pre-service program (Courey, et al., 2012). Pre-service instruction in lesson planning using the UDL framework improves teacher ability to proactively adapt instruction challenging students at their own level (McGhie-Richmond & Sung, 2012). Similarly, Katz (2013) applied a three-block model of UDL that included planning as a major component to implementation with a group of 10 schools in rural and urban districts. Results of the study showed a dramatic increase in learner engagement and on-task behavior (Katz, 2013). When provided instruction and support in UDL, teachers can adapt lesson plans to accommodate all learners thus creating conditions for greater inclusion (McGhie-Richmond & Sung, 2012).

Several studies support the use of UDL for instruction in academic settings other than math or English language arts. For instance, Marino, et al. (2014) used video games as a digital platform for UDL enhanced instruction to increase learner engagement in a fifth-grade science class. Video games provided multiple means of expression, representation, and engagement, allowing students choice and flexibility in how they interacted with lesson components. Students with disabilities in the science intervention group experienced substantially greater gains than those in the control group on measures of academic performance (Marino, et al. (2014). In addition, students reported increased preference for the video game format, increase in collaborative engagement, and a connection to their personal lives (Marino, et al., 2014).

In another study examining UDL-infused science instruction, King-Sears, et al. (2015) incorporated a “multi-component module of lessons focusing on molar conversation that integrated the principles, guidelines, and checkpoints from universal design” (King-Sears, et al. 2015, p.86). The suite of lessons embedded elements of UDL such as the use of a self-management strategy, multiple options for student interests, and various tools for constructing information (King-Sears, et al., 2015). Researchers compared an experimental group that included students with disabilities (SWD) receiving the UDL-infused instruction with a control group receiving traditional instruction. Results demonstrated that SWD exposed to UDL-infused instruction scored substantially higher on post-test scores than did students taught with traditional methods (King-Sears, et al., 2015).

Providing flexible assessment methods also represents a critical component of UDL (CAST, 2011) and warrants considerable attention from educators and practitioners. Dolan, et al. (2005) used computer-based testing with text-to-speech capability and traditional paper-and-pencil tests to evaluate effectiveness of UDL when applied to assessment practices. A group of high school students took two equivalent assessments, one that was computer-based and the other paper-based. Students demonstrated a 22% higher score on the computer-based assessment than with traditional paper-and-pencil test. These findings support results reported by Marino, et al. (2014), where students expressed significant frustration with traditional paper-and-pencil tests, much preferring the digital format where options for demonstrating content knowledge were more adaptable.



## **Implications for UDL**

The theoretical principles grounding UDL – the recognition, strategic, and affective networks – offer a pedagogical framework that can support educators in designing and implementing accessible instruction. “UDL is a proactive strategy that helps teachers build differentiation into their lessons from the beginning, eliminating the need for most accommodations that teachers typically make after the fact” (Spencer, 2012, p. 11). UDL as an instructional framework informs a significant portion of the innovation for this study, the (Dis)ability Workshop. Several sessions focused explicitly on UDL and its implementation in classroom settings.

### **Adult Learning: Transformative Learning Theory (TLT)**

Learning and meaning making are contextualized activities, shaped by individualized beliefs, values, and assumptions formed through a person’s historical experience (Mezirow, 1996, 1997a, 2000). Adult learners, frequently resist or reject ideas that fail to “fit” with established epistemological and cultural frameworks constructed through this historical experience (Mezirow, 1996). Therefore, educators must use a learning theory for adults that empowers individuals to be autonomous, to act thoughtfully, and to critically examine the presentation of information (Mezirow, 1997a). Mezirow’s transformative learning theory (1996, 1997, 2000) offers a theoretical framework for explaining and designing learning opportunities that are meaningful and address the needs of adult learners. Studies examining transformative learning theory over a variety of settings, occupations, and people, confirm the power of transformative learning as a profound theoretical model; pre-service teaching programs (Carrington &

Selva, 2010), nursing (Rashotte, 2002), and teacher professional development and training (Kose & Lim, 2010) illustrate the range of application.

Mezirow conceptualizes this learning process by identifying traits of adult learners that lead to changes in understanding. Such understanding follows from an objective or subjective reframing—a changing one's *frame of reference* and a reshaping of *meaning structures* (Davis, 2006; Mezirow, 1996, 1997a, 2000). The learning process reconstructs the interpretive framework used by individuals to make meaning and filter their experience of the lived world (Taylor, 2008).

### **An Overview of Transformative Learning Theory**

Learning involves the critical reflection of assumptions informing our belief structure that leads to a reframing of one's perspective (Mezirow, 1997a). Two types of reframing can occur when one engages in a learning experience, *objective* and *subjective* reframing. Objective reframing occurs when one engages in critical reflection on assumptions involving a task-oriented activity and subsequently makes changes in their understanding (Dirkx, Mezirow & Cranton, 2006), such as the empirical testing of beliefs. More profound subjective reframing, requires engaging in critical self-reflection of one's own assumptions as well as what others communicate about ideals, beliefs, and values (Mezirow, 2000; Taylor 1998). TLT is primarily concerned with subjective reframing.

Subjective reframing revises previously held assumptions to create a new interpretation of one's experience that leads to future action (Mezirow, 1998). According to Mezirow (1996, 1997, 2000), such learning occurs by acquiring new *meaning schemes*, internal belief structures that interpret experience and make meaning. New meaning

schemes are acquired in one of four ways; “by elaborating an existing frame of reference, by learning new frames of reference, by transforming points of view, or by transforming habits of mind” (Mezirow, 2000, p. 19). A revision of a previously held frame of reference represents a paradigmatic shift leading to a more developed and functional frame of reference (Taylor, 20008). New frames of reference are inclusive, differentiated, permeable, critically reflective, and integrative of experience (Mezirow, 1996, p. 163).

The following ten phases outline typical steps in the transformative learning process:

1. A disorienting dilemma
2. Self-examination with feelings of fear, anger, guilt, or shame
3. A critical assessment of assumptions
4. Recognition that one’s discontent and the process of transformation are shared
5. Exploration of options for new roles, relationships, and actions
6. Planning a course of action
7. Acquiring knowledge and skills for implementing one’s plans
8. Provisional trying of new roles
9. Building competence and self-confidence in new roles and relationships
10. A reintegration into one’s life on the basis of conditions dictated by one’s new perspective (Mezirow, 2000, p. 22).

Three core processes govern transformative learning—*centrality of experience*, *critical reflection*, and *rational discourse* (Mezirow, 1997a, 2000; Taylor, 2008).

### **Centrality of experience**

There are several meaning structures Mezirow identifies that are integrated into transformative learning and constitute the centrality of experience; *frames of references*, *habits of mind*, *points of view*, and *meaning schemes* (Mezirow, 2000). Each meaning structure, created through previous experiences and resulting in held assumptions, values, and beliefs, plays an important role in the meaning making and learning process in which adults engage (Mezirow, 2000).

**Frames of reference.** Frame of references are meaning perspectives that filter and shape our expectations, perceptions, cognition, and feelings (Mezirow, 1997a; 2000). Frames of reference involve cognitive, affective, and connotative dimensions guiding our ability to understand experience (Mezirow, 2000) and they serve as “boundaries” through which new experiences must be integrated (Mezirow, 1996). Frames of reference are durable and difficult to deconstruct, serving to maintain preexisting reified forms of knowledge (Mälkki, 2010).

Multiple frames of reference combine to create a “worldview” influencing one’s epistemological orientation (Mezirow, 2000). Kitchenham (2008) argues that transformative learning itself has become a paradigm as it fulfills a need for understanding information in conjunction with common individuals. The interpretation of information and meaning making process through one’s frame of reference can be illustrated in how democratic and republican ideology influence how people perceive the same information. Studies have shown that identical textual information regarding policy decisions and even graphs are perceived differently based on one’s political identity (frame of reference) (Nyhan & Reifler, 2016).

**Habits of mind and points of view.** An individual frame of reference is composed of habits of mind and points of view (Mezirow, 1997a, 2000). Habits of mind are sets of broad assumptions that serve to filter experience (Mezirow, 2000) and represent more “durable” conceptualizations than points of view (Mezirow, 1997a). A point of view is the expression of a habit of mind and is itself a cluster of meaning schemes (Mezirow, 2000). Points of view are less anchored than habits of mind, as one can simply voluntarily engage in a different point of view, but not a different habit of mind (Mezirow, 1996).

**Meaning schemes.** Meaning schemes are immediate attitudes, judgments, and beliefs that shape the interpretation of experience (Mezirow, 2000). They are malleable, changing with frequent experience and “everyday insights” (Mezirow, 1996). Meaning schemes comprise a particular or specific interpretation and are a regular part of our daily life (Taylor, 1998). For instance, one may change their meaning scheme but retain their larger worldview or frame of reference (Taylor, 2007).

The combination of meaning schemes, points of view, habits of mind, and frames of reference, coalesce to determine our understanding of the world – the centrality of experience (Taylor, 1998). Any new experience gets integrated into one’s frame of reference, either reinforcing the existing meaning scheme or challenging previously held assumptions thereby disrupting and forcing perspective change (Taylor, 1998). If a new experience cannot be assimilated into an existing frame of reference, a transformation occurs leading to a new or expanded meaning scheme (Mezirow, 1996, 1997a, 2000). Only through critical reflection and discourse can existing frames of reference be altered and rebuilt (Mälkki, 2010; Mezirow, 1997a; 2000). When a collective group shares a

frame of reference it becomes a cultural paradigm—it is these cultural perspectives that then integrate experience into meaning (Mezirow, 2000).

As an example, King (2004) found significant perspective transformation in experience among 58 adult educators participating in a transformative learning experience at a private university. Many noted a change in their worldview and frame of reference, felt more open minded, had increased awareness of social expectations, and looked at issues from multiple perspectives (King, 2004). Critical reflection constitutes a core activity in the process of this type of transformation.

### **Critical Reflection**

Critical reflection involves the “explicit reassessment” of our previously held assumptions, beliefs, and values—an interrogation of our existing frames of reference (Taylor, 2007, 2008). As with meaning structures, Mezirow distinguishes varying types of reflection including *content reflection*, *process reflection*, and *premise reflection* (Kitchenham, 2008). Content reflection draws upon past experience and prior action in the transformation of meaning schemes; process reflection includes an aetiologic review of action. Premise reflection, however, engages in inspection of a value system or worldview (Kitchenham, 2008). It’s with the latter of these, premise reflection, upon which Mezirow centers critical reflection leading to transformative change. Premise reflection is the critical self-reflection of an assumption which one has defined a problem and can be further delineated in a taxonomy displayed in figure 4 (Mezirow, 1998).

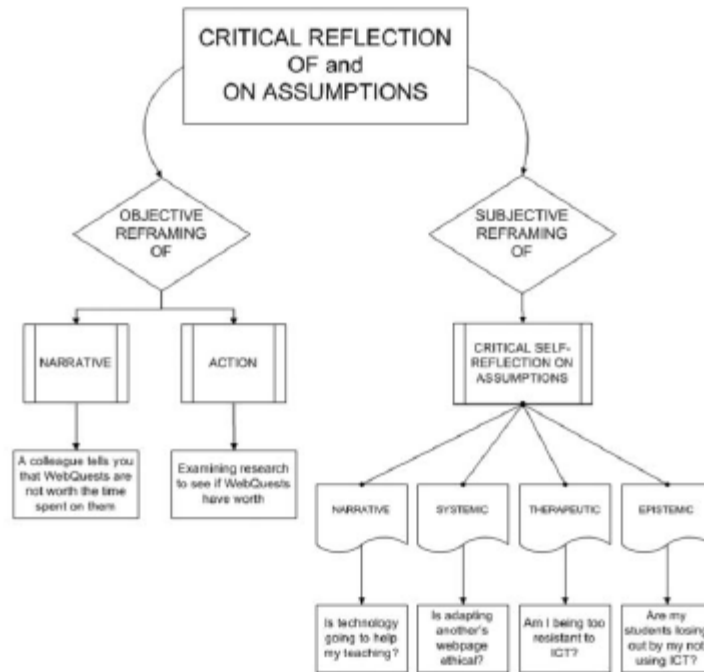


Figure 4. Taxonomy of Critical Reflection of Assumptions for Transformative Learning Theory (Kitchenham, 2008).

Transformative learning occurs when one engages in the critical reflection of assumptions (others) and critical self-reflection of assumptions (self), leading to a change in one's frame of reference (Carrington, Mercer, Iyer, & Selva, 2014; Carrington & Selva, 2010; Mezirow, 2000). "Through critical reflection, we become emancipated from communication that is distorted by cultural constraints on full free participation in discourse" (Mezirow, 1996, p. 165). In other words, critical reflection challenges preconditioned belief systems by fully examining and reassessing existing meaning structures through reasoned judgement (Taylor, 2008).

Each form of critical reflection emphasizes the analysis of held assumptions and beliefs, examines epistemological understanding, and challenges preexisting conceptual or psychological limitations (Mezirow, 1998). When critical reflection leads to disruption

in a meaning structure by engaging in reflection *on* or *of* assumptions, an objective or subjective reframing occurs (Kitchenham, 2008). Current research confirms the utility of critical reflection in facilitating personal transformation and learning as seen with both pre-service and in-service teaching staff.

In a study with a group of pre-service students, Carrington & Selva (2010) used service-learning reflection logs to facilitate critical examination of experience leading to transformative learning. By completing journals, students (pre-service teachers) engaged in reflection and transformative learning across four distinct lenses: technical, cultural, political, and postmodern/post-structural (Carrington & Selva, 2010). By utilizing a pedagogy of service-learning, researchers facilitated transformative learning through critical reflection thus enhancing future teachers' ability to engage in critique and action.

### **Rational Discourse**

Discourse is the core activity that drives transformative learning; it is the method through which transformation is “promoted and developed” and critical reflection is “put into action” (Taylor, 1998, p. 10-11). The rational assessment of evidence uses discourse and dialogue to critically examine alternative points of view (Mezirow, 1996, 1997). Discourse leverages dialogue to search for common understanding of belief, consensus, and reflection of assumptions (Mezirow, 2000). It is this meaning making through rational discourse with others that leads to transformation (Kucukaydin & Cranton, 2012), as new meaning schemes only become validated through discursive interaction (Kitchenham, 2008). To engage in rational discourse, the following assumptions are made:



- It is rational only as long [as] it meets conditions necessary to create understanding with another;
- It is driven by objectivity;
- All actions and statements are open to question and discussion;
- Understanding is arrived through the weighing of evidence and measuring the insight and strength of supporting arguments; and
- The primary goal is to promote mutual understanding among others (Taylor, 1999, p. 10).

Several essential elements must be present for any truly rational discourse. These include having accurate information, being free from coercion, having objectivity, open-mindedness, engaging in critical reflection, equality of participation, and the acceptance of rational consensus (Mezirow, 1996). Rational and critical discourse is used to come to understanding about new beliefs obtained through reflection and dialogue (Mezirow, 1998). It is the process of consensus building, working towards agreement and greater understanding that leads to the construction of practical knowledge and changes in one's frame of reference (Mezirow, 1996). For instance, King (2004) found that discussion was the most frequent activity leading to transformation of a frame of reference for adult educators in a post-graduate program. Rational dialogue and discourse is therefore central to transformative learning.

### **Learning Through Action**

A central outcome of transformative learning is to be more aware and critical of one's own assumptions and assumptions of others, to identify frames of reference and existing paradigms, and engage with others in activities such as reasoned dialogue,

problem solving, and consensus building (Mezirow, 1997a). However, to be considered a transformative learning experience the learner must “make an informed and reflective *decision to act*” (Mezirow, 1996, p. 163-164). It is through this action decision that adult learners critically examine, reflect, and affirm their newly adopted frames of reference. One of the most powerful methods to foster transformative learning is to engage in activities that are personal and stimulate reflection (Taylor, 2007).

For example, Carrington, et al. (2014) found that participation in a “critical service-learning” program transformed students’ frames of reference regarding inclusive education and community involvement. Critical service-learning situates traditional service-learning in a socio-cultural context that promotes the “critique of social values, educational policy and practice that opposes inclusion...” (Carrington, et al., 2014, p. 62). Specifically, students changed their attitudes and skills through activities fostering critical reflection in service-learning experiences. Several other studies have also illustrated the need for individuals to engage in social critique, exploration, and action in order to fully develop new meaning structures and frames of reference (Taylor, 2007).

Conceptualizing adult education through the framework of transformative learning theory holds great promise for in-service professional development. School leaders face challenges in making large scale or school-wide pedagogical shifts due to resistance from teachers whose frames of reference contrast with externally imposed reforms. Teachers tend to implement (or not implement) such reforms based on their own contextualized “pedagogical pasts” (Datnow & Castellano, 2016) and adapt initiatives that fit their pre-existing meaning schemes. Datnow and Castellano (2016) propose that implementation and long-term sustainability improve when teachers are enlisted as co-

creators in any change process and work to alter their frames of reference as they engage in the reform effort, think critically about their practice, and dialogue with others. These concepts directly influenced the innovation for my study by enlisting teachers as co-creators of workshop sessions, empowering them to shape workshop activities.

Educational leadership itself can be transformed by Mezirow's theory of learning. As a district leader I am attempting to use the following criteria to inform my innovation so that schools and school leaders adopt a new mindset regarding inclusive education. Davis (2006) describes six suggestions for superintendents to better promote transformative learning in schools and districts;

1. superintendents can help create awareness of critical reflection
2. change frames of reference with respect to school problems, foster reciprocal discourse among colleagues
3. create better understanding of school leaders' own assumptions
4. establish growth-oriented learning goals
5. encourage leadership autonomy based on "sophisticated mental models" (Davis, 2006, p. 4).

Each element listed by Davis corresponds to my innovation and the intended outcome of this study.

### **Alternative Perspectives**

Most of the previous section concerns transformative learning theory as conceptualized by Jack Mezirow and his rationalist approach. However, several other theorists provide contrasting and complimentary interpretations of transformative learning worth noting. Among the alternative models of transformative learning include

John Dirkx's holistic approach, Daloz's developmental approach, Boyd's extrarational approach, and Freire's emancipatory approach. Each provides additional conceptualizations of adult learning and transformational experience (Kucukaydin & Cranton, 2013). Freire in particular offers an important theoretical grounding for transformative learning not found in Mezirow's theory that has informed this action research project.

For instance, Freire's emancipatory approach describes education not as a formal activity bound by the physical classroom space, but experience embedded in all aspects of a person's life (Freire, 1993). Education, therefore, is always a political endeavor (Kitchenham, 2008). As a political act, transformative learning combats marginalization through promotion of inclusion, empowerment, and cross-cultural negotiation when pre-existing frames of reference are critically examined and new meaning schemes are adopted (Taylor, 2008). By disrupting pre-existing frames of reference that perceive inclusive practice as unnecessary or view special education through the outdated medical model, transformative learning offers what Freire would describe as emancipatory effort in freeing those with disabilities from society's constraints. School systems currently demonstrate an inability to effectively address cultural, racial, and social economic disparities (Anyon, 2005; Darling-Hammond, 2010; Noguera, 2008). Transformative learning may offer practitioners a method for promoting more socially equitable teaching practices (Kose & Lim, 2011) and enhancing educators' ability to address oppressive social structures.

### **Summary**

Recent trends suggest transformative learning and action research align as theoretical and methodological practices (Taylor, 2007). Action research is the process of systematic inquiry to improve practice through continuous cycles of action and reflection (Mertler, 2014) which corresponds with the goals of TLT. Both seek to change the current state of being by moving towards a more effective understanding of the social world. Transformative learning has also been shown to be methodologically in line with mixed-methods studies, using both interview and survey designs in education settings (Taylor, 2007). Mixed-methods research, which integrates multiple data sources to better understand and explain social phenomenon, also aligns with both action research and transformative learning. For these reasons, transformative learning theory offered a valid theoretical framework for informing the development of my innovation and study design.

