

Preparing K-12 Educators to Teach Students with Disabilities

Amanda B. Banks

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Bonnie S. Billingsley, Committee Chair
Thomas O. Williams, Jr.
Mary Alice Barksdale
Donna F. Fogelsong

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ABSTRACT

My dissertation is comprised of two manuscripts on preparing educators to address the needs of students with disabilities. The first manuscript is a systematic review of 23 empirical studies published over the last two decades, addressing how traditional teacher preparation programs prepared preservice educators to learn about teaching students with disabilities in inclusive settings. A conceptual model was developed to synthesize the findings. Better outcomes in dispositions, knowledge, and skills were associated with preservice educators' placements in inclusive classrooms where supportive supervising teachers modeled effective collaboration and provided opportunities for developing specific teaching skills. Although student disability type and teacher education program type are not directly related to preparation, researchers suggest that they mediate preservice educators' dispositions.

The second manuscript examines the demographic, preparation, and school poverty level of a nationally representative sample of 51,340 early career special educators and the extent to which more and less preparation predicted their perceived preparedness for eight instructional practices. Data analyses included descriptive statistics, cross tabulations, and multiple linear regression. Findings indicated that more preparation significantly predicted educators' feelings of preparedness as they began teaching. The majority of educators with more preparation entered teaching through traditional routes while those who were less prepared tended to enter through alternative routes. Additionally, the majority of all educators felt least prepared to use student data to inform instruction and most prepared to differentiate instruction. Implications for education policy, teacher preparation, and future research are considered in both manuscripts.

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GENERAL AUDIENCE ABSTRACT

What matters most in preparing educators to teach students with disabilities has often been debated but has yet to be clearly determined. This dissertation is comprised of two manuscripts that explore this topic. The first manuscript examines how traditional teacher preparation programs prepare classroom teachers to teach students with disabilities in inclusive classrooms. A conceptual model is provided that reflects how key factors interact to shape preservice educators' development of inclusion-related dispositions, knowledge, and skills. Findings indicate that experiences in inclusive classrooms with supportive supervising teachers who are skilled collaborators result in positive outcomes for preservice educators.

The second manuscript explores the demographic characteristics, teacher preparation, and school poverty level of new special educators across the United States, and whether their preservice preparation had a significant affect on their feelings of readiness to teach during their first year. Findings indicate that more preparation helps new special educators feel better prepared. Most of these better-prepared educators entered the profession through traditional teacher education programs while those with less preparation tended to enter through alternative routes. Implications for improving how new educators are prepared to teach students with disabilities are considered in both manuscripts.

Dedication

This dissertation is dedicated to my husband, Kent Miller.
Your unconditional support and love make everything possible.

“It always seems impossible until it's done.”

-Nelson Mandela

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Introduction to the Dissertation

Amanda B. Banks

Background on Teacher Preparation

In the last 40 years, the passage of key federal legislation has effectively opened the doors of America's public schools to an entire population of children. Since the signing of the Education of All Handicapped Children Act (EHA) in 1975, the number of students with disabilities attending public schools and learning in general education classrooms has dramatically increased (Snyder, de Brey, & Dillow, 2016). Today, most students in special education are taught the general curriculum and participate in state testing programs, with the vast majority taking the same tests as their peers without disabilities (Every Student Succeeds Act [ESSA], 2015; No Child Left Behind Act [NCLB], 2001). These changes have led to shifts in the roles of all teachers, demanding that they be responsible and accountable for the success and academic achievement of students with disabilities in general education. Although there have been substantial changes to policy, relatively little is known about which features of teacher preparation are most influential in preparing both general and special educators to effectively teach students with disabilities. To address this gap in the literature, I examined extant research on inclusion preparation for preservice general educators in single programs, considering the extent to which specific preparation variables (e.g., placements in inclusive settings, collaboration, and supervising teachers) and mediating variables (e.g., students' disability type and teacher education program type) shape preservice educators' dispositions, knowledge, and skills. I also considered the preservice preparation and perceived instructional preparedness of early career special educators, as well as their demographic characteristics and school poverty

level. In addition, I investigated the extent to which these variables predicted new special educators' instructional preparedness.

Organization of the Dissertation

This dissertation study does not follow the traditional dissertation format, but consists of two chapters that are written as separate manuscripts that will be submitted for publication. Each of the chapters is summarized below.