## Chapter 3

### METHODS

This chapter provides a detailed description of my action research study. First, I review my context and the context of the study along with a discussion of the of previous cycles of research informing the current cycle. Next, I provide an overview of the methodology, research design, and intervention. Following is a description of the data collection instruments and implementation procedures outlining how the study was conducted. Finally, methods of data collection and analysis are detailed along with threats to validity.

The primary focus of my research study is to examine the impact of a professional development workshop constructed around elements of critical disability theory, growth mindset, and universal design for learning, on how teachers conceive and construct the idea of disability and intelligence. Specifically, I am attempting to discover the extent to which learning about mindset and UDL can change teachers' perception of what it means to be (dis)abled and therefore alter their existing methods of instruction. Current scholarship suggests how educators construct the idea of intelligence generally can have significant influence on student academic and behavioral performance (Dweck, 2006).

This study is designed to answer the following research questions:

- RQ1. How and to what extent do teachers' beliefs and understanding of ability and disability change after the (dis)ability workshop?
- RQ2. How and to what extent do teachers' beliefs and understanding about accessible instruction for diverse classrooms change after participating in the (dis)ability workshop?

- RQ3. How and to what extent have teachers gained the necessary confidence, insights, and skills about how to begin to incorporate UDL and growth mindset into their instructional design after participating in the (dis)ability workshop?
- RQ4. How do teachers perceive the (dis)ability workshop as a professional learning experience?

### **Context**

Recall from chapter one that I was hired in 2013 as the director of exceptional student services for a local school district residing just outside the Phoenix-metro area. I compared district-wide testing data for students with disabilities and their non-disabled peers, controlling for the type of instructional setting (i.e. students taught in general education classrooms and those taught solely in special education classrooms for math and reading) to evaluate any gaps in achievement. Data were compelling and supported the conclusion that students with disabilities in segregated or special education classrooms had worse academic performance than their similarly disabled peers taught in general education classrooms. I then implemented strategies designed to increase access for SWD in general education classrooms to be more in alignment with national statistics; 60% of SWD are included for over 80% of the day, and 90% of SWD included for 40% or more of their school day (NCES, 2015). The premise was that students who were more fully included would have better academic performance.

Despite the increasing percentage of students accessing general education curriculum in inclusive settings, district data indicated that academic achievement gaps still existed between SWD and their non-disabled peers. Research suggests changes in teacher mindset and instructional methodology may assist in reducing gaps in

achievement and improving academic, outcomes for SWD (Blackwell et al., 2007; Paunesku, et al., 2015). This action research project is designed to answer questions about how mindset and universal design for learning can affect teachers' view of learning, intelligence, and disability, and provide them with pedagogical tools for addressing the variable learning needs of today's classrooms.

### **Previous Cycles**

Previous cycles of action research informed my innovation, the *(Dis)ability Workshop*. Mertler (2014) describes the iterative and ongoing nature of action research as a successive cycle of planning, acting, developing, and reflecting. Such was the process for this action research study, culminating in this latest cycle of action and reflection. The first cycle consisted of an exploratory phase using only a single researcher-developed survey measuring teacher perception of disability and inclusive practices. Teachers rated themselves on a Likert-type scale evaluating their self-efficacy, knowledge, and beliefs about teaching students with disabilities and other special learning needs. The survey was administered in the fall of 2015 at a kindergarten through 8<sup>th</sup> grade school of similar size and demographics to the school in the current cycle. Survey results indicated that teachers had a high degree of self-efficacy when asked if they felt comfortable teaching SWD or if they felt confident in their ability to teach SWD; however, they also expressed several concerns about teaching students with disabilities. Concerns included not having enough in-class coaching and support or adequate instructional resources. Teachers also had variable expectations about students with disabilities participating in general education classrooms, indicating that many “struggled” to participate in grade-level instruction.



Analysis of this data resulted in three themes of concern: *lack of support for teachers, concern for SWD making adequate progress, and a need for resources to differentiate instruction*. Teachers indicated that they often felt overwhelmed with the demands of an inclusive classroom and required additional support from others to meet the needs of all their students. They expressed concern that SWD were not making enough academic progress in their classrooms and that the pace of instruction was leaving them behind their typical peers. Finally, teachers identified a desire to implement instruction tailored to each student's individual level, but often felt that they lacked the curriculum and other resources needed for differentiation. These themes directly informed the second cycle of action research.

My second cycle of action research was conducted in the spring of 2016, using a single concurrent mixed-methods phase, simultaneously collecting quantitative and qualitative data. I administered a survey adopted from Forlin, Earle, Loreman, & Sharma (2011) *The Sentiments, Attitudes, and Concerns about Inclusive Education Revised* (SACIE-R) scale. Concurrently, I interviewed two first grade teachers about their classroom practices, attitudes, and beliefs about teaching diverse learners. After an initial exploratory phase, I had each teacher complete a set of online modules about the use of universal design for learning. The online professional learning modules were developed at the IRIS Center at Vanderbilt University in partnership with the Center for Applied Special Technology (CAST). The nine sections of the module series include:

- universal design for learning
- UDL principles
- curricular components
- goals
- instructional materials

- instructional methods
- assessment
- UDL in practice
- implementation issues

Teachers progressed through each module section at their own pace during spring intersession (spring break). This allowed participants to focus on completing training without distractions and time obligations that are part of their normal work day. It took approximately 3-4 hours to complete all nine sections of the module. Teachers indicated that the content in these modules better prepared them to instruct students in inclusive classroom settings. However, the online method of professional development was perceived to be less than desirable for delivery of the content, leading teachers to request more time and face-to-face training. Information from the interviews, survey, and classrooms observations from this cycle informed the third iteration of the action research innovation.

From the fall of 2016 to the spring of 2017, I conducted a series of workshops with all the District's *master teachers*. Master teachers are school-based instructional specialists whose primary job responsibility is to coach classroom teachers on instructional design and implementation. These workshops were informed by what I learned from the previous cycle of research. A total of five workshop sessions were provided over the course of five months. Participants provided ongoing feedback on session activities that helped shape successive workshop sessions. The intent of this cycle was to refine the workshop aspect of my study's innovation and to pilot several data collection instruments including a revised survey, participant and researcher journals, narrative tools, and semi-structured interview protocols.

## **Innovation**

For my dissertation action research project, I integrated literature on disability studies, mindset, instructional design, and adult learning to form a series of five in-person workshop sessions called the *(Dis)ability Workshop*. The intent of the innovation was to reframe teachers' perceptions of disability and to provide them instructional tools to address wide learner variation within their classrooms. I facilitated a series of five professional development workshop sessions conducted over the course of 15 weeks, with one or two workshop sessions occurring each month. The workshop sessions lasted approximately 1 – 2 hours.

*Workshop session I* drew heavily upon transformative learning (Mezirow, 1997b) as a means of establishing a framework for effective adult learning, and themes from critical disability theory (Rocco, 2005) were woven into each workshop session. Participants were enlisted as “co-authors” of the workshop, where much of their feedback was included in an ongoing iterative process of refinement for future workshop sessions. Session I focused on challenging participants' existing frames of reference to engage them in a meaningful critique of their own beliefs, values, and assumptions of disability and intelligence. Mezirow (1997b) describes the process of subjective reframing as involving critical reflection, validating discussion, and action. Teachers engaged in several activities such as listening to a podcast, reading an article, and participating in simulation exercises to experience what it is like to have a disability.

*Workshop session II* focused on *growth mindset* (Dweck, 2006). Teachers engaged in several activities and discussions about the nature of intelligence, how intelligence can be understood as a malleable trait, and what impact it can have on

student performance. This session briefly introduced the concept of growth mindset, orienting teachers to a new view of ability. The *critical examination* of participant beliefs and *dialogue* satisfies two of three criteria for subjective reframing (Mezirow, 1997b), both highlighted in this session.

*Workshop session III* expanded on growth mindset and asked teachers to develop specific lessons and activities to use with their students. They participated in collaborative group work designing a lesson on growth mindset for classroom use. Each group presented their activity followed by a facilitated discussion. The use of growth mindset in the classroom satisfied the *action* component of transformative learning described by Mezirow (1997b).

*Workshop sessions IV* introduced universal design for learning (UDL). Teachers were presented with the framework for UDL, information about learner variability, and basic neuroscience research. Just as sessions I and II attempted to reframe concepts of disability and intelligence, session IV worked to reconstruct and reframe teacher concepts of learning and curriculum design. I highlighted the framework for learning through UDL, which focuses on creating individual expert learners and flexible, universally accessible curriculum. A critique of traditional curriculum design again challenged teacher values and belief systems about education and led them to critical reflection, dialogue, and action.

*Workshop session V* expanded on each of the three principles of UDL, *recognition, action & expression*, and *engagement* (CAST, 2011). The goal of this session was to provide specific instructional design frameworks to increase accessibility for students and to give teachers tools for implementation. During the workshop session,

teachers engaged in a variety of activities using active learning structures. They were asked to apply the principles and tools in their classrooms and provide evidence to their instructional coach and principal of implementation, including artifacts and collected student data. The final session leveraged critical reflection, dialogue, and action (Mezirow, 1997b) as a means to inform and change teacher practice.

To spark critical reflection after each workshop session, participants were asked to write a response to reflective prompts such as, “what has changed about my view of disability after this workshop session?” These responses were collected and used to assist in planning the content for the following workshop. In addition, participants were also asked to collect photos weekly that represented their understanding of accessible instructional practices. Each photo was described and interpreted by the participant in a weekly online journal.

### **Setting**

This study took place during the fall of 2017 at Sky Ranch K8 school.<sup>7</sup> Sky Ranch serves students kindergarten through eighth grade in the Gila Valley Unified School District (GVUSD). GVUSD is a semi-rural district just outside the Phoenix-metro area with a highly transient student population. Sky Ranch has a total of 860 students, 20% who are English language learners (ELLs), 13-14% who qualify as students with disabilities, and 4% are students identified as gifted and talented (SGT). The identification rate for SWD is slightly above the Arizona state average of 11.4% and the national average of 12.9% (NCES, 2015). There are approximately 30 general education

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<sup>7</sup> All school, district, and individual names identified in this paper are pseudonyms to protect participant confidentiality

teachers and three special education teachers covering grades K-8. This school implements an inclusive model of special education service delivery where most students are in general education classes for the entire day. Some classrooms are *co-taught* and have both a special education and general education teacher providing instruction simultaneously, where other classrooms are traditional in nature having either general education or special education teachers be solely responsible for instructional delivery.

The principal of Sky Ranch was supportive of the study, an important piece of any school-wide implementation effort. He was willing and able to set time aside for additional professional development and was even willing to participate alongside his teaching staff. Embedding the workshops into existing PD time assisted in protecting teachers' professional autonomy by not forcing them to attend additional trainings.

## **Participants**

### **Sampling**

In this study I used three separate sampling procedures: *cluster sampling*, *purposive sampling* and *convenience sampling* (Teddlie & Yu, 2007). Cluster sampling involves selection of naturally occurring groupings from an existing clustered population such as neighborhoods or schools (Teddlie & Yu, 2007). First, I looked at the naturally occurring population samples of schools in my district and then selected several schools that represented potential typical cases based on teacher and student demographics.

The second sampling procedure used typical case *purposive sampling*. Purposive sampling involves selecting research participants specifically to better understand the topic of study (Creswell, 2015; Plano-Clark & Creswell, 2015). I evaluated all the potential schools for this cycle of the action research project and chose Sky Ranch as the

implementation school based on its typical case representation and leadership support. Sky Ranch has a principal who is supportive of the project and has a favorable view of inclusive education. Without leadership support it would have been unlikely that any workshop or professional development would have been received positively (Speck, 1996). Sky Ranch represented a “typical” case based on teacher and student demographics, as these were similar to the average school within the district.

The final sampling procedure included a *convenience* sample of participants. Convenience sampling draws upon participants that are available and willing to participate in the study (Teddlie & Yu, 2007). I invited all teachers at the school to voluntarily participate in my research by presenting at a staff meeting and then selected 13 teachers among the school faculty who expressed interest in becoming participants. Although convenience sampling is not as rigorous a sampling technique as is applied in many quantitative studies, this action research project emphasized a qualitative research design. Qualitative methods allow for implementation with staff who were willing to participate on a voluntary basis rather than drawing a representative sample. By allowing teachers to “opt in,” I selected only those staff who were open to the training.

An important consideration includes the potential bias that may exist in the sample population since teachers self-selected to participate and may have predisposed favorable attitudes towards new teaching methods and professional learning. Although action research in general is not concerned with sampling bias, as it is intended to be applied in real world settings, such predispositions may influence the results and will be considered in the final analysis. In addition, since action research is context dependent and concerned with transferability rather than generalizability, including a convenience

sample does not present any methodological limitations. According to Stake (1986), naturalistic generalization, or the tacit knowledge generated through experience that directly influences practice, represents a critical component of educational research. A more detailed discussion of threats to validity are included later in the chapter.

## Teachers

Participants were all classroom teachers from Sky Ranch K8 who taught grades kindergarten through eighth grade with the exception of the principal, assistant principal, and school psychologist. All teachers in the school were required to attend the first three professional development workshop sessions, but only those who volunteered to participate in the research study were selected for purposes of data collection. Restricting the sample to 13 total participants made data collection and analysis manageable while providing sufficient sample size to answer my research questions. Demographics for the research participants are located in table 1.

Table 1

### *Participant Demographics (N=13)*

	Characteristic	n	%
Gender	Male	2	15.4
	Female	11	84.6
Age	26-35 years	4	30.7
	36-45 years	5	38.6
	46 years or above	4	30.7
Grade Level/Subject Area	Primary / Elementary	7	53.8
	Secondary	3	23.1
	Special Education	1	7.7
	Administration	2	15.4

Note: One of the participants was a school psychologist which was not a selection available on the survey instrument. This participant marked special education as her grade level/subject area.



## **Role of the Researcher**

Since I work in district my positionality is one of *insider* collaborating with other *insiders*. Herr and Anderson (2015) describe the benefits of an insider collaborating with other insiders as producing more democratic participation and impact on the participants' and researcher's setting. However, I am currently the assistant superintendent for academic services and this position is administrative and supervisory in nature, creating unequal power dynamics between myself and the research participants. Although I consider myself to be an insider within the District rather than an outside researcher, my positionality regarding internal hierarchical organizational structures changes the nature of the participant-researcher relationship.

This "not quite insider" positionality makes it more difficult to enlist research participants as true co-researchers or co-collaborators and presents potential threats to validity. I had to consider social desirability bias as I analyzed and interpreted research findings, being cautious of how this could influence data collection and results. Several steps were taken to mitigate the influence of my positionality which are described in detail at the end of this chapter.

## **Methodology**

### **Action Research**

Action research can be described as a systematic inquiry process designed to solve practical issues, improve practice, and empower or emancipate through social change (Ivankova, 2015; Mertler, 2014). These methodological goals align with the goals of my study: to evaluate the influence of professional development on the socially constructed idea of disability and intelligence, and on equity in instructional pedagogy.

My research questions focus on (1) addressing a real-life concern in the form of my problem of practice, (2) improving the skills of teachers and staff, and (3) initiating social change through the way educators view ability and intelligence. It was my intent that the (Dis)ability Workshop series challenge previously held assumptions about disability and fosters critical examination and reflection about how socially constructed barriers reinforce the notion of disablement.

Mertler (2014) describes action research as a process that assesses learning through continuous cycles of action and reflection. This action research study represents the culmination of several previous cycles of research that have informed the methods, methodology, research questions, instruments, and intervention detailed in the present study. Although this dissertation highlights the most recent cycle of research, it is an ongoing process that will again inform the next iteration of research and action.

This project forwards emancipatory and social justice goals by attempting to remove socially constructed barriers for students in disadvantaged and minority subgroups. While this study does not adhere to the strict methodology of participatory action research (PAR) by enlisting participants as co-researchers, (Herr & Anderson, 2015) it does address many of the same goals of PAR such as the reduction in marginalization and improvement of social acceptance for SWD.

### **Research Paradigm**

As an action researcher my epistemological orientation informs my problem of practice, related literature, intervention, and methodological approach. Since I ascribe to a constructionist epistemology, my action research project focuses on the interaction between individuals and how they construct meaning through relationships with others

(Gergen, 2015). By collective agreement, we determine what knowledge exists and how we access that knowledge (Gergen, 2015). I have applied this epistemological frame when developing an action research project designed to challenge the notion of disability and intelligence as static innate characteristics. Other critical theories such as critical race theory (López, 1994) and feminist theory (Cott, 1987) also challenge existing social norms, upending traditional convention that suggests things/ideas exist “in reality,” outside of the socially engaged world in which they are experienced. This study draws on that critical tradition to highlight how beliefs about ableism and “disableism” contribute to systematic educational marginalization through reified social constructions. It was my intent that teachers in the study would challenge and critically examine assumptions of disability and how those assumptions may lead to greater exclusion in school and society for students with disabilities.

### **Mixed-methods**

I chose to use a mixed-methods action research approach in alignment with constructionist epistemology. Mixed-methods research combines both quantitative and qualitative data collection and analysis to better understand the phenomena being studied (Creswell, 2015). It is defined as a research approach that combines multiple ways of making sense of the world by using qualitative and quantitative methods in a single inquiry process (Ivankova, 2015). Action researchers often use mixed-methods design, as it provides the ability to integrate multiple data sources. Using two disparate types of data allows the researcher to mitigate the shortcomings of purely quantitative or qualitative data and provide a more robust, comprehensive description and analysis of the problem (Ivankova, 2015). This approach aligns with my action research study by combining

multiple data sources, following a constructivist worldview, and advancing emancipatory outcomes (Ivankova, 2015).

I use several types of qualitative data sources in this research. Qualitative research has specific relevance to the study of social constructs and relationships as it often seeks to investigate the “why” of particular phenomenon (Flick, 2014). Several of this study’s research questions require qualitative data drawn from interviews, narratives, photo collection, and journaling. Since researchers cannot capture the true “lived experience” of participants, texts such as interviews and narratives offer surrogate experience used to investigate the questions under study (Brinkman & Kvale, 2015).

To enhance the qualitative data, I collected and integrated quantitative data in the form of participant surveys. Surveys are attitudinal measures of participant feelings towards the constructs identified in the research (Creswell, 2015). Quantitative data was then combined with qualitative data for analysis. The following section describes the research design and outlines the specific mixed-methods approach used in this study.

### **Research Design**

For this study I conducted a two-phase sequential and concurrent mixed-methods research design, each with a combination of quantitative and qualitative data collection. The first phase followed a sequential explanatory mixed-methods design (Ivankova, 2015), first using quantitative survey data to inform a second round of qualitative data collection. More specifically, the preliminary survey allowed me to gather initial quantitative data to refine my interview protocols for the qualitative data collection as appropriate. During this first phase of the study, I placed an emphasis on qualitative data

(Quant → QUAL), using interviews and observations to explore participant beliefs about disability.

The second phase of the study employed a concurrent mixed-methods approach with an emphasis on qualitative data (QUAL + Quant). In this phase I collected both quantitative and qualitative data simultaneously and used triangulation during the analysis phase. Triangulation refers to the combination of methods and/or data sources to corroborate findings (Creswell, 2015; Flick, 2014). I used triangulation to corroborate findings among qualitative data sources, such as interviews, session reflections, and narratives.

### Procedures

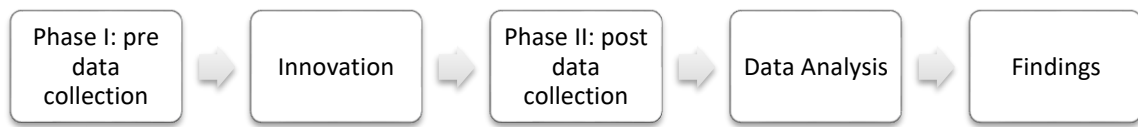


Figure 5. Graphic of Study Procedures. This figure depicts the overall study procedures using a two-phase design.

### Phase I

The initial phase consisted of gathering quantitative data through an online survey measuring participant beliefs and understandings of disability and intelligence, understanding of accessible instructional design, and self-efficacy regarding implementation of accessible instruction. The survey data served as both a pre-intervention measure as well as a tool shaping the qualitative data collection done through semi-structured interviews. Constructs on the survey informed additional probing questions. For example, many of the initial scores indicated teachers believed most students with disabilities should be in regular classes. I used this information to further

investigate participant beliefs around this topic, enriching the data used in the final analysis. Surveys were completed in August, one week prior to interviews and two weeks prior the start of the innovation.

Qualitative data in the form of an interview and narrative were then obtained from each participant prior to the first workshop. Interviews were conducted 1-on-1 in the teacher's classroom or front office conference room. Interviews ranged from 30 minutes to just over 1 hour. Each teacher was also asked to write a narrative regarding their beliefs about disability. The narrative and interviews are used as pre-test and post-test measures to compare participant beliefs before and after participating in the (Dis)ability Workshop.

### **(Dis)ability Workshop**

The innovation, the (Dis)ability Workshop, was conducted during the first semester of the 2017-2018 school year, from August – November 2017 at Sky Ranch School. Workshop sessions lasted between 1-2 hours, conducted on early release days during typical teacher professional development time. There were approximately two workshop sessions per month starting the first week of August. A timeline of the sessions is shown in table 2. Throughout the innovation there was ongoing qualitative data collection in the form of weekly reflections, photovoice images, and a researcher journal.

Table 2

*Innovation Schedule*

Week	Session	Description
1-3	I	Introduction to study and disruption of existing frames of reference
4-6	II	Introduction to growth mindset
7-9	III	Growth mindset expanded and action planning activities
10-12	IV	Introduction to universal design for learning
13-15	V	UDL principles I-III

**Phase II**

Upon completion of the (Dis)ability Workshop, quantitative and qualitative data were gathered from each of the study participants. They completed and submitted a personal reflection journal that included their photovoice images collected throughout the study. After submission of the journals and photo projects, each participant received an online survey that was identical to the one given prior to participating in the workshops. Finally, interviews were conducted during the last two weeks of November. Table 3 provides an outline of the study’s timeline and procedures.

Table 3

*Timeline and Procedures for this Study*

Time Frame	Actions	Procedures
June	Contact school principal and schedule workshop sessions	Meeting with site administrator to explain the study and schedule each of the workshop session for staff
July	Recruitment of participants	Introduction to study and participation requirements
	Administer (dis)ability survey	Online survey sent to teachers

August	Conduct interviews	Pre-innovation interviews were conducted and recorded
	Collect personal disability narratives	Pre-intervention narratives were collected via online submission
August – November	Conduct the (Dis)ability Workshop sessions	Workshop sessions were conducted according to schedule.
	Record researcher journal entries	Wrote entries after each workshop session and any other relevant event occurs
November	Conduct post-intervention interviews	Post-intervention interviews were conducted and recorded
	Administer post-intervention (dis)ability survey	Post-intervention survey was administered after final workshop session
	Collect photovoice projects	Photovoice collages were collected at last workshop session
	Disability narratives collected	Narratives were collected at last workshop session
	Collect teacher reflection journals	Online teacher reflection journals were collected
December	Analyze data	

### **Instruments**

Table 4 provides an overview of each instrument I used to collect my data, along with a description of the instrument and its alignment with the research questions. Following the table is a detailed account of how each data collection tool was used.



Table 4

*Data Collection Inventory*

Research Question	Data Type	Instrument	Description	Method
RQ 1. How and to what extent do teachers' beliefs and understanding of ability and disability change after the (dis)ability workshop?	qual	semi-structured interview	pre-and post-interviews were conducted with the participants to discover how they construct disability and intelligence before and after the innovation.	pre- and post-interview
		personal narrative	Each participant wrote a letter to a child about what it means to have a disability. I used the letter to discover how they interpreted and constructed the concept of disability. A second narrative asked participants to write a story about a child with a disability.	letter collected pre-innovation, personal story collected post-innovation
		photovoice	Each participant gathered photos throughout the workshop series representing their perceptions of disability and intelligence. They included a minimum of one photo and description on a shared document weekly.	participants received periodic reminders to collect data continuously during the innovation and submit a summative form post-innovation
		weekly reflections	Participants wrote weekly reflections with prompts to reflect on the experience of going through workshop sessions.	data collection occurred continuously, entries were analyzed at the end of the study

		researcher journal	I kept a personal journal to reflect on my own experience and to add additional data to answer the research questions.	data collection occurred continuously during the entire study
	quant	survey	A survey instrument combining the sentiments, concerns, and attitudes scale - revised (SACIE-R), growth mindset questionnaire, and researcher developed questions. Survey used Likert-type questions with a total of 50 items.	survey administered pre- and post-innovation
RQ 2. How and to what extent do teachers' beliefs and understanding about accessible instruction for diverse classrooms change after participating in the (dis)ability workshop?	qual	semi-structured interview	pre-and post-interviews were conducted with the participants to discover how their beliefs and understanding about accessible instruction has changed	pre- and post-interview
		weekly reflection	Participants wrote weekly reflections with prompts to reflect on the experience of going through the workshop sessions. Specifically, they were asked what changed about their beliefs regarding disability and intelligence.	data collection occurred continuously, but entries were analyzed at the beginning and end for this research question
		researcher journal	I kept a personal journal to reflect on my own experience and to add additional data to answer the research questions.	data collection occurred continuously during the entire study.
	quant	survey	A survey instrument combining the sentiments, concerns, and attitudes scale - revised (SACIE-R), growth mindset questionnaire, and researcher developed questions. Survey	survey administered pre- and post-innovation

used Likert-type questions with a total of 50 items.

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RQ 3. How and to what extent have teachers gained the necessary confidence, insights, and skills about how to begin to incorporate UDL and growth mindset into their instructional design after participating in the (dis)ability workshop?	qual	semi-structured interview	pre-and post-interviews were conducted with the participants to discover if they have gained the necessary confidence, skills, and insights regarding UDL and growth mindset	pre- and post-interview
		researcher journal	I kept a personal journal to reflect on my own experience and to add additional data to answer the research questions.	data collection occurred continuously during the entire study.
	quant	survey	A survey instrument combining the sentiments, concerns, and attitudes scale - revised (SACIE-R), growth mindset questionnaire, and researcher developed questions. Survey used Likert-type questions with a total of 50 items.	survey administered pre- and post-innovation

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RQ 4. How do teachers perceive the (dis)ability workshop as a professional learning experience?	qual	semi-structured interview	The semi-structured interview included questions about participant experience designed to answer if the professional development was an effective vehicle for adult learning.	post-innovation
		weekly reflection	Participants wrote weekly reflections with prompts to reflect on the experience of going through the workshop sessions. Specifically, they are asked what changed about their beliefs regarding disability and intelligence.	data collection occurred continuously, but entries were analyzed at the beginning and end for this research question

researcher journal	I kept a personal journal to reflect on my own experience and to add additional data to answer the research questions.	data collection occurred continuously during the entire study.
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## Quantitative instruments

**(Dis)ability survey.** I administered an online survey to all participants at Sky Ranch to answer RQs 1, 2, and 3 (see Appendix A). The survey combines two validated instruments, the Sentiments, Attitudes, and Concerns About Inclusive Education Revised (SACIE-R) scale (Forlin, et al., 2011) and growth mindset questionnaire (Dweck, 2006), along with researcher developed questions. I chose the SACIE-R to measure perceptions about students with disabilities and general overall attitudes toward disability status. I measured growth mindset to determine whether participants currently had a fixed or growth mindset before and after the intervention. My research questions correlated well with the existing constructs in both validated surveys, but I added additional survey questions to gather data about participant beliefs and understanding of accessible instruction, as well as data about teachers' confidence, insights, and skills regarding universal design for learning (UDL).

Although Forlin et al. (2011) validated the SACIE-R survey with pre-service teachers, it appeared to be appropriate to administer with in-service teachers as well. In a previous cycle of action research, I piloted the survey with a current teaching staff at a local high school (n = 30) to determine scale internal reliability using Cronbach's alpha (Cronbach, 1951). Results indicate acceptable reliability with each of the four constructs

measured on the instrument, SACIE-R ( $\alpha = .81$ ), growth mindset ( $\alpha = .79$ ), attitude towards ability ( $\alpha = .74$ ), and confidence in applying UDL ( $\alpha = .96$ ).

I administered the survey immediately prior to and after the (Dis)ability Workshop to capture changes in participant responses. The survey was constructed using an online Google Form and sent electronically to participants. Online surveys provide convenient collection of quantitative data for analysis, are easy to administer, and have become a popular method for survey administration (Creswell, 2015). Each participant was asked to use a unique identifier code so that responses were anonymous but could still be matched with data sources for accurate analysis. All responses were transferred into a spreadsheet and imported into SPSS version 25 for analysis. Results were analyzed for changes in participant beliefs and understandings related to each of the survey constructs.

### **Qualitative instruments**

**Semi-structured interviews.** I conducted semi-structured one-on-one interviews using a pre-developed interview protocol (see Appendix B) to answer RQs 1, 2, 3 and 4. The purpose of a semi-structured interview is to “obtain descriptions of the life world of the interviewee in order to interpret the meaning of the described phenomenon” (Brinkman & Kvale, 2015, p. 6). I used a semi-structured format so that there was opportunity to explore participant responses that may not always correspond directly with pre-developed interview questions. A semi-structured interview combines pre-developed open-ended questions with follow-up probing questions designed to solicit information regarding the topic of study (Creswell, 2015; Flick, 2014). Sample questions include, “tell me what the term disability means to you?” and “what do you experience as a

teacher when you have a high number of students with different levels of ability in your classroom?”

All interviews took place at the school in each teachers’ classroom or front office conference room. I used an iPhone to record each session rather than a digital recorder to reduce participant anxiety about having the interview recorded. Interviews lasted approximately 30 minutes to 1 hour and each recording was transcribed into a Microsoft Word document for analysis.

**Personal narrative.** I asked each participant to write two short narratives during the study to answer RQ 1 (see Appendix C). Both narratives were included as writing exercises during workshop sessions; the first narrative was part of the initial workshop session and the second during the last session. Narrative as a qualitative data collection tool provides additional data from which the researcher can generate conceptual understanding of a topic (Flick, 2014). As Creswell (2015) describes, “For educators looking for personal experiences in actual school settings, narrative research offers practical, specific insights” (p. 504). In addition, narratives allow others to express insights, social understanding, perspectives, and engage in self-reflection (Leavy, 2015). Because critical disability theory underpins this action research project, narrative offers me a valuable tool in understanding how individuals conceptualize the abstract social constructions *disability* and *intelligence*.

The pre- and post-narratives included separate writing prompts. The first narrative asked participants to write a letter to a current or future child regarding having a disability. This was completed at the beginning of the first workshop session. Participants had a 10-minute time limit to write and submit their letter. The post-narrative asked

participants to write a story about someone with a disability. Participants were given the same 10-minute timeframe to complete the post-narrative at the final workshop session. Each narrative was completed on a Google Doc and submitted electronically.

**Session reflections.** I used teachers' reflections to collect qualitative data to answer RQs 1, 2, and 4 (see Appendix D). As part of this action research study I use transformative learning principles (Mezirow, 1997b) to form and shape the nature of the innovation. Having participants write weekly reflections about their experiences is important for several reasons; 1) it engages them in critical self-reflection, a component of Mezirow's (1997b) transformative learning theory, 2) it solicits their participation in the process of deconstructing and reconstructing conceptual frameworks of ability and disability, and 3) it provides a robust set of data to analyze in answering my research questions.

Participants were asked to write a reflection after each workshop session about their experience and teaching practices as it relates to the (Dis)ability Workshop. According to Mertler (2014) teacher journals can provide reflective narrative accounts of the research experience. Each teacher had an online Google Doc shared with me that included two reflective components. The first was a reflection on the session itself. These were completed immediately after each workshop session as a closing activity and included the prompts, "What did you like about this session?" "What changes would you like to see in future sessions?" and "What has changed for you about your thinking of disability and learning?" I measured changes in participant beliefs regarding the two constructs, disability and intelligence, and used feedback on the session itself to refine future workshops. The second component was a weekly reflection asking participants to

take and embed a picture into the online document and describe the picture as it relates to the two constructs discussed above. This was included as part of the photovoice project described in the following section.

**Photovoice.** Photovoice is an arts-based research method that asks participants to collect images of their environment and personal circumstances to provide perceptions on the topic of interest (Ivankova, 2015; Leavy, 2015). This method is in alignment with the goals of action research and can be used with a mixed-methods design (Leavy, 2015). Disability and intelligence are abstract concepts, which can be further understood using visual representation through arts-based methods such as photovoice. At the beginning of the first workshop session, participants were asked to take pictures during their journey through the workshop series (see Appendix D). The prompt includes the statement, “Please take one picture each week representing your teaching practices and how you perceive intelligence and disability.” Participants embedded one or more photos weekly into the online document and provided a written description of the picture relating to the prompt. At the end of the workshop participants compiled the photos and submitted them along with their weekly reflection log.

**Researcher journal.** I kept a personal journal throughout the final phase of the action research study to answer all research questions. A self-reflection journal is a strategy for researchers to investigate their own assumptions and belief systems, as well to make transparent the data analysis and subjectivity implicit in qualitative research (Ortlipp, 2008). The purpose of the researcher journal was to gather data about my own perceptions of the innovation and to examine how my beliefs and values shaped the innovation and were then in turn shaped by the research process itself. It also served as



another data source for which to compare various views and perspectives of others (Flick, 2014).

I used the journal to document all my notes and personal thoughts about the innovation during each phase of research. After each interview and workshop session, I wrote about my experience and highlighted salient aspects of the workshop relevant to the research questions. I also wrote in the journal at any point in the research process that I felt something noteworthy had happened or if I had any reflective insights along the way.

### **Data Analysis Plan**

Data were analyzed from the beginning of the study through January of the following semester. Analysis involved transcription of interviews, coding of transcripts, photovoice collages and weekly reflections, and statistical computation of quantitative data. Immediately after the first round of pre-intervention interviews, I had the audio transcribed and then uploaded transcriptions along with the other qualitative data sources into an online computer assisted qualitative data analysis program (CAQDAS). Upon completion of the last workshop session and collection of the post-surveys, interviews, reflection journals, post-narratives and photovoice images, I uploaded all artifacts into the CAQDAS for final coding and analysis.

### **RQ 1: How and to what extent do teachers' beliefs and understanding of ability and disability change after the (dis)ability workshop?**

To analyze the data for RQ 1, I used a combination of quantitative and qualitative analysis methods. To analyze the quantitative survey data, I first imported the survey results into SPSS version 25. The SPSS software package provides analytic tools for

statistical analysis of numerical data. Both descriptive and inferential procedures were used to analyze the data. Descriptive statistics include the mean and standard deviation as an aggregate measure of scores. Inferential statistics were then used to determine any statistically significant changes between sets of scores measuring teacher understanding of ability and disability. Inferential statistics included a paired samples *t*-test. A paired samples *t*-test “evaluates whether the mean of the difference between two variables is difference from zero in the population” (Green & Salkind, 2014, p. 151).

For qualitative data including the personal narrative, semi-structured interviews, weekly reflection, photovoice, and research journal, I used the constant comparative method to continuously compare data from all sources in an iterative process of coding and recoding with a combination of theory-driven and data-driven codes (DeCuir-Gunby, Marshall, & McCulloch, 2011; Flick, 2014; Mertler, 2014). The constant comparative method of analysis aligns well with action research (Ivankova, 2015). I first used theory-driven codes drawn from the literature to generate an initial codebook and code categories based on the theoretical frameworks guiding this study. I then used an inductive coding procedure to generate data-driven codes through an analysis of the data corpus. The combination of theory-driven and data-driven codes led to themes and assertions about the topic of disability and intelligence that helped to answer the research questions. Specifically, I looked for how teachers conceptualize disability, ability and intelligence before and after the (Dis)ability Workshop. Were teachers using a medical or deficit-based interpretive framework, or did they reconstruct their meaning schemes to be more aligned with a socio-cultural model of disability?

Finally, I used triangulation to analyze and interpret the quantitative and qualitative data. Triangulation involves the collection and analysis of data from different methodological perspectives, different data sources, or different individuals, to corroborate researcher findings (Creswell, 2015; Flick, 2014).

**RQ 2: How and to what extent do teachers' beliefs and understanding about accessible instruction for diverse classrooms change after participating in the (dis)ability workshop?**

To analyze the data for RQ 2, I again used a combination of quantitative and qualitative analysis methods. Both descriptive and inferential procedures were used to analyze the quantitative survey data. Descriptive statistics include the mean and standard deviation as an aggregate measure of scores. Inferential statistics were again used to determine any significant changes between sets of scores measuring teacher beliefs and understanding of accessible instruction. A paired samples *t*-test was used to answer this research question (Green & Salkind, 2014).

For qualitative data including the semi-structured interviews, weekly reflections, and research journal, I again used the constant comparative method of coding and recoding to interpret and understand the data (Flick, 2014; Mertler, 2014). Both theory theory-driven and data-driven codes were applied to the data and led to themes and assertions about how teacher beliefs and understanding of accessible instruction changed. Specifically, I was analyzed how teachers identify and interpret their own pedagogical frameworks as they apply to students across the spectrum. Triangulation was again used to create better understanding of the data and to corroborate findings.

**RQ 3: How and to what extent have teachers gained the necessary confidence, insights, and skills about how to begin to incorporate UDL and growth mindset into their instructional design after participating in the (dis)ability workshop?**

To analyze the data for RQ 3, I used the same combination of quantitative and qualitative analysis methods that I used for RQ 1 and 2. Descriptive and inferential statistical procedures were used to determine changes in pre- and post-test scores on measures of self-confidence, skill, and ability. Descriptive statistics included the mean and standard deviation as an aggregate measure of scores. Inferential statistics included a paired samples *t*-test (Green & Salkind, 2014).

The constant comparative method was used again here to look for themes within the data to answer the research question. Specifically, I identified themes relating to how teachers describe their own abilities and self-confidence with accessible pedagogy before and after the (Dis)ability Workshop.

**RQ 4: How do teachers perceive the (dis)ability workshop as a professional learning experience?**

RQ 4 was analyzed using the same coding procedures described above through the constant comparative method to determine salient themes and assertions in the qualitative data. I looked for data that indicated how teachers perceived the workshop series, if it was informative, worthwhile, allowed them continued agency, and ultimately gave them skills to become a better teacher.

**Threats to Trustworthiness**

Because this study emphasizes qualitative data, I used trustworthiness to judge validity and reliability of the findings. Ivankova (2015) describes four components used

to determine the trustworthiness of data: *credibility*, *transferability*, *dependability*, and *confirmability*. I briefly describe each of these concepts and potential threats.

*Credibility* involves the degree to which the findings are believable and are in alignment with “reality” (Ivankova, 2015). It is critical as an action researcher that the findings from the study are congruent with experiences of teachers and other participants. Qualitative data often involves considerable interpretation, so it is important to ensure conclusions are commensurate with participant views.

To address this threat, I used member checking to ensure data was an accurate representative of participants’ views and aligned with their lived experience. Member checking involves asking participants to review transcripts of interviews and portions of the data analysis for accuracy (Ivankova, 2015).

*Transferability* involves the applicability of the findings to other contexts (Ivankova, 2015). While action research is not concerned with generalizability, it does require that findings are relevant and that the study involves sufficient information so that others can adapt findings to similar contexts as appropriate. Relevant findings include applicability beyond just the specific context in the study. A comprehensive description of study context is essential for transferability, as it allows readers to adapt the innovation to their individual settings. I have attempted to lay out a detailed and comprehensive description of my context so that others may interpret and adapt my research as appropriate.

*Dependability* refers to replicability of the findings (Ivankova, 2015). Again, this involves the rigor of the research design so that the study could be repeated if necessary and to the extent to which methodological procedures are systematic in application. My

research design and implementation procedures are described in detail with sufficient information to judge the dependability of results. This study was not experimental so there was no attempt to control all potentially influencing variables, only to extensively document as much as was possible.