The first manuscript, entitled "Preparing K-12 Educators to Teach Students with Disabilities," is a systematic review of 23 empirical studies published over the last two decades and addresses how traditional teacher preparation programs prepared preservice educators to teach students with disabilities in inclusive settings. Only programs that included field experiences as part of their inclusive preparation were considered. A conceptual model was developed to synthesize findings. Preservice teachers who collaborated consistently in inclusive classrooms with supportive, skilled supervising teachers reported increased positivity and greater gains in inclusion-related knowledge and skills. Although student disability type and teacher education program type are not directly related to preparation, researchers suggest that they mediate preservice educators' dispositions.

The second manuscript is entitled "Special Education Teacher Preparation: Does More Make a Difference?" The purpose of this study was to examine the demographic and preparation characteristics and school poverty levels of a nationally representative sample of early career special educators and the extent to which more and less preparation predicted their perceived preparedness for eight key instructional practices. Findings indicated that more preparation significantly predicted special educators' feelings of preparedness as they began teaching. The majority of educators with more preparation entered teaching through traditional routes while

those with less preparation tended to enter through alternative routes. Additionally, the majority of all special educators felt least prepared to use student data to inform instruction and most prepared to differentiate instruction.

Preparation for Teaching Students with Disabilities

The majority of research on teacher quality and preservice preparation has been conducted in general education (Cochran-Smith & Villegas, 2015; Darling-Hammond, Chung, & Frelow, 2002; Ronfeldt, Schwartz, & Jacob, 2014; Rosenberg & Sindelar, 2005). There is some evidence that extensive preservice preparation significantly impacts new teachers' preparedness to teach students with disabilities. In a nationally representative study, Ronfeldt et al. (2014) found that early career general educators who completed more methods-related coursework and practice teaching perceived themselves as more instructionally prepared and were less likely to leave the profession. Ronfeldt et al. noted that these estimated effects were positive and similar in magnitude across preparation routes. In another study, Boe, Shin, and Cook (2007) examined the perceptions of preparedness among a nationally representative sample of early career special and general educators. They found that extensive teacher preparation was more effective than some or none in helping new teachers feel well prepared in pedagogical skills and content matter. These two studies provide insights about the extent to which categorical amounts or ranges of preparation influence new teachers' preparedness. The findings of my study extend their research exclusively to early career special educators.

Research Questions

The 2011-2012 Schools and Staffing (SASS) Teacher Questionnaire (TQ) was used to examine early career special educators' demographic and preparation characteristics, perceived instructional preparedness, and school poverty level. The effect of preservice preparation on

special educators' perceived instructional preparedness during their first year of teaching was also examined.

The following two research questions guided this inquiry:

1. To what extent do more and less preparation predict early career special educators' perceived instructional preparedness during their first year of teaching, controlling for demographic and school characteristics?
2. What are the characteristics of early career special educators' preparation (e.g., certification route, number of methods courses, weeks of practice teaching, reading specialization, degree level, degree in special education, and perceived preparedness) and how do these differ between those with more and less preparation?

The first question focused on new special educators' perceived instructional preparedness on a composite of eight preparedness variables. Multiple regression analysis was used to determine whether the nature and extent of educators' preparation predicted their preparedness to teach. The second question focused on educators' demographic and preparation characteristics, perceived preparedness, and school poverty level. Descriptive statistics and cross tabulation were used to summarize the survey data and examine the extent to which educators' characteristics, preparedness, and school poverty level varied among those with more and less preparation.

Significance of the Work

Preparing special educators to teach students with disabilities is critical for improving their long-term success (Brownell, Sindelar, Kiely, & Danielson, 2010; Feng & Sass, 2010). There is a lack of consensus, however, on what constitutes qualified, well-prepared teachers (Brownell et al., 2010; Carlson, Lee, & Schroll, 2004; Feng & Sass, 2010). There is also limited research on the particular features of teacher education that might cause some programs to be

more successful than others in graduating teachers who are prepared (Clotfelter, Ladd, & Vigdor, 2007; Feng & Sass, 2010; Ronfeldt et al., 2014; Zagona, Kurth, & McFarland, 2017). To address this gap in the literature, the present study examines how particular features of preparation influence perceived instructional preparedness and how preparedness differs among early career special educators with more and less preparation.

Examining the instructional preparedness of new teachers is important for several reasons. First, as early career special educators enter the classroom they are expected to be ready to effectively support their students' achievement (Brownell et al., 2010; Leko, Brownell, Sindelar, & Kiely, 2015; Pugach & Peck, 2016). The extent to which they are prepared for this work depends largely on the nature and scope of their preservice preparation (Boe et al., 2007; Brownell, Ross, Colón, & McCallum, 2005; Brownell et al., 2010; Feng & Sass, 2013; Leko et al., 2015). Pinpointing the effects of particular preparation variables on special educators' readiness to teach is important for improving the effectiveness of initial teacher preparation. Second, teachers' belief in their readiness to teach is the strongest predictor of teaching efficacy (Darling-Hammond et al., 2002).