Finally, *confirmability* evaluates the degree to which the findings are a result of the participant views and not researcher bias (Ivankova, 2015). Although results should accurately reflect participant views, qualitative research is not overly concerned with researcher bias (D.L. Carlson, personal communication, September 2016), as interpretation and researcher perspective are often central to understanding qualitative data. However, the researcher must reflect on and make explicit their biases which is often done by keeping a researcher journal (Ivankova, 2015). For this study, it was more important to determine the extent to which my positionality may have shaped participant views and therefore threatened the trustworthiness of the data.

My positionality, while that of “semi-insider,” may have been an additional threat to the trustworthiness of the data. Holding an authoritative position within the school district could have potentially influenced participant responses through social desirability bias. However, I took several steps to ensure that teachers felt no obligation to provide favorable responses, such as building rapport, clarifying the intent of the research project, and emphasizing the need for honest discussion. In addition, I worked closely with staff throughout the process to position myself so that I could minimize my authoritative presence as much as possible. In addition, enlisting participants as “co-creators” of the innovation by soliciting and incorporating ongoing feedback on workshop sessions, assisted in reframing hierarchical power relations to be more position-neutral. However, I

recognize that there still may have been a desire for teachers to provide responses that appear more aligned to my personal beliefs about SWD than would have otherwise been given.

I included several methodological steps into the research design to mitigate threats to trustworthiness in each of the above areas. First, I used member checking to ensure that qualitative data was accurate and reflective of participant views. I then used triangulation as a method to confirm results between data sources. To address threats to reliability and dependability, I used a thorough and rigorous research design that included contextual descriptions and detailed methods for application. Finally, to address confirmability, I again engaged in member checking, critical reflection and included a thorough description of my study design.

### **Summary**

This study included a variety of qualitative data collection tools and one quantitative survey. Initial data was gathered through an exploratory phase used to measure existing frames of reference and personal constructions of the concepts *intelligence* and *disability*. The innovation was then implemented over the course of four months, with five separate workshop sessions targeting principles of critical disability theory, growth mindset, and universal design for learning. I used transformative learning theory as a vehicle for engaging participants in the process as adult learners, focusing on enlisting participants as co-creators of the workshop sessions rather than passive participants. Finally, I collected post-innovation data through interviews, journals, photovoice, and online surveys. Data was analyzed using a combination of the coding procedures and descriptive and inferential statistics.

## Chapter 4

### ANALYSIS AND RESULTS

The purpose of this mixed-methods research project was to examine the effect of the (Dis)ability Workshop (DW) on teacher understanding of ability, disability, and accessible pedagogy, as well as how teachers perceived the DW as a professional learning experience. The results of the study are presented in this chapter. A brief description of the analysis procedures is followed by a detailed description of the study results. First, the quantitative data is presented with a description of procedures and statistical results, followed by the qualitative data presented with themes and assertions extracted from the data and supported by excerpts from collected qualitative sources. The data for both the quantitative and qualitative data are structured around the four research questions under study.

Quantitative data includes a pre- and post-survey with four subscales and 49 items measuring (a) teacher perception of disability, (b) intelligence mindset, (c) perception of ability, and (d) self-efficacy regarding universal design for learning (UDL). The pre-survey was administered to the study participants in August, prior to the first workshop session; the post-survey was administered in December, immediately after the last workshop session. Data from the survey were analyzed using a combination of descriptive and inferential statistics.

Qualitative data were collected prior to the intervention using semi-structured interviews and a personal narrative. Ongoing qualitative data were gathered through participant reflections on workshop sessions, weekly journals and photo voice projects.



Post-interviews and post-narratives were collected after the last workshop session and combined with other data sources for analysis.

### Results from Quantitative Data

Data from the 13 pre- and post-surveys were uploaded into SPSS v.25 and analyzed to identify differences in responses before and after the intervention, as well as to determine if the differences, if any, were statistically significant. Results from the quantitative data are presented in two sections. First, descriptive statistics are provided for pre- and post-surveys. Second, the results of the paired samples *t*-test are displayed.

#### Descriptive Statistics

Descriptive statistics for the pre- and post-surveys are displayed in table 5. The Likert scale measured item responses ranging from 1.0 – 4.0. Scores of 3.0 and above indicate a higher level of agreement and scores below 3.0 indicate a lower level agreement with survey items. The mean and standard deviations illustrate change in participant responses before and after participation in the DW, with means for each construct increasing slightly from the pre- to the post-survey. The standard deviations, how spread out or how closely the collection of responses are to the average, remained relatively consistent across constructs, indicating little dispersion among responses.

Table 5

*Descriptive Statistics for Pre- and Post-Innovation Survey*

Construct	Pre-survey		Post-survey	
	M	SD	M	SD
Disability	2.88	0.39	3.07	0.53
Intelligence	3.05	0.42	3.25	0.50
Ability	3.62	0.41	3.65	0.41
Accessible Pedagogy	3.00	0.44	3.22	0.43

### Paired-Samples *t*-test

Second, a paired samples *t*-test was used to analyze changes in means scores before and after participation in the (Dis)ability Workshop. Paired samples *t*-tests are a form of hypothesis testing in which the researcher tests the prediction that there are statistically significant differences in mean scores for two population samples (Creswell, 2015). A statically significant change is indicated by a value of  $p < .05$ . Change in mean scores for the construct *disability* were found to be statistically significant at  $t = -2.61$ ,  $p = .023$ . Change in mean scores for *intelligence* were not found to be statistically significant at  $t = -1.89$ ,  $p = .118$ . Changes in mean scores for *ability* were not found to be statistically at  $t = -.331$ ,  $p = .746$ . Finally, changes in means scores for *accessible pedagogy* were not found to be statistically significant at  $t = -1.93$ ,  $p = .077$ .

Table 6

#### *Pre and Post Comparison*

Construct	Group	N	Mean	Significance* (2 tailed)
Disability	Pre	13	2.88	.02
	Post	13	3.07	
Intelligence	Pre	13	3.05	.12
	Post	13	3.25	
Ability	Pre	13	3.62	.75
	Post	13	3.65	
Accessible Pedagogy	Pre	13	3.00	.08
	Post	13	3.22	

Results of the paired samples *t*-test suggest we can reject the null hypothesis that the DW had no effect on teacher understanding and belief for the construct *disability* and accept the alternative hypothesis that there was a statistically significant difference in

scores for this construct. However, we are unable to reject the null hypothesis for the constructs *intelligence*, *ability*, and *accessible pedagogy* as the statistical significance did not meet the threshold of  $p \leq .05$ .

### **Results from Qualitative Data**

Qualitative data were collected as a primary means for understanding what effect the innovation had on participant beliefs, understanding, and insights into the constructs of ability, disability, and accessible pedagogy. Several qualitative instruments were used to collect data including pre- and post- semi-structured interviews, pre- and post-narratives, workshop session reflections, and weekly reflection journals using photovoice.<sup>8</sup>

### **Data Analysis Summary**

Each qualitative data source was analyzed using the constant comparative method of coding and recoding (Ivankova, 2015). The coding process is used to make sense of the qualitative data, make connections among concepts and to support or contradict the theory guiding the research project (DeCuir-Gunby, et al., 2011, p. 138, p. 138). I used two main methods of code generation to establish the codebook used in this study. First, I developed theory-driven codes by reviewing the literature and theoretical frameworks guiding this research study and generated a general list of initial codes organized by broad coding categories. These categories were established by identifying the constructs being explored: *disability*, *intelligence*, *accessible pedagogy*, and *adult learning*. For example, the code *medical-model* under the category of disability came from scholarship

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<sup>8</sup> A summary of the data collected is presented in appendix E

on critical disability studies (Rocco, 2005). Codes generated under the category *Adult Learning Experience* were informed by research on Transformative Learning Theory (Mezirow, 1996, 1997, 2000).

After I established the first set of codes, I then developed data-driven codes by examining the data corpus. This inductive process allowed me to generate additional codes by identifying themes present in the data that did not fit under the existing theory-driven coding (DeCuir-Gunby, et al., 2011). The following table provides a summary of the coding categories, a description of the categories and sample sub codes within each category, the number of codes contained within each category, and the total number of coding events.

Table 7

*Description of Codes*

Code Category	Category Description	# of Codes	# Applied to Data
Disability	Participants refer to how disability is manifest in society and the educational environment (e.g., deficit, function, social construction, etc.)	10	287
Ability and Intelligence	Participants refer to how intelligence, ability, or mindset are constructed and applied to educational settings (e.g., growth mindset, multiple intelligence, etc.)	5	244
Understanding of Accessible Instruction	Participants describe components of Universal Design for Learning as well as other pedagogical frameworks (e.g., differentiated instruction).	10	356
Implementation of Accessible Instruction	Participants describe implementation of instruction in their own classrooms.	14	297

Adult Learning Experience	Participants refer to their professional learning experience (e.g., critical reflection, discourse, action, etc.)	13	261
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Theory-driven and data-driven codes were then used to analyze the data and establish general theme-related components. The theme related components were then combined into an overall theme. Finally, an assertion was generated to explain the data and answer the research question. The next section provides the results of this analysis for each of the four research questions.

**RQ 1. How and to what extent do teachers' beliefs and understanding of ability and disability change after the (dis)ability workshop?**

Table 8 presents the themes, theme-related components, and assertions I used to answer RQ 1. Following the table, each theme and assertion is described along with the theme-related components and supporting participant quotes.

Table 8

*Data analysis of codes to answer research question one*

Theme	Theme Related Components	Assertion
Teachers beliefs and conceptual understanding of disability.	<ol style="list-style-type: none"> <li>1. Disability should be defined by difference.</li> <li>2. Social norms factor into disability status.</li> <li>3. Disability correlates to real-world adversity and a need for different types of supports.</li> </ol>	The conceptual understanding of disability changed from a medical-model based on deficit to a socio-cultural model based on difference and social norms.

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Teacher beliefs and conceptual understanding of ability and intelligence.	<ol style="list-style-type: none"> <li>1. Rejection of IQ as the sole measure of intellectual ability</li> <li>2. Teachers believe intelligence can be grown</li> <li>3. Growth in ability is due to effort</li> <li>4. Experience can foster improved intelligence</li> <li>5. Continued reliance on a multiple intelligence mental model</li> </ol>	The conceptual understanding of ability and intelligence changed from a model of fixed intelligence to one of growth based on experience and motivation.
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**Teachers beliefs and conceptual understanding of disability.** *Assertion: The conceptual understanding of disability changed from a medical-model based on deficit to a socio-cultural model based on difference and social norms.* To answer the first research question, semi-structured interviews were conducted before and after the innovation to capture changes in understanding of, and beliefs towards, disability. In addition, participants wrote a short narrative before and after the innovation. The narrative asked participants to describe what having a disability means to their own (potential) child and to a student. Session reflections with prompts asking teachers to reflect on their understanding of disability were also collected after each workshop session. Finally, each participant wrote in a weekly journal that included reflective prompts about photos taken as part of the photovoice collection. The following theme related components were generated from this data: disability should be defined by difference, social norms factor into disability status, and disability correlates to real-world adversity.

***Disability should be defined by difference.*** Prior to participation in the (Dis)ability Workshop, 11 out of the 13 participants described disability using terminology and language that highlighted deficit as the primarily indicator for disability

status. Conceptual understanding of disability was built around the inability to perform a task or skill, a physical or psychological deficiency, or the absence of functional capacity in one or more areas. For instance, Tina asserted that functionality is what she thinks determines disability, “The term disability means to me that someone is maybe not fully functioning as physically. I have a lot of kids physically not fully functioning. They need assistance to function with the other students” (interview). Julie explained simply that disability is “...any person who has either an impairment, physical or mental, that prevents them from doing something” (interview). The determination of disability status based on a diagnosable or observable psychological problem was reaffirmed in the personal narratives. Paul explained to his “child,”

*Your mom and I just found out that after testing you were diagnosed with ADHD. You will now be labeled as a kid with a disability. Your mom and I do not like that term, disability. Many people in today’s world associate the word disability with being inadequate or not able to do something or not as good at something (personal narrative).*

After participation in the DW, teacher views shifted to minimized language identifying *inadequacy* and greater frequency of language framing disability as a *difference* among individuals. Teachers were more likely to discuss disability as a learning difference rather than an innate flaw or functional deficit. For example, Tina described how her thinking changed,

*Okay, to be honest, after we had our meeting on it and we were learning more and more about it, I saw something that said, and I think I wrote it in my letter, my post-letter or whatever, that, there's not a disability, it's just a different ability.*

*They're not at a disadvantage for anything. It's just a different way to go about accomplishing something. It's just a different ability, not a disability. I don't like disability as a word (interview).*

Even when discussing more salient examples, such as individuals with autism, participants expressed an interpretation of disability as difference after experiencing the workshop. Kara said,

*I think it has some validity, but I don't think it is what we should derive the specific term of disability on, because I think specifically with autistic children, they learn completely different than a typical child does. So, would they truly have a disability? Or do they just learn differently? (interview).*

This idea was prevalent in the post narratives as well when Cora explained,

*It means we may have to design together some alternative ways to do things or add in more steps to achieve a task or assignment than others may need. What it doesn't mean is that you "can't" or "won't" do something whether it is in class or in life... (personal narrative).*

This alteration in meaning scheme (Mezirow, 1997) was also illustrated during the session reflections as noted by Sue during two separate sessions: "I think we need to quit using the term DISability and change it to just abilities" and "Disability seems like less of a difference and more something that is shared by all but manifested individually."

Although most participants demonstrated a change in conceptual understanding of disability, some participants still showed adherence to a traditional deficit-based model. For instance, Mary said, "To me a disability is the lack of ability" (interview); and Julie, who used very similar terminology in her pre-interview and post-interview, said "To me,



it is either a physical or mental impairment that prevents someone from doing something” (interview). Despite the persistence of the *disability-as-deficit* perspective in a limited number of participants, most described the concept in terms reflecting a changed conceptual understanding.

***Social norms factor into disability status.*** In addition to using context to identify disability, participants also discussed how social and cultural norms contribute to disability status, an indication that disability is less an inherent deficit and more a deviation from a social norm. Participant responses changed from using a deviation from normed expectations as an indication of disability, to responses that highlighted the arbitrary designation social norms place on disability status. Heather explains,

*I guess the average is basically told from us by society on what normal people can do, and so I think when you see somebody who is not able to perform in that certain way, or if they're exceptional at that, that they're above average or they can't do those functions, so they would necessarily be labeled as having disability (interview).*

A simple interpretation is made by Eve, “Disability is maybe not being able to do what supposedly able-bodied people are able to do” (interview). Post DW, participant views changed to be critical of social norms determining disability status. Julie discusses the arbitrary nature of disability definition in education,

*Of course not, because the lawmakers in place have decided that we can't have things too broad, because that would be impossible to meet every single need and that would put them in a whole bunch of legal trouble. So, we make it very narrow and very, very specific (interview).*

Carrie expresses how society determines expectations regarding disability but that those may conflict with what educators may perceive,

*I think society dictates a lot of what we see. In those as we talked about in that one training, you've got your education department for the country that thinks one thing, but they are not in the field like the rest of us. So, I think those of us that are in the field kind of know a little bit better and we see what they need (interview).*

One participant discussed her belief about society's influence on disability status,

*What the term disability means, well, I think it can mean a variety of different things. I'm very much from an advocacy perspective, so I'm of the mind that we all have disabilities. I don't think that any one person ... I think society basically creates the disability or the way a person approaches the disability (interview).*

A greater focus on social norms was evident in the post innovation data when compared to participant views in the pre-intervention phase. There continued to be variability in how each participant described social influence on disability status, such as when Vin said,

*Disability, really, when I think disability, I don't like thinking of it as a school setting. I like thinking of it as having a difference from the norm, having to adapt in a different way than what's normal. I guess, that's the best way I can see it in my eyes (interview).*

***Disability correlates to real-world adversity and a need for different types of supports.*** Although participant views appeared to change over the course of the innovation, qualitative data indicate that many still believed that disability status

continued to result in additional educational adversity and required classroom support.

Cora said,

*Disability to me means that someone may have difficulty in maybe an area or across certain areas when it comes to learning. And that they may need different types of scaffolds or supports in a learning environment to access the content (interview).*

When writing her post narrative to a fictional student, Heather asserted, “This does not mean that they can’t do everything that we can; they just might need assistance in how they accomplish the task.” Vin also identified “extra” supports for those SWD,

*But I feel like we have students that have extra accommodations that are such students with an IEP because those students need those extra accommodations to help them raise to their ability that we want them to grow to. I guess that's what I'm trying to say (interview).*

### **Teacher beliefs and conceptual understanding of ability and intelligence.**

*Assertion: The conceptual understanding of ability and intelligence changed from a model of fixed intelligence to one of growth based on experience and motivation.* To answer the second construct measured in RQ 1, the same qualitative instruments were used, and data was analyzed in a similar fashion. The following theme related components were generated from this data: rejection of IQ as a measure of intellectual ability, intelligence can be grown; growth in ability is due to effort, experience can foster improved intelligence, continued reliance on a multiple intelligence mental model.

***Rejection of IQ as the sole measure of intellectual ability.*** Many participants described IQ as an invalid indicator of intelligence, either rejecting its use as too

reductive or expressing disagreement with testing in general as a means for determining ability. However, there was a reluctance to discount IQ measures altogether. Tina criticized IQ as a means of judging intellectual ability,

*Because if they're not, just like the state standards or the testing, what if you're, like I said, I already said this, if you're really good at something, to me, that's your highlight, that's what you're getting, that's what you understand, but they don't assess you on that. That's not even part of your IQ, so why would you even ... Unless you hit every single thing, then I don't think that's even accurate (interview).*

Julie expressed similar criticism,

*Because somebody who may not know a whole bunch of facts, can still be a very, very intelligent person, could be the best architect in the world, but maybe they are unable to tell you ... maybe they can't read very well, or do reading comprehension. I don't know what the IQ test, all the specific questions, but it seems to be a very academically focused examination versus more real-world experience (interview).*

Jen also expressed concern regarding IQ, “I've had an IQ test done when I was a kid, and the questions they ask are not like anything that you'd actually ever use in real life, for the most part” (interview). One participant acknowledged the bias present in standardized IQ assessment,

*For me there are different types of intelligence. I know that IQ tests, or I feel that IQ tests, are biased a lot of times. Depending on the background knowledge of a person, that is what's going to determine, I believe, a large part of how they do on*

*IQ tests. But then, of course, there is some basic knowledge that someone with a high IQ inherently, kind of know...(interview).*

Despite this rejection, some participant responses indicated that IQ maybe a useful, if flawed measure of ability. However, it should not be used to limit potential. Vin said,

*I feel like IQ plays a role because you're only, according to what IQ says, this is what your talent just has. But I feel like there's other factors that could make you short of your IQ or could make you outperform what your IQ says. Not by a whole lot, but I feel like you could go past that (interview).*

Carrie expressed the same by commenting, "...I don't want to say anymore that your IQ limits you because I don't think it does anymore" (interview). However, some participants continued to rely on IQ as a static measure of ability as expressed by Kara, "For me, when my son got tested with a disability, they looked at his IQ, whether it was lower than average, higher than average, whatever. And so to me, that's what I look at" (interview).

***Intelligence can be grown.*** Another theme-related component that was evident in the data included the idea that intelligence as a characteristic or trait was changeable, not fixed, and could be altered. Participant responses during post-innovation interviews revealed that intelligence as a personal trait could be improved and expanded. One participant stated,

*But I feel like when they have all those tools and they have all those capabilities, they're able to increase this in some capacity and they're able to grow in their*

*intelligence and they're able perform at a level that they didn't think that they were able to perform on because you're pushing them* (interview).

Cora acknowledged the impact of the DW on the belief about intelligence stating, “Through this process I strongly feel that I don't see intelligence as such a fixed thing that we can't move on the graph” (interview). This was further supported by comments from Julie, “I think you're just growing it. They are continually growing and developing and being able to process more information, more facts, more ... just whatever comes at them” (interview), Bev, “I think the right instruction can have ... I know that there's varying schools of thought out there that say that we can't increase that intelligence. I don't agree with that. I think we can change intelligence” (interview), and Paul, “Well, I still think you can learn. Acquire knowledge. Be taught. Intelligence, I think you could build intelligence. Gain, however you want to say it” (interview).

***Growth in ability is due to effort.*** A third theme related component emerging from the data includes the idea that intelligence can be improved with effort. Participants discussed how hard work, effort, and persistence can lead to improve intellectual capacity and cognitive skill. Vin provided an example using a fictitious student,

*But I feel like if Joe works his butt off and Joe adapts, and Joe is able to adapt to certain situations. He's able to adapt his learning. He's able to work hard. I feel like Joe could increase his IQ. I'm not saying he could increase his IQ times a million, but I feel like he could perform better than what the tests say his IQ could. Where if Jim doesn't do any effort, doesn't do anything, I feel like he's going to underperform his IQ* (interview).

A similar statement was made by Paul, identifying intelligence as the ability to seek knowledge, “But you can also build intelligence yourself, just by going out and searching for new learning” (interview).

Persistence was also a common theme as evidenced by the comments from this participant, “...but they can also improve their intelligence in my opinion, by working hard and not giving up” (interview). Another participant described the teacher’s responsibility in providing an environment where challenge leads to increased ability,

*I believe that by pushing students, knowing where they are, knowing that all of them are able to achieve, whether they're high or they're low, just challenging them at whatever level they happen to be at will help them to grow in intelligence because intelligence is fluid (interview).*

Effort appeared to correlate with the ability to adapt. Many participants referenced adaptation as a key component of effort,

*I feel like intelligence is your ability just to adapt, so adapting to a situation. Now, that doesn't mean adapting on the fly, that adapting could be studying, or not just studying, but working and trying to increase your skill, your knowledge, your performance in a certain area. And I feel like your ability to do that to me is a huge factor in how I rate intelligence (interview).*

***Experience can foster improved intelligence.*** In addition to motivation, participants described experience and learning opportunity as crucial factors in growing intellectual ability. Several comments illustrate the relationship between experience and intelligence. When describing the need for exposure to high quality instruction, Eve said,

*Otherwise, they're not going to grow in intelligence, because they're not going to understand or get the information; and only by that acquisition of knowledge are they going to be able to grow, get all those synapses growing, and make all of those connections that need to be made to actually grow in intelligence* (interview).

The importance of instruction on intelligence was stated succinctly in this interview exchange between the researcher and teacher:

Speaker 1: So can instruction change IQ?

Speaker 2: I believe it can. I believe it can. Yes. It can.

One participant even framed intellect as a skill acquired just like any other, “I just believe that you learn everything. You learn intelligence. From a very early age, you're being taught different things” (interview). Another participant referenced the need to diversify experience over time to grow one’s intelligence, “And I think that as you learn more things your intelligence can grow, and you can apply it in other areas. But it's not something that is this one-time fix” (interview).

***Continued reliance on a multiple intelligence mental model.*** Participants continued to frame intellectual ability and intelligence through a multiple intelligence model. They described individual cognitive capacity by defining areas of strength and weakness, and converged skill and motivation into intelligence. Prior to the intervention, participants used multiple references to “books smarts” as separate from more applied areas of ability as is described by Julie, “For me intelligence is just a mixture of book smarts and street smarts” (interview). A further delineation can be seen in this participant’s comments,



*They have certain areas on their ASVAB [military vocational exam] that they did very well, so they represent high intelligence in different areas that aren't necessarily book smart or verbally it doesn't manifest itself in that way, so that's where I'm kind of getting my information (interview).*

Some even refer to Gardner's multiple intelligence model, "Those could be, you know, we talk about Gardner's multiple intelligence. It could be the kinesthetic intelligence. It could be the verbal, the linguistic, audible. I mean, it could be a number of different things, intelligence" (interview). Some participants described intelligence as areas of skill, "Some people are very well articulated, so to me their intelligence level is higher with the articulation, with the verbal, where some people are amazing artists, so their intelligence level is great when it comes to the art" (interview).

Post-interview data revealed similar themes regarding multiple intelligences. Tina describes it as one finding their own set of abilities,

*Everyone's intelligent, I think in their own way. I think I remember saying this. Everyone's very intelligent and I feel like I'm repeating myself. Whether it be an artist or they have that special technique with maybe baseball. They have that perfect, they get it. That's what I think about intelligence. Everyone has something, whether they know it or not I don't know, but some know what they have and some don't. They haven't been exposed to it or they haven't, it hasn't come to light yet, I guess is what I'm trying to say (interview).*

Others describe intelligence using traditional subject knowledge,

*I know every one of my students is smart or intelligent in certain areas. It might not be math, it might not be reading. It might be band, it might be music. And so for me to define*

*intelligence, it depends what area we're talking about or ... and I think that's my confusing part is the whole intelligence piece. Because for me, I'm extremely smart in math, but in reading and writing, I'm not very high in (interview).*

**Summary.** Results from the qualitative data reveal teachers using socio-cultural mental models to understand and describe disability, ability, and intelligence. Participant responses indicated that social and environmental factors largely contributed to disability status and intellectual ability. However, there continued to be a persistent core of traditional beliefs such as the inability of teachers to wholly reject IQ as an indicator of intelligence and the continued reference of multiple intelligences in their own conceptual understanding of intellect and ability.

**RQ2. How and to what extent do teachers' beliefs and understanding about accessible instruction for diverse classrooms change after participating in the (dis)ability workshop?**

To answer research question two, interviews, session reflections, weekly reflections, and photo voice projects were analyzed producing theme-related components and assertions. The results are displayed in table 9 and presented in the following section.

**Changes in instructional beliefs and adherence to traditional pedagogy.**

*Assertion: Changes in understanding of accessible instruction are subtle, mostly manifest in perception of learner variability and the principle of various methods of assessment.*

To answer the second research question, the same qualitative data sources were used and coded with the constant comparative method. Based on the analysis, the following theme related components were generated from this data: creating pedagogy that reaches both ends of the learning spectrum; beliefs in the “average” student dismissed; concepts of

action and expression understood most clearly; prioritizing student choice; and continued description of differentiation and cooperative learning as primary pedagogies.

Table 9

*Data analysis of codes to answer research question two.*

Theme	Theme Related Components	Assertion
Changes in instructional beliefs and adherence to traditional pedagogy.	<ol style="list-style-type: none"> <li>1. Creating pedagogy that reaches both ends of the learning spectrum</li> <li>2. Beliefs in the “average” student dismissed</li> <li>3. Concepts of action and expression understood most clearly</li> <li>4. Prioritizing student choice</li> <li>5. Continued description of differentiation and cooperative learning as primary pedagogies</li> </ol>	Changes in understanding of accessible instruction are subtle, mostly manifest in perception of learner variability and the principle of multiple methods of assessment.

***Creating pedagogy that reaches both ends of the learning spectrum.*** Participants provided responses that clearly indicated a shift in instructional perspective to include a pedagogy designed to reach the entire learning spectrum. For example, several participants talked about *teaching to the edges*, “If you teach to the edge, students, all students will be encompassed (session reflection), “We need to try our best to teach to the edges” (session reflection).

Several participants talked about moving out of their comfort zone in the effort to extend instructional efficacy,

*I believe that this whole thing has opened my box and taken me out of my comfort zone. I want to be able to reach all of the edges and my eyes have been opened to not limiting the learning of students with disabilities. These types of students are very capable of learning - it just needs to be accessible to them with high expectations and appropriate goals (session reflection). I don't know about the others but ... You made me go out of my comfort zone, which after a while I think sometimes teachers need that. Because you get so stuck in your right and you need teach to the middle and you forget about the edges and everybody*

(interview). Several participants referenced a graphic used in one of the workshop sessions (figure 6). The image depicted the act of shoveling snow to illustrate the



Figure 6. UDL Comic used for introduction module (Giangreco & Ruelle, 2002).

need to design a universally accessible curriculum. This appeared to be a powerful visual representation for participants.

*I need to shovel the ramp and put up a chain link fence. I know, personally, that I am not hitting the high and low in my room and need to adjust my teaching to hit those edges. I*

*have personally seen that when I set my expectations of all high, my students at all levels respond positively (session reflection).*

Kara discussed her instructional approach, “Not to focus on the average but to focus on the edges because this will encompass everyone similar to shoveling the snow off the ramp versus stairs” (session reflection).

The idea was well received, but many participants acknowledge that it required innovative thinking and a mindset change. Mary stated, “It has changed a lot. I notice that I need to change my teaching to teach every student not just trying to find a box that fits one student” (session reflection). Even the building principal described the need to shift perceptions of traditional pedagogy,

*I need to do a better job coaching teachers to think outside of the box and take risks in their classroom. I am still very new and I think many of them are worried or scared to take risk or step out of their comfort zone. Many of us are teaching to the middle because it is comfortable or safe. We are losing the students on the outer edge (session reflection).*

Although most participants discussed the need to redesign their instructional approach to reach all learners, some still referenced traditional constrained pedagogy, such as when Cora and Heather stated:

*I typically have to look at the standards that we're addressing, and then evaluate what can my student do in regard to that standard. Sometimes we only get a part of that standard, and that's okay for them. Sometimes they get that standard. Sometimes they get that standard plus two other ones (interview).*

*I mean, I don't even know. ABC order or something. You have your higher kids that are doing it to the second and the third letter, and then you have your lower*

*kids that are still just trying to put the A through Z, just letters. They're not even on words. Just having them put the alphabet in order (interview).*

***Beliefs in the “average” student dismissed.*** After the DW, participants expressed rejection of the notion of the “average” student when discussing student learning and instead described student needs in terms of learner variability. The following excerpts illustrate how participants’ views of “average” conflict with their understanding of ability and learning:

*You’ve got a classroom where you’ve got your ESS students but you’ve also got gifted students and you got what’s called your average kids. But they all have their strengths and they all have their weaknesses. So in a way we are all are the same, we are just learning ... I don't know this is going to come out wrong, not learning differently and at different paces. But eventually it all starts to click especially I don’t know, especially I see that with the little ones. They just to click a little bit more. Maybe click is not the right word but it ... Their light bulb goes off and they are getting it, they understand it (interview).*

*Yeah. It would be so much easier to just talk to the middle. But then, that's such a low, minimal percentage of my students, because I would probably say it's 5/30 of my kids who are in the middle. Because I have some that are extremely, extremely low, and I have some that are kind of average, and then higher. So it really depends, especially it depends on the topic that we're talking about or the content that we're talking about (interview).*

*But I feel like nobody is perfect. Nobody is the same, like me and you could be thinking or doing the same as I think but in my brain, it works itself out a little bit*

*different than you have. And one way might be faster, one way might be a little more productive. But I feel like everybody has their own little accommodation that they make, either they're self-aware of it or somebody has to come and provide that accommodation to them, if that makes sense (interview).*

*And even in math. You have kids that can't even identify their numbers, but then you have kids that can do double digit addition. There still is not ... Even my middle kids that can still do single digit addition, I would not consider them average (interview).*

***Concepts of action and expression understood most clearly.*** Analysis of the data revealed that participants' beliefs and understanding of accessible instruction was manifest most in the principle of *multiple means of action and expression*. Many of the participants described various methods of instructional activity, engagement, and assessment as critical to promoting accessibility among students. For example, Vin described how students can interact with a topic in multiple ways,

*But then, I do projects. I do like today, the students were researching a topic and then they had to find a way to present that information. It could be a visual. They could have drawn a picture. They could do like a PowerPoint. They could do like a Cornell notes. They could act it out. I felt like the lesson that I was doing is I was hitting all the different ways, all the multiple intelligences and I was letting them pick the best way what they felt was the best way for them to show me the information that they learned (interview).*

Julie described how traditional vocabulary instruction can be altered to reflect a variety of engagement and assessment methods,

*So, let's say we're doing vocabulary, and the standard is I can understand vocabulary words from the text. Some of you can tell you what the definition is. Some of you, I ask them to draw what the definition is, 'cause it's easier for them to draw than to tell you. Some of them, I ask them to write a sentence or give an example of what the vocabulary word is. And some of them, if they can't write, they can't spell ... I have a few kiddos like that. Again, drawing. They could tell it to me. They can use an example. And so, have they met that standard of understanding X amount of vocabulary words. Yeah. They just showed it to me in seven different ways (interview).*

Assessment became a common theme in the data as evidenced by the following excerpts: *We need to be more aware of assessment strategies. A one size fits all model is not appropriate for students with disabilities or students without disabilities (session reflection).*

*Some kids just don't respond to a multiple-choice test. They will fail it, even though they know the information, they don't do well. Some of them need to write to express, they need to do a project to express, where there's visuals and creativity, and they'll still demonstrate the same mastery, but it's just in a different form, so it's about finding what helps them demonstrate their intelligence and their mastery, according to their intelligence type (interview).*

*Because not everybody is gonna be successful on one specific assessment, or one specific strategy. And that goes back with the learning. If I present it one way, that's gonna hit maybe 5, 10, 15% of my class. Just like assessments or testing, or to see where they're at, they're gonna show me where they're at in multiple*



*different ways. So I need to assess them in multiple different ways to truly get a good gauge of where they're at (interview).*

Contrasting with these findings, some participants resisted the idea that every activity or lesson should include multiple means of engagement and assessment. One teacher said,

*My goal right now is to get them successful for eighth grade and eventually high school and college, and in college, they don't differentiate. They don't, they can't. They have like a hundred kids in their classroom. It's impossible. They're not going to differentiate for you. They're not going to be like, "Well, you do a writing project, and you do a picture." They're just not. So you need to have the basic idea of how to do it to be successful in college, because they're not going to care. It's college. My college professors didn't care. You had to write the essays. I'm like, "You guys, you're going to take 101 and 102. You're going to have to write all these essays. You have to know how to do this." I think it's an important skill to know how to write (interview).*

**Prioritizing student choice.** Data revealed that participants prioritized student choice within learning activities after participating in the movement towards students as *Expert Learners* (CAST, 2011) includes greater autonomy for the learning process as was evidenced in participant responses. For example, one participant explained how students need to engage in self-directed learning,

*I think that goes to knowing when to jump in as a teacher and knowing just to step back and let the kids figure it out on their own and adapt on their own and use skills that you have previously taught them, figure out, "Oh, this is why," or, "This is why I know how to do this," and they just do it on their own (interview).*

Another discussed the need to have students engage in trial and error during the learning process,

*"Okay, here's the problem. How can I solve it?" That problem-solving part of it. As well as the ability for them to trial and error. Wanting them to say, "Oh, this time it didn't work so what can I try next time to make it work better, and how can I see it be successful?" And all this kind of stuff. (interview).*

Two other participants saw student choice as a means to promote greater engagement with content, as exemplified by these two teachers:

*If I get the ability to choose this or this, you already got a buy-in from me. Instead of saying, "All right, this is what we're doing. This is the only thing we're doing. You don't have a choice." Whereas you can say, "All right, we can do this this way, or this this way." I think it's just more giving them choices. It's good I think at any level (interview).*

*Because I want them to explore it. I feel like a student has more ownership of their education, their learning when they find the answers as opposed to somebody feeding it to them (interview).*

Tina even discussed how student choice can be used to foster individual challenge,

*We go through all of them before we even ... like, this station, you can do it this, this and this. This is your lower, this is your medium, this is if you've done it a while and you feel you want to really challenge yourself, then you can do that (interview).*

One teacher even had students provide input on her instructional method,

*And I even polled them on one of my blocks. I'm like, "Okay, how do you want to learn this information? Is it productive for me to be standing up here and talking, or what would you like to see?" And that was a really good piece for me. I think it was after our first or second workshop with you. I'm like, okay, I just need to take a step back and see so I can plan better, because I can see some of them checked out. I can see the engagement, it wasn't there. So it's like, okay, I need to do better as a teacher, and I need to meet them where they're at. So that was nice to see and to hear, "Yeah, we need this, Mrs. Law. We need to talk to each other, we need to work on this before we talk to you about it" (interview).*

***Continued description of differentiation and cooperative learning as primary pedagogies.*** Although teachers made clear pedagogical shifts in understanding towards UDL, most still identified differentiated instruction and cooperative learning as their primary pedagogy. Vin discussed the need for continual differentiation, “Constant differentiation. It's constant. It's every little thing, from giving directions to planning your lesson, to planning your assignment (interview). As did Tina, “To me, with what I do is different than classroom teachers I want to say, but you have to differentiate (interview).

Another participant described instructional divisions based on performance, *It's very hard. You have general classroom instruction, and then I've typically had small group instruction afterwards, so I can provide differentiated instruction for my higher kids, for my middle kids, for my lower kids, and that's what we've been able to do here, with the scheduling...(interview).*

Cora provided a detailed description of a lesson that she believed was effective, highlighting the need to differentiate,

*Having had the lower group of kiddos, I moved from ... whole group might have been 30 or 35 minutes, to whole group became 10 minutes and very focused, student-friendly type of standard and instruction, and then out into groupings that were very targeted, sort of meeting at instructional level, and then that piece where I would pull kids over and we would continue to work on that standard but designing the activity and the questioning and all of that piece specifically to that group of six or eight kids that was with me, and then taking ... at the end, coming back together for that really brief whole group time and having a whole other sort of instructional piece where I had those sort of follow-up questions to see if we could all come to the same understanding before leaving that day (interview).*

In addition to differentiated instruction, participants also expressed the need to incorporate cooperative learning as a means of effective pedagogy. For example, one teacher described her vocabulary lesson,

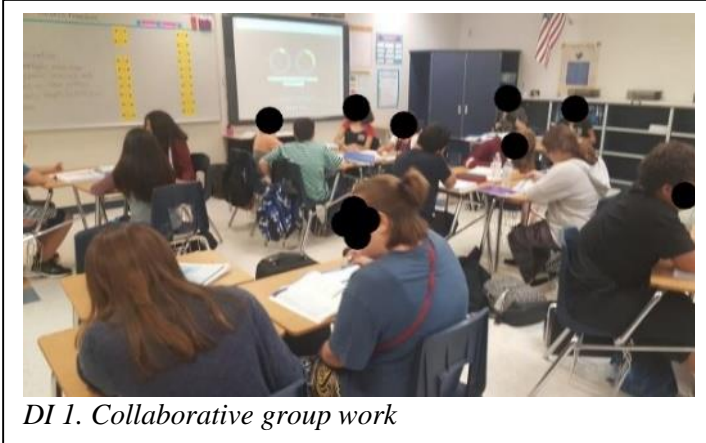
*... so that they can learn from each other. Maybe they couldn't think of a picture, or they couldn't think of a way to use it in a sentence. Well, they heard their student use it ... you know, their friend use it in another way, and so they're learning from that, too. So, I love doing that. Every Monday we do vocabulary squares. I just call it vocabulary squares (interview).*

Another teacher described grouping and learning styles as a means of fostering collaboration,

*I think whenever your kids work in a collaborative group, there's always that. Those needs are being met, and there's the different learning styles, and they can*

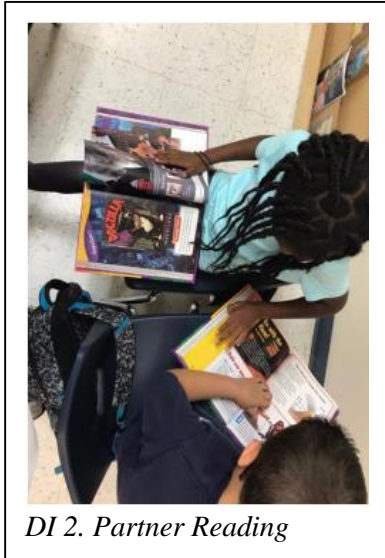
*learn off of each other, and they can learn off of me when I come around. I do a lot of that (interview).*

One teacher discussed the need to be more of a facilitator of learning, “But I believe that’s huge as well, letting students be a student, what is the term, student led groups, and I am



just a facilitator once they actually have what they need to have (interview). Many of the weekly reflections and photos elicited during the study highlight cooperative learning,

“Students work on their assignment in collaborative groups. They are working together to answer text-dependent questions based on a text we read as a class” (weekly reflection).



Even reading activities became cooperative, “we are partner reading our stories, this helps to have the person right next to you so you can hear them read. Both students have the same story and help each other decodes words” (weekly reflection).

**Summary.** Data indicate several outcomes; that participants described the goal of instruction to be meeting the needs of all learners, that learner variability

represents a clear repudiation of the fictional “average” student, and that differentiated instruction and cooperative learning continue to drive teacher pedagogy. In addition, teachers made mention of accessible instructional practices by referencing student choice

and multiple means of action and expression, however connection to other UDL principles were weak and unclear.

**RQ3. How and to what extent have teachers gained the necessary confidence, insights, and skills about how to begin to incorporate UDL and growth mindset into their instructional design after participating in the (dis)ability workshop?**

To answer RQ 3, interviews, session reflections, weekly reflections, and photo voice projects were analyzed, producing theme-related components and assertions. The results are presented in the following section.

Table 10

*Data analysis of codes to answer research question three*

Theme	Theme Related Components	Assertion
Insights into UDL led to the initiation of small changes in practice.	<ol style="list-style-type: none"> <li>1. Adopting growth mindset concepts.</li> <li>2. Utilizing UDL without explicitly identifying strategies</li> <li>3. Time continues to be a barrier to changes in existing pedagogy</li> </ol>	Teachers gained some confidence in changing existing practice, but still need additional training and coaching on how to shift to a UDL and growth mindset pedagogy.

**Insights into UDL led to the initiation of small changes in practice.** *Assertion: Teachers gained some confidence in changing existing practice, but still need additional training and coaching on how to shift to a UDL and growth mindset pedagogy.* To answer the third research question, the same qualitative data sources were used and coded with the constant comparative method. Based on the analysis the following theme related components were generated from this data: adopting growth mindset concepts, utilizing

UDL without explicitly identifying strategies, and time continues to be a barrier to changes in existing pedagogy.

*Adopting growth mindset concepts.* Participants began to discuss and display use of growth mindset concepts in their instructional designs after participating in the DW session on intelligence, growth mindset, and grit. Several participants discussed use of growth mindset concepts as a shift in how they perceive student learning and failure. For example, in a session reflection one participant identified how they redefined failure, “Failure as not only the opportunity for growth but the need for change in the teaching mindset - not just grades, score, pass or fail but looking for the reason and contributing factors” (session reflection). Another expressed in a session reflection the need to use the notion of “yet,” Carol Dweck’s idea of looking at failure as impermanent, to guide their practice: “I like the Power of Yet concept. It allows students to fail and learn from their mistakes” (session reflection).

In the narrative letter written to a future student, one teacher expresses the importance of having a growth mindset,

*During the year we are going to run into difficult challenges. We will overcome these challenges together. I need you to be ready to work hard and never give up. Everyone one in our class is a little different and that is what makes us all great and unique. There will be times when you think activities are easy and there will also be times when activities are hard. Just know, you are not alone. There will also be friends in class that are having trouble also. The most important thing is that you never give up (narrative).*

Others described the impact such concepts have on instructional practice,

*Obviously a majority of the kids, they can get it, but those who struggle a little bit more, you're looking to see if they've made an adjustment. Mine's more effort based I feel. If they're trying it and trying it and they're adjusting and they're still can't get it, that's fine. As long as they're trying is what I'm looking for* (interview).

*My class does growth mindset bell-ringers every morning, where it's talking about failure is not the end, it's how you react to failure. Every failure is an opportunity to learn and learn what not to do next time, so you can succeed eventually. I don't think they quite get it yet. They're like, "Why are we talking about failure?" I'm like, "I'm not. It's not about the failure, it's about what you do after the failure"* (interview).

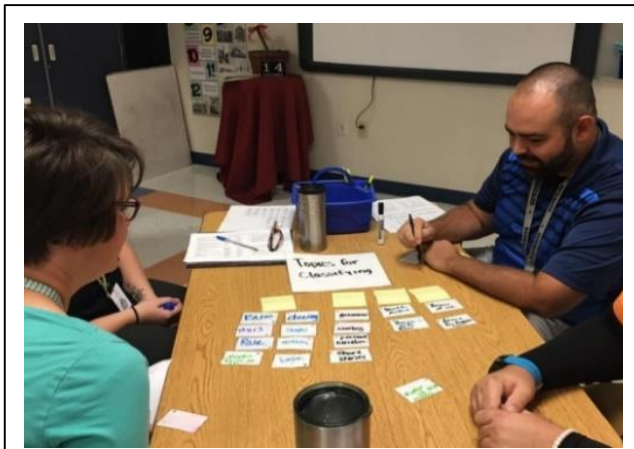
*It can have a huge impact because having the mindset, you know, we talk about growth mindset, having that mindset that all students are able to achieve, they might achieve at different times, but they're going to eventually achieve, is really important because I think that, unconsciously, we project onto our students. So if you had that knowledge and that feeling that a student is going to be able to make growth, then they inherently try, I think, try a little harder, as well. And then you just kind of adjust your instruction. "I know that you're not getting it right now, but you're going to get it eventually. We're just going to keep trying"* (interview).

Several participants identified the application of growth mindset concepts to teachers themselves. One described how she can model mindset for students with her own mistakes,



*...that idea that I will make mistakes in my teaching. And I can learn from them. My students can learn from them and I can take that and build upon it and take it apart. Figure out what went wrong and which way to go and how to grow and move forward. Versus I guess the best word is rigid or maybe that fixed idea, my fixed mindset of my classroom goes this way every day. This is how it's going to go and if those things don't happen then I'm doing to stop and make those things happen (interview).*

The principal adopted the mindset approach while working with his with staff and



*DI 3. Staff Engaging in Growth Mindset*

included the following photo with his reflection:

*They were asked to take this new information back to their classrooms and incorporate it in an activity. This is a great example of how to develop a growth mindset*

*with a staff. They are being asked to take risks whether they fail or not. Not only are the teacher's creating a growth mindset but they are modeling for their students also. Overall, this process will teach students with disabilities it is okay to fail as long as you are trying and taking risks (reflection).*

The idea of “grit” conceptualized by Angela Duckworth was also prevalent in participant responses. On teacher reflected, “We need to work on incorporating more time to teach “Grit” with our kids” (session reflection). Another commented, “I enjoyed

the message of the Grit video. I believe this needs to be the mindset of the teacher also in their ability to teach” (session reflection).

One teacher provided evidence of student outcomes that result from inclusion of these concepts into instruction,

*Working with a group of boys with Eureka math. The little one with the hand in*



*front of his face had been getting frustrated, but had the “ah-ha!” moment and the math has then clicked for him. It was nice to see his frustration level go away and his confidence with math has increased.*

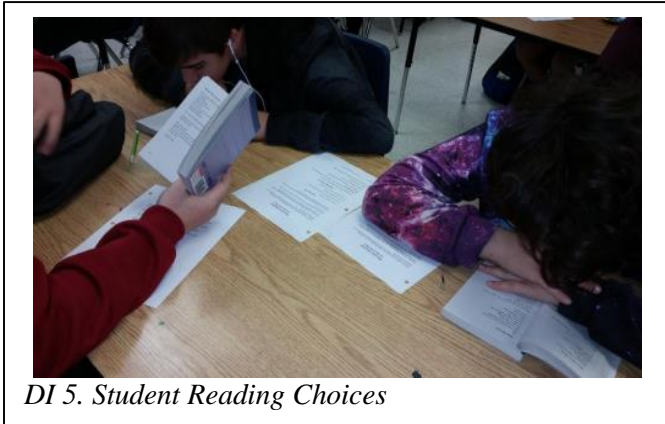
*Now we are working on his reading*

*confidence (photo journal).*

Despite evidence that most teachers readily included growth mindset into instruction, some participants still expressed difficulty with how to incorporate these new conceptual shifts into their existing pedagogy. One participant explained,

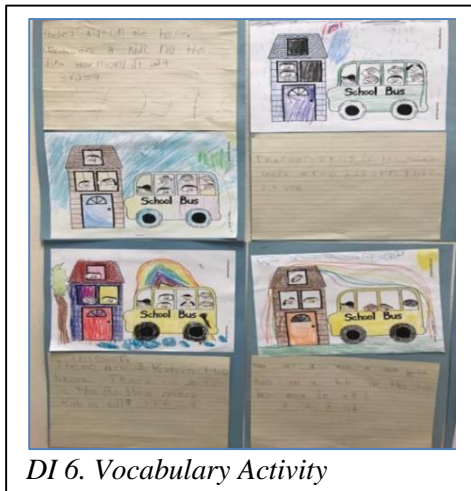
*I am thinking more about grit and I am wondering how do I develop this in my kiddos. I see my kids as their own biggest obstacle in learning and if they were to continue through it, I believe they would see greater success (session reflection).*

*Utilizing UDL without explicitly identifying strategies.* Teachers described and



displayed use of many components of a UDL curriculum but struggled to explicitly identify them in context. Teachers required guidance to identify traditional as well as new instructional practices that were aligned with the UDL

framework. For example, one participant described two students working on a reading activity, “This picture shows one student reading independently, one student listening to audio along with the book, and one student listening to the audio and not following the text” (weekly reflection). However, she failed to identify how this aligns with the principle of *multiple means of representation*.



Another participant provided evidence of *multiple means of action and expression*, using creative components in the assessment of vocabulary acquisition, “Students had to create their own word problems. They needed to illustrate and write their problem” (weekly reflection).



The use of technology to enhance instructional practice illustrates the principle of *multiple means of engagement* by fostering student choice. However, this participant also failed to identify this alignment in her weekly reflection.

Many other teachers also described UDL components but without naming elements in their descriptions. This was evident in the post-interview as well when describing *accessible pedagogy*,

*I think that's their buy-in. If they get to choose anything, you're giving them that ability to choose something. If I get the ability to choose this or this, you already got me a buy-in from me. Instead of saying, "All right, this is what we're doing. This is the only thing we're doing. You don't have a choice." Whereas you can say, "All right, we can do this this way, or this this way." I think it's just more giving them choices. It's good I think at any level (interview).*

Another participant described a lesson strongly representative of the UDL framework, but did not mention any of the structure of universal design,

*They can do a written project sometimes, or a PowerPoint, so they have the ability to be creative. In the past, I've done book-in-a-box projects where they do a book report and they create a scene in a cereal box from the book, so it's creativity and a project. They did wanted posters for a mythology thing that we did this last quarter, where they could create a wanted poster for a missing god or*

*goddess. I've noticed that the more creative it is, the less just writing, writing, writing, they respond to it more, and it's all of them, not just some of them* (interview).

***Time continues to be a barrier to changes in existing pedagogy.*** Several teachers described time as a major obstacle in adjusting to any new pedagogical or curricular adoption. Although time is a prevalent factor in most change efforts, it appeared particularly salient for teachers when discussing how to adjust existing instructional approaches to include a shift towards Universal Design for Learning. For example, one teacher appeared to be somewhat overwhelmed,

*I think so but I just need to sit, I need to sit and process it and look into it more. Look at everything you've given us and sit and come up with my plan, how do I use those in my classroom* (interview)?

Another teacher described time as an existing barrier,

*Time on my end. I just do not have enough time in the day to make every lesson plan, every activity, to specifically target every single individual's needs. For example, in reading, all my kids have different reading levels. I mean, I have a few that overlap, but I pull up articles within a certain Lexile range, so I have three to four different Lexile ranges for my low, my medium, my high, and my super high kids. I could do four of those, but they're not gonna target ... it's just gonna be a range versus targeting each individual student and giving them exactly what they need* (interview).

Even the administrator seemed to acknowledge time as a restriction,

*Part of it is desire and the want to teach in that way to make sure that you're meeting those needs but also having the tools to do it with. Which would be the collaboration time planning with other people. The instruction. The ability to practice designing those types of things in an already really packed day. We ask a lot of them in a very short amount of time on any given day (interview).*

**Summary.** Data indicate that teachers described and incorporated growth mindset principles into instructional practices soon after participation in the DW. However, weekly reflections and photo voice projects revealed that while many teachers used some UDL instructional principles during in-class lessons they were unable to explicitly identify those instructional strategies upon reflection. Finally, teachers expressed that shifts in pedagogy requires greater time than was currently available to investigate, plan, and apply new information to classroom instruction.

#### **RQ4. How do teachers perceive the (dis)ability workshop as a professional learning experience?**

To answer RQ 4, interviews and session reflections were analyzed, producing theme-related components and assertions. The results are presented in the following section.

**Changes in frame of reference and instructional practice.** *Assertion: Changes in current educational beliefs were challenged, which motivated teachers to engage in new action.* Analysis of the data revealed two theme-related components that support the assertion: teachers engaged in critical reflection about their own assumptions and teachers acted to incorporate new information into existing practice.

Table 11

*Data analysis of codes to answer research question four*

Theme	Theme Related Components	Assertion
Changes in frame of reference and instructional practice.	<ol style="list-style-type: none"> <li>1. Teachers engaged in critical reflection about their own assumptions</li> <li>2. Teachers acted to incorporate new information into existing practice.</li> </ol>	Changes in current educational beliefs were challenged, which motivated teachers to engage in new action.
Effective professional learning components.	<ol style="list-style-type: none"> <li>1. Dialogue was an effective means of promoting teacher engagement</li> <li>2. Active learning activities were important in sustaining teacher interest</li> <li>3. Teachers wanted specific implementation strategies</li> <li>4. Teachers wanted more time for sessions on UDL</li> </ol>	Critical elements to foster adult learning include active elements such as collaboration and dialogue, relevant content, teacher autonomy, and time.

***Teachers engaged in critical reflection about their own assumptions.*** Mezirow (1996) defines critical reflection as a central element of adult learning, and a critical process in changing one’s frame of reference. A shift in pedagogy is more than a change in practical application of instruction; it involves a fundamental shift in meaning about the nature of teaching and learning. Throughout the DW series and upon completion of all activities, data illustrate how teachers engaged in the process of critical reflection of assumptions. For example, many reflected on their understanding and assumptions of disability, “I have learned that as a staff, we need to be more aware of our students and their disabilities (if any) and have knowledge of how to address and teach these students”

(session reflection). Another teacher expressed, “I feel like that first ... The first couple of workshops, I felt like other teachers were eye-opening like, ‘Hey, these kids can do it.’ If I don't expect them to do it, they're not going to do it” (interview). One participant discussed changes that were crucial moving forward,

*I think for me, the thing I appreciated the most about it was having people rethink their ideas on disability, because I do think that's important. I think we have to start to reshape that. I think when we start to reshape that in other people, then that changes the conversation, changes the environment and I do think that that is real important (interview).*

Some of the participants reflected on the idea of grit and growth mindset, “The thought of Grit really made me think about how students who have disabilities are functioning in our classrooms. Teachers need to change their ways of teaching and approaching all students” (session reflection). Several others reflected on their own instructional practices. One participant stated “Using the personal checklist and my lesson plan to see if I am including the UDL checklist in my lesson plan. WOW! I need to modify my lesson plans” (session reflection). Another participant said, “It was eye opening to look at my lesson plans and see if I had the components of the educator checklist” (session reflection). One commented, “Mind blown, realizing how I want to teach is how it would be the best to teach” (session reflection). Some discussed how the workshop sparked thinking, forcing them to reconsider previously held beliefs,

*...we all interacted. You made us think. Or at least you made me think. I don't know about the others but ... You made me go out of my comfort zone, which after a while I think sometimes teachers need that (interview).*



Not all teachers altered their mindset after engaging in the process of critical reflection; some appeared only to have their assumptions reinforced as they were in alignment with much of the workshop content. For example, “I feel like what I have originally thought about disability and learning is still similar. I love the fact I am learning new things about the subject!” (session reflection). Another participant commented, “It has concreted my ideas about abilities. Our expectations do affect the students and those around us” (session reflection).

*Teachers acted to incorporate new information into existing practice.* Action can also be considered an important part of adopting a new frame of reference or changing an existing belief structure (Mezirow, 1997a). Teachers identified how new information was being incorporated into their current pedagogy and fostered a desire for additional personal learning. One said,

*Yeah, and it's cool because I've taken that growth mindset piece, or that grit piece, and I even talked about it today because I got a problem wrong in front of them. I'm like, "Okay, how did Mrs. Law get this wrong? How did I get this wrong?" And so we process it, we talked about it, then I tried again (interview).*

Two other teachers expressed intent to follow up the initial workshop trainings by doing their own research, as exemplified by comments such as “I also enjoyed the growth mindset material - I plan to read the book - I would like to understand the strategies” (session reflection), and “I want to use this, and read “UDL Now” book” (session reflection).

**Effective professional learning components.** *Assertion: Critical elements to foster adult learning include active elements such as collaboration and dialogue, relevant*

*content, and teacher autonomy.* Data reveal the following theme-related components regarding teacher perception of the (Dis)ability workshop series: dialogue was an effective means of promoting teacher engagement, active learning activities were important in sustaining teacher interest, teachers wanted specific implementation strategies, teachers wanted more time for sessions on UDL.

***Dialogue was an effective means of promoting teacher engagement.*** It is meaning making through rational discourse with others that leads to transformation (Kucukaydin & Cranton, 2012). Data indicate that teachers favored inclusion of activities fostering dialogue among colleagues and the presenter. For example, several participants provided input on their session reflection logs about enjoying the discussion and dialogue included in the DW. One participant said, “I enjoyed the TED talk and the discussions with our group member (session reflection). Another responded when asked what they thought was effective about the workshop session, “Creating dialogue on the meaning of disability and perception” (session reflection). One participant also identified a non-verbal discussion activity as effective,

*I like after we watched the movie on Grit how we passed the paper and added a note to everyone's. This made us read what others wrote (their ideas) plus allowed us to respond. We had a conversation through notes. Makes it more concrete (session reflection)!*

Several interviews revealed that participants felt dialogue and discussion were important. For example, one participant responded:

*When you gave us discussion time it wasn't like we were talking about other things. We were talking about the questions you asked, and people weren't on*

*their computers trying to get other work done, you know? Which is often the case when there's that downtime where people are going, "Oh, really?" (interview).*

The principal acknowledged that having small group settings fostered better discourse,

*Yeah. And I think I said to you the other day, I wish that everyone were able to go through something like this. But, having the last two workshops in Vince's room, were completely different than the other ones. The dialogue was different, it was better (interview).*

***Active learning activities were important in sustaining teacher interest.*** In

addition to dialogue, teachers expressed that professional learning was most effective when active learning was used in place of traditional lecture style delivery. This was evident in many session reflection excerpts, as noted by this participant responding to the prompt about what she liked about the session, “Jigsaw article reading and sharing, Multiple modes of instruction - listening to the podcast, simulation, writing” (session reflection). Another said, “The different activities and how engaged I felt during the entire presentation along with information” (session reflection). One of the administrators acknowledged the use of cooperative and active learning, “I like the Kagan activities you are incorporating. These are going to help our teachers in the classrooms” (session reflection). Another teacher also highlighted the collaborative nature of active learning, “Being able to collaborate with teachers I normally don’t” (session reflection).

During post-interviews, several teachers discussed how technology also contributed to the activity learning format. For example, one teacher noted,

*I really liked the one that you did with the interactive PowerPoint where we had it in front of us. I thought that was cool and just kind of had everybody's attention. It*

*brought in a new way of doing things, I think sometimes we don't present*  
(interview).

And another noted,

*I liked a lot of the different programs that you used to get people adding their ideas to a website and then you can all see it on the board. I think that's really engaging. But it was a lot of good information* (interview).

***Teachers wanted specific implementation strategies.*** Analysis of the data indicates that after participating in the DW many teachers still desire additional strategies for implementation. Teachers expressed a need for specific and practical instructional techniques for immediate implementation in their classrooms. This was evident in session reflections such as this one, “I just, like with anything, I want more things that I can take back to my classroom that I can incorporate. So, the lesson planning ... Yeah” (interview). Another participant commented, “I should be identifying my specific student needs and address what I am going to do in my lesson plan. Being more specific would be helpful in this area” (session reflection).

Many suggested that explicit examples would have been helpful. For instance, “I would like to see specific examples of UDL lessons and how they are implemented” (session reflection). Another participant said, “Some examples of how these strategies are being used currently in a classroom” (session reflection). Even the building principal agreed, “It would be good to see some examples of UDL in the classrooms. This would give the participants a visual to go along with material” (session reflection).

Teachers expressed a willingness to implement, but a need to know more about how to do so. This teacher discussed this in her post-interview speaking about future workshops,

*Hopefully, it gives me some techniques that I can use in my classroom right away, because getting that information was like, 'Oh, this is great. Now where do I get more so I can actually start using it?' So that was, I think, as you probably read from my reflection, that was something that I asked. "How do I do this, now?"*  
(interview).

***Teachers wanted more time for sessions on UDL.*** In addition to needing strategies on UDL, analysis of the data revealed that teachers wanted more time to learn about UDL. Participants expressed this during several reflection sessions, “One change that I would like to see in future sessions would be more interactive activities to understand UDL a little more, more examples” (session reflection). Another teacher expressed a need for clarification, “More in-depth explanation of UDL and using the checklist to check my lesson plan” (session reflection).

Other teachers wanted extended time to learn and collaborate with colleagues. “Despite the difficulty with time, having the time to dig into the concepts deeper with colleagues is needed” (session reflection). This teacher concurred, “I would like more opportunities to discuss our thoughts and findings with our groups and more time to share and discuss with the entire group as a whole (session reflection).

Despite the often-negative reaction to afterschool professional development, many teachers requested to extend the workshop sessions so that additional content could be covered. One teacher said,

*I think rather than doing an hour and a half bits, it would be nicer to have a bigger chunk so we can get a little bit more in depth about certain things, because there's certain topics that I wanted to know more about... (interview).*

Another teacher noted,

*The hardest thing for me was I felt like right when we started to get in the meat of it the workshop ended or that session was over for that day. So, I don't know exactly how timing wise, or what that was, but it was really good to ... the questions you'd pose, or how you'd ask us to work with each other we'd start in these really good conversations, and then you'd be like, "okay, so what my plan was to do this, but we ran out of time" (interview).*

**Summary.** Data indicated that teachers were successful in engaging in critical reflection of assumptions about their teaching practices. This critical reflection initiated new actions to incorporate information about accessible curriculum into their classroom instruction. Upon review of data regarding teacher perception of the DW, dialogue, and active engagement were prevalent factors that led to a positive professional learning experience. Increased time for collaboration, content exploration and planning, would have further improved teacher perception of the DW. Interview responses were consistent in describing the need to collaborate with peers through dialogue, to engage with the content and not passively listen, and to have enough time with to fully understand the workshop concepts. Finally, teachers identified the need for specific implementation strategies to enhance adoption of growth mindset and UDL as new classroom practices

## Chapter 5

### DISCUSSION

Learner variability in K-12 classrooms continues to present a challenge for general education teachers as they are required to educate an increasing number of students from diverse backgrounds with many different learning needs. The inclusion of students with disabilities into general education settings requires all teachers to redesign educational environments to reach the margins of the learning spectrum and provide appropriate instructional supports for every child. The purpose of this action research study was to examine the impact that a series of professional development workshops had on teacher understanding of disability, intelligence, and accessible pedagogy.

My goal was to determine if using critical disability theory, growth mindset, and universal design for learning could reshape participant expectations about disability and intelligence and lead them to adopt a more accessible form of pedagogy for teaching and learning in their classrooms. The (Dis)ability Workshop (DW) incorporated transformative learning theory as a means for understanding how to engage adult learners in the process of shifting their existing meaning schemes and frames of reference around instructional practice through rational discourse, critical reflection, and action.

I attempted to answer the following questions through this research:

- RQ1. How and to what extent do teachers' beliefs and understanding of ability and disability change after the (dis)ability workshop?
- RQ2. How and to what extent do teachers' beliefs and understanding about accessible instruction for diverse classrooms change after participating in the (dis)ability workshop?

- RQ3. How and to what extent have teachers gained the necessary confidence, insights, and skills about how to begin to incorporate UDL and growth mindset into their instructional design after participating in the (dis)ability workshop?
- RQ4. How do teachers perceive the (dis)ability workshop as a professional learning experience?

In this chapter I will discuss the study findings, identify limitations, and provide areas for future research and practice.

### **Discussion of Findings**

In this section, I present the study findings organized by research question. Connections to literature and existing theory are integrated throughout this section.

#### **Research question #1. How and to what extent do teachers' beliefs and understanding of ability and disability change after the (dis)ability workshop?**

I attempted to determine if a professional development workshop series could influence teacher understanding and belief about disability, ability, and intelligence. These mental constructs determine the expectations teachers hold for students through implicit bias, shaping teacher behavior and teacher-to-student interactions (Gutshall, 2013; Rattan, et al., 2012). Analysis of the data led to two general assertions regarding this research question.

**Teachers' conceptual understanding of disability changed from a medical-model based on deficit to a socio-cultural model based on difference and societal norms.** Both qualitative and quantitative data indicated a change in understanding after the intervention. Prior to participation in the DW, many teachers used language reflecting a conceptual model of disability centered primarily on functionality with respect to social



and normative expectations. This represents a medical model, situating “disability” within the individual as an innate biological impairment (Phelan, 2011). Much of the current organizational structure of the K-12 educational system perpetuates the notion of *disability-as-deficit*, creating conditions for teachers to construct their meaning schemes around this deficit perspective. Even methods used to determine special education eligibility illustrate a deficit model by identifying disability through an inability to perform at academic grade level and/or a deviation from expected social behavior defined by normed cultural and societal expectations. This conceptual understanding of disability was evident in teacher responses prior to workshop sessions, although with gradation among various participant’s views. Several participants expressed the opinion that societal expectation shapes disability designation and that critical examination of existing educational frameworks may lead teachers to question the validity of the disability label itself. Defining disability as an “inability to perform,” as many participants did prior to the workshops, aligns with the criticism inherent in critical disability theory (CDT), where American functionalism defines disability as “not able” (Rocco, 2005).

After the DW, a more nuanced and critical conceptual framework for disability emerged, less rooted in innate characteristic flaws as identity markers and more in unequal societal expectations for students with learning differences. A clear shift in both the quantitative and qualitative data indicated that participants were beginning to conceptualize the idea of disability as part of the continuum of human variability – the term disability itself was useful in identifying *difference*, but not *deficit*. Teachers expressed beliefs that were critical of disability identification that was based on normed expectation, and redefined disability status as an alterable trait existing within a wide

continuum of performance and cultural context. Findings support tenets of CDT, namely that (a) disability as identity is valued, (b) all individuals fall within the continuum of normal variation, and (c) that disability is socially constructed (Rocco, 2005).

However, a redefinition of disability status continues to be threatened by existing reified cultural, social, and policy structures grounded in the deficit perspective. Although teachers expressed disagreement with identifying disability as a “problem” with an individual, they struggled reconciling this belief with the idea that individuals who have disabilities still require assistance and or supports to benefit from education systems. It is this misalignment between existing institutional practice and a redefined sociocultural perspective on disability identity that continues to prevent individuals from fully embracing learning difference instead of conventional models of *disability-as-deficit*. Teachers still work in a system built on a set of normative social values constituted in educational policy, procedure, and practice. In the context of disability status, such constraints make it more difficult for teachers to move toward an understanding of disability as one aspect of normal human variability and to making concrete changes in pedagogical approaches that embrace the idea of a broad spectrum of learning needs.

In addition, there was some seemingly conflicting data, as three of the 13 participants had negative changes in survey responses, indicating shifts towards deficit models of understanding disability. However, qualitative data contrasted with the survey results by providing robust evidence that each of the three participants shifted conceptual frameworks by utilizing a separate schema and terminology to describe disability in post-interview sessions. The negative change in survey responses could be explained by poor instrument construction and items not explicitly asking participants to describe their

beliefs about disability, instead asking participants indirect questions regarding instructional decisions and personal interactions with those with disabilities.

**Teachers' conceptual understanding of ability and intelligence changed from a model of fixed to one of growth based on experience and motivation.** The (Dis)ability Workshop was effective in reshaping the type of language participants used to describe intelligence and subsequently how they constructed the idea of ability and intellect. Although the quantitative results were mixed and not all participants showed a change in mindset regarding intelligence, results overall indicated teachers' beliefs and understanding of intelligence shifted to be more in alignment with a growth mindset (Dweck, 2006). Teacher descriptions of intelligence changed significantly from static measures of performance (e.g., "he is smart") to ones that identified intelligence as a malleable trait (e.g., working hard makes a difference). This was most evident in discussions related to IQ. This quotient has a pervasive history in American culture, often standing for an easily identifiable and quantifiable measure of ability. The simplicity of a single number representing a complex concept such as intelligence makes using IQ an *efficient* but *inaccurate* judgement of a person's capacity. In post-intervention interviews, teachers critiqued the idea of IQ being a limitation. However, many continued to reference it as a general estimate of potential.

A second finding was that understanding malleability was central to changes in participant constructions of intelligence after participation in the DW. Participants identified two primary factors that contribute to intellectual growth; *effort* and *experience*. Effort and experience were central to several workshop sessions, so it is unsurprising that these variables were identified by teachers and administrators as

important components of promoting growth in proficiency and intelligence. Both growth mindset and grit were discussed at length using a variety of active learning activities and extended dialogue between participants. Effort and experience represent core characteristics of growth mindset and grit (Duckworth, 2015; Dweck, 2006), and teachers appear to have extracted and adopted these concepts more readily than others discussed in the DW. Immediately after workshop sessions, teachers began to incorporate growth mindset concepts into instruction. One teacher even indicated that she constructs and delivers mini-lessons on growth mindset several times each week.

Qualitative data from interviews, session reflections, and narratives indicated that all teachers experienced at least some degree of change in mindset with regard to their understanding of intelligence. However, there was not a statistically significant change in responses on the intelligence construct survey items pre- and post-intervention. This may be a result of a relatively high baseline score on this construct, as teachers were self-selected and therefore may have received higher initial scores than a randomly selected participant pool would have had, leading to less overall change after intervention. Despite the lack of statistical significance in the quantitative analysis, it was clear in the qualitative data that after the DW teachers more often used language that described the malleability of intellect and at the same time rejected the idea that intelligence was an unalterable trait.

**RQ2. How and to what extent do teachers' beliefs and understanding about accessible instruction for diverse classrooms change after participating in the (dis)ability workshop?**

With RQ 2, I sought to understand the impact of the DW on teachers' beliefs about accessible pedagogy, understanding of how to design accessible pedagogy, and how to accommodate greater diversity of learning differences in their classroom. After analysis of both quantitative and qualitative data, I made the following assertion:

**Changes in teachers' understanding of accessible instruction are subtle, mostly manifest in perception of learner variability and the principle of multiple methods of assessment.** There was triangulation among quantitative and qualitative data, indicating teachers had a greater understanding about accessible pedagogy after the DW. However, quantitative results did not indicate a statistically significant relationship and therefore I was unable to reject the null hypothesis that the DW produced no difference in teachers' understanding. Regardless, all but two participants had some degree of increased post-survey scores on measures of accessible pedagogy; in addition, the qualitative data clearly indicated that the DW positively influenced participants' understanding and belief about accessible instructional practices.

Most salient was teachers' framing of "good" instruction as the ability to expand the curriculum to reach learners at both ends of the ability spectrum. Central to the concept of Universal Design for Learning is utilizing flexible designs to meet the needs of students with disabilities, students with gifts and talents, and all learners in-between (Rose & Meyer, 2000b). Conventional school structures often do not align with the premise of UDL, and instead establish general classroom environments for the average student, while filtering low-performing students into remedial classes and gifted students into advance courses. Teachers in this study clearly critique this type of school structure and question the validity of a model that centers on teaching "average" students. Again,

changes with respect to pedagogy were subtle, as many of these teachers continued to adhere to a belief system that placed emphasis on differentiation and *accommodation*. However, there was a clear adoption of the idea that designing instruction for *all* had greater efficiency and efficacy than retrofitting inaccessible curriculum post hoc

Although teachers readily identified core conceptual components of UDL, there continued to be a reliance on the more generalized concept of differentiated instruction as the main pedagogy. During post-interviews and weekly reflections teachers often signaled differentiated instruction as evidence of effective classroom practice – more so than any specific reference to UDL.

Transformative learning theory again provides a helpful analysis as it appeared that underlying meaning schemes have shifted through critical reflection and rational discourse but had yet to be reinforced through new action and teaching methods. Previously held pedagogical actions appear to have greater intractability than did conceptual frameworks around disability and intelligence. Identifying and adopting new pedagogical practices are more than just establishing content knowledge; it may also involve a greater change in a teacher's *instructional identity*. This instructional identity represents the values, goals, and assumptions that inform how teachers design and implement curriculum and instruction. Sustained changes in practice can only follow changes in one's identity as a teacher. The DW provided a groundwork for these changes, but I hypothesize that a continuation of workshop sessions on UDL would be necessary to fully address the movement towards a new instructional identity for all teachers.

**RQ3. How and to what extent have teachers gained the necessary confidence, insights, and skills about how to begin to incorporate UDL and growth mindset into their instructional design after participating in the (dis)ability workshop?**

It was important to evaluate teachers' beliefs and understanding of accessible instruction, but also to determine if the DW could influence their ability to implement new instructional practices in their classrooms. Analysis of qualitative and quantitative data led to the following assertion:

**Teachers gained some confidence in changing existing practice, but still need additional training and coaching on how to shift to a UDL and growth mindset pedagogy.** There was triangulation among qualitative and quantitative data, indicating a change in teacher confidence for using UDL. Although quantitative results were not statistically significant and qualitative data indicated only small changes, teachers expressed more positive statements about use of UDL in classroom settings. Reflection journals, photovoice, and post-interview data all reveal some adoption of UDL into daily instruction. For example, teachers provided visual evidence of activities that utilized multiple means of action and expression through images taken of real classroom lessons. However, teachers struggled to explicitly identify specific principles, guidelines, and strategies used in such lessons. While there was evidence of use, a higher level of understanding about accessible instructional practices was absent.

This finding is unsurprising for several reasons. First, teachers were not exposed to the entire professional development content identified in the original innovation. Alterations in the district calendar and training schedule required condensing the additional UDL workshop sessions, limiting the overall time teachers were provided

training. As is the nature of action research, researchers must adjust to real-world research settings that are often unpredictable. As was noted in several of the participant responses, teachers felt that they needed additional time to explore and learn about UDL, how it could be implemented in their classrooms, and time to plan with colleagues to adjust their current instruction. This may be due to the limited exposure teachers had to UDL through just two workshop sessions.

Although unsurprising, these results do provide important consideration for teacher professional development by identifying how much time is needed for teachers to adopt a new instructional approach. Extant research suggests that it takes extended time in order for teachers to alter existing teaching behaviors. Often districts initiate changes in curriculum or pedagogy without consideration of the time necessary for teachers to learn the content, identify implementation strategies, and collaborate with peers to generate new plans for the change effort. Although the participants in this study recognized the need for UDL and demonstrated some of the basic principles, identification of the principles and changes in classroom practices were less visible. This suggests that teaching behavior is durable, requiring sustained exposure and training to effectively implement pedagogical changes. A transition to UDL may take more than a couple sessions to alter an existing instructional frames of reference and the attendant new action required for cementing an altered meaning scheme.

**RQ4. How do teachers perceive the (dis)ability workshop as a professional learning experience?**

Adult learning is an inescapable part of professional life. Whether it is called professional learning, professional development, in-service training, etc., the ability to



transfer new knowledge and skills to an adult workforce presents a continual challenge for schools and districts. I attempted to use Mezirow's (1997a) transformative learning theory as a framework for designing and implementing professional learning that challenged teachers to rethink many of their previously held beliefs and values regarding teaching and learning. Two assertions about teacher perceptions of the DW were extracted from the data.

**Changes in current educational beliefs were challenged, which motivated teachers to engage in new thinking.** Teachers participated in several activities designed to disrupt their current frames of reference regarding disability, intelligence, and instruction. Session reflections, in-workshop discussions, and post-interviews revealed continued critical reflection about the DW concepts. Often teachers would write that they had "ah-ha" moments where their thinking changed throughout the session, or that they viewed classroom instruction differently after participating in the workshops. This is a critical aspect of any professional learning activity – without a *disorienting dilemma* (Mezirow, 1996) teachers see no reason to adopt a change in practice.

The critical reflection component of the DW became a salient feature of each workshop session, not only through the challenging of existing conceptual beliefs and organizational practices, but through continued examination of multiple aspects of teaching and learning. This essential feature is often absent from professional learning and in-service training, leading to failed opportunities to engage teachers and others in new thinking about content topics. Without a change in thinking, it is unlikely that teachers will change behavior.

Interview and session reflection responses indicated that some teachers determined the workshop sessions only reinforced their current belief and value systems around disability and intelligence. This may be a result of a predisposition among some study participants to already be in alignment with the study's guiding values. A more diverse set of individuals may have exhibited more entrenched beliefs about disability, intelligence, and pedagogy that contrasted with the content of the intervention.

**Critical elements to foster adult learning include active elements such as collaboration and dialogue, relevant content, and teacher autonomy.** Teachers identified dialogue and active engagement as elements of effective professional development. Dialogue and discussion were primary motivators for sustaining teacher engagement and interest throughout the workshop sessions. Several teachers described how facilitated dialogue through structured activities guided collaboration among peers, leading to increased perspective-taking and deep engagement with the session topic. Transformative learning occurs when rational discourse fosters critical reflection of assumptions and integration of information to create new frames of reference (Mezirow, 1997a). Based on these findings, effective professional development for adult participants should include multiple methods to foster dialogue and discourse as core learning strategies.

Active and collaborative learning activities provided another means of sustaining teacher interest and promoting deeper engagement with content. A common theme illustrated was the positive perception of activities that required group interaction to accomplish a task. Examples include the curation of a YouTube playlist on growth mindset, creation of a collaborative slide deck on grit, and the development of short

lessons using content from the workshop. Participants all identified these components as most desirable for an effective learning session. These findings are significant as similar activities can be embedded in a comprehensive district-wide framework for professional learning.

In sum, teachers perceived the (Dis)ability Workshop as a positive learning experience. However, the limited exposure to UDL content resulted in teachers requesting additional sessions to learn more about specific implementation strategies. This finding was anticipated, as the original timeline included two additional sessions on UDL that were combined in the final series due to rescheduling and time constraints.

### **Limitations**

There are several noteworthy limitations that warrant consideration when interpreting findings. Although mixed-methods action research is rigorous and valid, research conducted in real-world environments presents unique challenges and constraints.

### **Sample Size**

This study used a small *n* count ( $n=13$ ) which limits the ability to make generalized conclusions regarding the results. A low number of participants particularly limits the strength of conclusions drawn from quantitative statistical analysis. The larger the data set and number of participants the greater confidence that the researcher can have in inferential analysis. Although action research is not concerned about generalizability, the small subset of participants does limit conclusions about the larger population of teachers across the school and district.

### **Sample Selection**

I used a purposive sampling procedure to identify a school in which participants for the study could be recruited, and then used a convenience sample of those individuals who wanted to participate among the school's faculty as my participant group. Because of this method, there may be a bias in the sampled population, as these teachers volunteered for the study knowing about the topic and general idea of the workshop content. This group may have already had more favorable beliefs about the study topics, been more open to critical reflection of these ideas, and had more positive experiences with professional development. Teachers who had negative perceptions about professional development in general, may have been less likely to volunteer as the DW represented an increased, uncompensated commitment to more training than was required of nonparticipating teachers.

### **Condensed Intervention Timeline**

The original DW included seven modules, not five. The condensed schedule was primarily due to changes in scheduling and conflicts that arose during the course of the semester with other district and school events. This reduction in the number of workshop sessions may have led to less significant results, particularly with respect to UDL understanding and implementation. The original plan was to structure four of the seven modules to focus on UDL, but this content had to be condensed into only two modules. This meant that many of the activities had to be removed to fit within the time allotted for each session. Many of the practical implementation strategies were also removed for there to be enough time to discuss the theoretical grounding for UDL. This limitation makes it difficult to draw accurate conclusions from the study regarding the efficacy of

the intervention in developing understanding of accessible pedagogy, as participants were only exposed to a portion of the original intervention.

### **Experimenter Effect**

A threat to the validity may be due to *experimenter effect*, or the influence the researcher has on the study participants (Smith & Glass, 1987). According to experimenter effect, results of an experiment may not be generalizable or transferable because outcomes could be contingent on the personality and character of a specific researcher. As a result, other researchers may not be able to reproduce similar results. There are three main critiques of my role as researcher that fall within the experimenter effect: I am passionate in my disability advocacy, I previously held a position solely responsible for working with students with disabilities, and my own positionality as assistant superintendent may have influenced participants. I am extremely passionate about students with disabilities and have advocated in many forums across the district in previous years for practices that reflect social equity. My enthusiasm for the content may have influenced participant views, where others not as immersed in disability advocacy may not have.

The following two factors highlighting the experimenter effect could be classified as social desirability bias, or the tendency of research participants to give responses that appear favorable rather than representative of their true feelings (Grimm, 2010). My previous position as director of exceptional student services indirectly identified my own perspective on the constructs discussed in this study. Participants may have provided favorable responses knowing my background and presumed beliefs regarding intelligence and disability. Finally, my positionality as assistant superintendent could have led

participants to provide favorable responses. It is unlikely that my supervisory role within the organization did not factor into teacher and administrator responses.

### **Implications for Future Research**

This was the fourth cycle of research I conducted on the phenomena under study. As action research is an ongoing iterative process designed around cycles of planning, action, evaluation, and reflection (Mertler, 2014), several additional avenues of research are warranted. First, future research should examine the impact of the DW for an entire school staff. As only volunteers were selected as study participants, no data was collected on teachers who had entrenched beliefs that contrasted significantly with the content of the intervention. Although the first two workshop sessions included all school staff, no initial baseline data was collected for those not participating in the study. It would be worthwhile to determine if a more diverse set of participants would lead to different outcomes and if having an entire staff participate would create any sense of collective efficacy. Future research could also use a similarly situated set of non-participants in the school as a naturally occurring control group, providing stronger methodological rigor.

The second implication for future research is to examine how extended workshop sessions on UDL would influence understanding and self-efficacy regarding accessible pedagogy. Participants expressed a need for more information on this topic, illustrated by the following quote: “One change that I would like to see in future sessions would be more interactive activities to understand UDL” (session reflection). A possible comparison could be made between the original seven session workshop series and the five-session series I implemented for this study.

A third implication for future research is to examine longitudinal changes in teacher practice, and the relationship of those changes with changes in teachers' belief and understanding of disability and intelligence. This study did not examine in depth how teachers altered their instructional practices over time. Future studies could include ethnographies and field observations of classrooms settings to better identify if changes in mindset result in sustained changes in pedagogy. Transformative learning theory identifies a change in behavior as the ability to integrate information into a new meaning scheme (Mezirow, 1997a). The theory argues that new meaning schemes and frames of reference regarding instruction are necessary in order to adjust instructional practices over an extended time period. This study only examined teacher reflections and personal photovoice projects over less than a single school semester. Future research should determine if initial changes in mental frameworks persist throughout the school year and beyond, and if new belief structures result in a fundamental and long-standing change in teachers' pedagogical practice.

### **Implications for Future Practice**

This study yielded several important considerations for future practice. The use of CDT and mindset as professional development content to disrupt existing belief structures and engage teachers in critical reflection led to positive teacher engagement. Those workshop sessions designed to challenge previously held assumptions about disability led to robust discussion around student expectations and fostered collaborative engagement among staff. Teachers began to have conversations with one another about why students with disabilities were absent from their classrooms for core content instruction and what they could do to collaborate with other teachers to better include

students into classroom activities. This type of active learning and enhanced teacher agency should be replicated at other school sites. Each school's faculty should examine their assumptions about disability and intelligence because at minimum, my study's findings suggest that this leads to critical reflection and dialogue about established teaching practices.

Secondly, UDL should be included as a continued professional development topic as well as embedded with other district professional learning initiatives to ensure effective implementation. Data indicate that while the DW was important in altering existing meaning schemes around pedagogy, extended sessions on each of the subcomponents of UDL are needed. In addition, whenever internal professional development is provided on curriculum and other content, those sessions should utilize UDL principles to model effective use to sustain the idea that UDL is part of the District's standard practice in all aspects of learning.

Thirdly, there should be continued use of a transformative learning theory framework for designing and delivering professional learning in school settings. As noted previously, learning and meaning-making are contextualized activities, shaped by individual beliefs, values, and assumptions formed through a person's historical experience (Mezirow, 1996, 1997a, 2000). Traditional approaches to professional learning fail to account for the beliefs and values of participants and focus primarily on knowledge transmission, changes in a basic strategy, or small discrete instructional behaviors. Leveraging critical reflection of assumptions, rational discourse, and new action can increase the likelihood that teachers will internalize changes to teaching and learning and fundamentally alter their existing pedagogy.



The last implication drawn from this research includes establishing professional learning activities that foster dialogue and refrain from diminishing teacher agency. During both the pre-intervention phase when participants were asked about what they believe must be included for good professional development, as well as in the post-interview sessions when asked what they like about the workshop series, teachers all conveyed that discussion and dialogue were critically important to the effectiveness of the learning session. They also provided strong evidence that autonomy and agency were paramount if they were to integrate new information, behaviors, and beliefs into their instruction. I plan to work with our professional learning department to shape future workshops around active learning and teacher agency.

## Chapter 6

### CONCLUSION

#### **Lessons Learned**

This chapter describes the personal insights and lessons I drew from engaging in this action research study. I discuss these insights from both a professional and personal lens and describe how this experience has helped shape a new internal identity.

#### **The Power of Action Research**

Action research (AR) provides a bridge between theory and practice, a connection between researcher and practitioner. It has the power to infuse methodological rigor into the decision-making process for educators and administrators, creating a school culture rooted in systematic inquiry and empirical evidence. Educators often “fumble in the dark” looking for strategies that can be leveraged to improve student performance, but such efforts often end with little to no long-term systemic change. Action research offers school systems the ability to conduct internal research on its own practices through ongoing investigation, innovation, application, and reflection. I have seen firsthand how this process establishes a culture of continuous improvement by empowering teachers and administrators to become the research experts. Conducting this action research project demonstrated the power of conducting research in your own work setting and sharing those results with colleagues. I believe that AR not only improves practice through more rigorous methodological approaches, but leads to greater agency and empowerment for staff, creating a progressive culture that challenges existing norms and held assumptions about standard operating procedures. AR emancipates teachers by

redistributing the power of knowledge creation to those in the field. I plan to incorporate this mindset into our district culture.

### **Professional Learning**

I learned a great deal about my own district and its teachers by engaging them in this research study. Their beliefs and values about education were evident in interviews and session discussions. These rich conversations led to a greater depth of understanding regarding how each individual staff member experiences their work as an educator and leader in our district. I gained insight into how they construct their identity as teachers, how this contributed to the beliefs they held about teaching and learning, and how they perceive professional development and training.

I plan to use this information about teacher experience to guide decision-making at every level of the organization. However, it is critical to conduct additional studies to further understand the personal perspective of teachers towards a variety of district-led initiatives and actions. Sound methodological approaches can assist in gathering this data and can inform all leaders about the needs of staff and how to better structure professional learning in our district. I have a much greater appreciation for the complexity involved in promoting new learning and the need to account for how individuals construct their professional identity and belief system.

### **Becoming A Scholarly and Influential Practitioner (SaIP)**

In addition to creating widespread organizational change, I also sought to become a more knowledgeable and effective administrator. I believe I have achieved this goal by becoming a *Scholarly and Influential Practitioner* (Buss, Zambo, Zambo, & Williams, 2014). The term Scholarly and Influential Practitioner (SaIP) merges personal identities

as leader, learner, and action researcher into one identity as SaIP. This new identity was formed through the unique programmatic experience gained as a mixed-methods action researcher in a doctoral program structured around collaboration and innovation. My previous singular identity as practitioner was disrupted and then combined with an emerging identity as a researcher to form a new self-concept. This corresponds directly with the research I conducted on this project, as transformative learning theory (Mezirow, 1997) identifies a disorienting experience as necessary to initiate critical reflection of one's assumptions – in this case, my identity solely as a practitioner. New information and knowledge regarding scholarly research practices forced the integration of new meaning into an existing frame of reference. My new identity as a SaIP guides my decision making as an assistant superintendent. No longer do I perceive myself solely as a practitioner situated in my field of practice, but nor do I perceive myself as an academic researcher situated in the university. This new hybrid perspective bridges the gap between the two, creating a more complex and nuanced identity.

### **Obligation**

As discussed earlier, doctoral research is not just about the research itself, but also about the *researcher*. The dissertation becomes a written reflection of internal development and transformation, an artifact that represents personal and professional change. I have attained a level of understanding that provides me increased insight and a method for understanding the world and making sense of phenomena. With that knowledge comes responsibility – an obligation to further advance the ideals of research: the pursuit for understanding and knowledge, the rational assessment of information, and

the free exchange of ideas. Advancing these values leads to a richer tapestry of human knowledge, to which, as a researcher, I am now obligated to contribute.

### **Personal Grit**

Part of completing a dissertation is persisting through continuous challenge, great effort, and constant critique. It is the adversity and sacrifice that imbues the dissertation with value, a tangible representation of one's personal *grit*. I questioned several times throughout the past three years if I had the tenacity required to see this journey to its resolution. It may have been serendipitous, but as my research unfolded I found that growth mindset and grit, two conceptual frameworks used in this study, represented the very traits I had to embody if I was to persist and persevere. Completing a dissertation teaches you much about yourself, not only your ability to see a difficult task through, but also about your own values, beliefs, and assumptions about the world. By the end you feel that you have tools to enable a deeper understanding of that world and the phenomena that exist within it. I for one can never return to a time when I fail to employ a critical mind cultivated by the experiences gained through my learning and research.

### **Conclusion**

National education data clearly indicate that students with disabilities are being included in general education classrooms at a greater rate than at any other point since 1975 with the passage of the Education for All Handicapped Children Act (P.L. 94-142) mandating a constitutional right to education. However, restrictive curriculum, pedagogy, and implicit bias, continue to inhibit equitable access to the general education

environment for many students as indicated by the continued achievement gap between students with disabilities and their non-disabled peers.

True education reform must address the underperformance of marginalized populations such as SWD, by creating conditions that challenge existing conceptual models and critique the underlying assumptions that drive curriculum development and pedagogical strategies currently implemented in schools. A redesign of educational approaches must include universal accessibility to ensure equitable access for every population of student, especially those with disabilities whose identification alone tends to reinforce negative attributions and low expectations in the current education system.

Equitable educational practices require that district leaders, school administrators, and teachers themselves reflect on the organizational structures that continue to perpetuate a deficit model for students with disabilities. Without interrogating underlying belief systems around disability, implicit bias will continue to influence decision-making at every level of education and society, continuing systemic academic and social oppression.

Using critical disability theory as a lens through which to structure my work, I attempted to challenge existing medical and deficit-based frames of reference regarding disability and intelligence. I learned that the capacity of teachers to adopt pedagogical changes must first be driven by changes in how they understand disability, intelligence, and instructional accessibility. By using activities that fostered critical reflection, I was able to challenge some of the biases that teachers held regarding SWD and engage them in a process of dialogue that fostered new perspectives. Although, it appears that teachers' value systems and identity around curriculum and pedagogy can be entrenched,

persisting even when provided with compelling reasons to change, continued engagement in critical reflection, discourse, and action must occur if changes in both mindset and practice are to manifest and endure.

An educational culture hyper-focused on compliance and testing represents a significant barrier for many school leaders and classroom teachers. It is important that these do not suppress the need to create classroom environments that are conducive to all learners. Standards-driven instruction assessed mainly through summative standardized testing was a source of anxiety among many of the staff, forcing them to “quickly get through the curriculum” in time for testing. Restructuring classroom pedagogy requires a restructuring of curriculum, but more importantly a restructuring of the assumptions, purposes, and goals of teaching and learning.

I hope to continue this work so that instructional methods in schools more closely align with true learner variability existing in every classroom. It is clear that given the right mindset and pedagogical tools, teachers have the capability to reach every learner and provide equitable access to the educational environment for all students, especially those with disabilities. We just need the strength and *grit* to tirelessly advocate until this goal is realized.... our students’ futures depend on it.

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APPENDIX A  
ABILITY PRE- & POST-SURVEY

## Ability Study

Please complete this survey to the best of our ability. All answers are anonymous and your name will not be used in anyway.

\* = question adapted from Forlin, Earle, Loreman, & Sharma (2011)

# = question adapted from Dweck (2006)

\* Required

1. **Consent Statement:** I agree to participate in the survey being conducted. I understand the survey will take approximately 10 minutes to complete. I am at least 18 years of age. \*

Mark only one oval.

- Yes  
 No    *Stop filling out this form.*

## Demographics

2. I have had significant/considerable interactions with a person with a disability: \*

Mark only one oval.

- yes  
 no

3. I am teaching in: \*

Mark only one oval.

- Early Childhood  
 Primary / Elementary  
 Secondary  
 Special Education

4. I am

Mark only one oval.

- Male  
 Female

5. I have had the following level of training on educating students with disabilities: \*

Mark only one oval.

- none  
 some  
 high (at least 40 hours)

**6. What is your age?**

*Mark only one oval.*

- 25 years or below
- 26-35 years
- 36-45 years
- 46 years or above

**7. In order to protect your confidentiality we will use a unique identifier code made up of letters and numbers rather than your name. To create this code, please include the first three letters of your mother's maiden name and the last four digits of your phone number \***

---

**Section 1**

**8. Please answer the following questions**

*Mark only one oval per row.*

	Strongly Agree	Agree	Disagree	Strongly Disagree
* I am concerned that students with disabilities will not be accepted by the rest of the class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*I am concerned that it will be difficult to give appropriate attention to all students in an inclusive classroom.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* I am concerned that my workload will increase if I have students with disabilities in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*I am concerned that I will be more stressed if I have students with disabilities in my class.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*I am concerned that I do not have the knowledge and skills required to teach students with disabilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Section 2**

9. Mark only one oval per row.

	Strongly Agree	Agree	Disagree	Strongly Disagree
*I dread the thought that I could eventually end up with a disability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*I tend to make contacts with people with disabilities brief and I finish them as quickly as possible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*I would feel terrible if I had a disability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*I am afraid to look directly at a person with a disability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*I find it difficult to overcome my initial shock when meeting people with severe physical disabilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Section 3

10. Mark only one oval per row.

	Strongly Agree	Agree	Disagree	Strongly Disagree
*Students who have difficulty expressing their thoughts verbally should be in regular classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Students who are inattentive should be in regular classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Students who require communicative technologies (e.g. Braille/sign language) should be in regular classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Students who frequently fail exams should be in regular classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Students who need an individualized academic program should be in regular classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Section 5

11. Mark only one oval per row.

	Strongly Agree	Agree	Disagree	Strongly Disagree
#You have a certain amount of intelligence, and you can't really do much to change it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#Your intelligence is something about you that you can't change very much.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#No matter who you are, you can significantly change your intelligence level.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#To be honest, you can't really change how intelligent you are.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#You can always substantially change how intelligent you are.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#You can learn new things, but you can't really change your basic intelligence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#No matter how much intelligence you have, you can always change it quite a bit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#You can change even your basic intelligence level considerably.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#You have a certain amount of talent, and you can't really do much to change it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#Your talent in an area is something about you that you can't change very much.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#No matter who you are, you can significantly change your level of talent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#To be honest, you can't really change how much talent you have.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#You can learn new things, but you can't really change your basic level of talent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#No matter how much talent you have, you can always change it quite a bit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#You can change even your basic level of talent considerably.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
#You can always substantially change how much talent you have.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Section 6**

12. Mark only one oval per row.

	Strongly Agree	Agree	Disagree	Strongly Disagree
Students must demonstrate mastery in the same way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Only students with disabilities should be provided accommodations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Only students with disabilities should be provided differentiated instruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Representing content in multiple ways is important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developing a variety of activities for the same lesson is important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Section 7

13. Mark only one oval per row.

	Strongly Agree	Agree	Disagree	Strongly Disagree
I am confident that my instruction can meet a wide variety of learning needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident in my ability to incorporate growth mindset into my instruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can include multiple options for representation of content for most lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can include multiple options for student engagement in most lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I can include multiple options to assess student learning in most lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I understand the concept of growth mindset	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I understand the concept of universal design for learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can explain how growth mindset can improve student achievement to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can explain the concepts of universal design for learning to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the necessary skills to develop lessons that incorporate growth mindset	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the necessary skills to develop lessons that include multiple options of representation for content	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the necessary skills to develop lessons that include multiple options for student engagement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the necessary skills to develop lessons that include multiple options to assess student learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



APPENDIX B  
INTERVIEW PROTOCOL

### Intro Script

The purpose of this interview is to obtain information that will assist me in understanding teachers' perception of students with different learning needs and to provide more effective professional development. This is part of an action research dissertation. I will ask you six questions, some of which include follow-up items.

### Questions

1. Tell me what the term disability means to you?
2. How do you define intelligence?
3. Can you describe a time when you taught a student who had a learning disability?
4. What do you experience as a teacher when you have a number of students with different levels of ability in your classroom?
5. How much can you as a teacher change students' intelligence?
6. What makes for good classroom instruction?
7. How do you measure student ability?
8. How confident are you in designing lessons that can meet the needs of all students you might be teaching?
9. How effective is professional development in changing the way you teach?
10. How effective was (dis)ability workshop as a professional learning experience (post innovation only)?

### Closing Script

Thank you for participating in this interview. I very much appreciate your time and I want use this information in ways that are beneficial to you and the students with whom you work.

APPENDIX C  
PERSONAL NARRATIVE PROTOCOL

Pre

Please write a letter to your child or future child about what it means to have a disability

Post

Please write a short story about a student with a disability

APPENDIX D

WEEKLY REFLECTION WITH PHOTOVOICE PROTOCOL

Week 1

**Session Reflection**

What did you like about this session?

What changes would you like to see in future session?

What has changed for you about your thinking of disability and learning?"

**Weekly Reflection**

Please take one picture each week representing your teaching practices and how you perceive intelligence and disability.

Photo
Description

APPENDIX E  
QUALITATIVE DATA ANALYSIS SUMMARY

*Description of Qualitative Data Sources*

Data Source	Word Count	Photos
Pre Workshop Semi-Structured Interview	81,634	0
Pre Workshop Narrative	1,777	0
Session Reflections	5,168	0
Weekly Reflections	5,960	98
Post Workshop Semi-Structured Interview	69,199	0
Post Workshop Narrative	1,790	0
Total	167,061	98



APPENDIX F  
INSTITUTIONAL REVIEW BOARD APPROVAL

EXEMPTION GRANTED

Carl Hermanns  
 Division of Educational Leadership and Innovation - West  
 -  
 Carl.Hermanns@asu.edu

Dear Carl Hermanns:

On 7/27/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	(Dis)ability Workshop: Deconstructing disability through growth mindset and universal design for learning.
Investigator:	Carl Hermanns
IRB ID:	STUDY00006556
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none"> <li>• Interview Questions - Cycle 3.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• Release Letter, Category: Other (to reflect anything not captured above);</li> <li>• IRB Protocol, Category: IRB Protocol;</li> <li>• Survey Questions Final Cycle.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• Personal Narrative.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• Reflection Journal.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li> <li>• Aleckie Consent, Category: Consent Form;</li> </ul>

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 7/27/2017.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Adam Leckie  
Carl Hermanns