Teaching efficacy is an educator's belief that he or she can successfully complete a teaching task that results in students' learning gains (Bandura, 1997). Educators with higher teaching efficacy are more likely to implement a variety of strategies to support their students' learning (Atilas, Jones, & Kim, 2012; Bandura, 1997). Maintaining a strong sense of efficacy is particularly important for teachers of students with disabilities, whose overall academic achievement generally lags behind that of their peers without disabilities (Drame & Pugach, 2010). Certain features of teacher preparation such as coursework and field experiences are associated with teachers' development of efficacy (Atilas et al., 2012) and their perceptions of

readiness to teach (Boe et al., 2007; Ronfeldt et al., 2014). Examining the influence of specific teacher preparation variables may yield important information for increasing preservice educators' efficacy and ultimately, their future students' academic achievement (Woolfolk Hoy, Davis, & Pape, 2006; Sharma & George, 2016; Woolfolk, Rosoff, & Hoy, 1990; Zee & Koomen, 2016).

Authorship Attribution

The manuscripts included in my dissertation reflect my individual work. However, Dr. Billingsley assisted me in conceptualizing and planning my studies, as helped me on numerous revisions of both manuscripts. Because of this, she has earned the status of co-author on both manuscripts. Additionally, Dr. Thomas O. Williams, Jr. assisted me in the development of the research methodology and conducted the statistical analyses for the second manuscript. As a result of his contribution he earned third authorship on the second study.

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Preparing Preservice General Educators for Inclusive Classrooms: A Review of the Literature

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ABSTRACT

Many classroom teachers do not feel prepared to teach students with disabilities, particularly students with complex needs. In response, some teacher education programs have focused on supporting preservice teachers in developing the dispositions, knowledge, and skills to teach students with disabilities. This synthesis of 23 research studies published over two decades describes preservice teacher educators' efforts and their outcomes to prepare K-12 general educators to include and teach students with disabilities. Although this review focuses on the preparation of classroom teachers for inclusive settings, some studies include comparisons with special education teachers. The majority of these studies focused on supporting preservice teachers' dispositions to teach students with disabilities and fewer programs reported the development of teachers' knowledge and skills. I provide a conceptual model to organize these findings and outline implications for teacher preparation and future research.

Introduction

The passage of the Education of All Handicapped Children Act (1975, EHA, PL 94-142) marked the beginning of a new era in U.S. policy for students with disabilities. In the decades following the passage of the law, students with disabilities have increasingly been served in general education classrooms, which has led to changes in the roles of classroom teachers, as they are expected to address the needs of students in inclusive settings. In 2014, approximately 13% of all students in the U.S. were being served under the renamed law, the Individuals with Disabilities Education Act (IDEA, 2004; Kena et al., 2014) and of these students, 95% attended their neighborhood schools. Approximately 62% of students with disabilities spend 80 to 100% of their school day in general education settings (Kena et al., 2014), which requires that classroom teachers be prepared to teach and support the well being of these students.

Another important development is the inclusion of students with disabilities in state testing programs, with the vast majority taking the same tests as their peers without disabilities (Every Student Succeeds Act [ESSA], 2015; No Child Left Behind Act [NCLB] of 2001). Therefore general and special educators are responsible not only for including students with disabilities, but supporting their achievement in the same state standards that apply to all students. Although evidence suggests that students' performance is improving on state tests in some districts (Thurlow, Quenemoen, & Lazarus, 2012), greater efforts are needed to improve their achievement and long-term outcomes (Feng & Sass, 2013; National Council on Disability, 2011; Olson, Leko, & Roberts, 2016).

General Educators' Preparation for Teaching Students with Disabilities

Over two decades ago Scruggs and Mastropieri (1996) surveyed 10,560 U.S. educators about their perceptions of "mainstreaming," a now dated term that indicated the placement of

students with disabilities in general education classrooms. Although more than 50% of the respondents endorsed “mainstreaming” for students with disabilities, approximately 67% felt less than fully prepared to address their needs (Scruggs & Mastropieri, 1996). Additionally, general educators were particularly uncertain about whether they could effectively support children with significant behavioral and learning challenges. Other researchers reported similar findings, with general educators indicating that teaching students with disabilities was their lowest area of competency (Goodlad and Field, 1993, cited by Cook, 2002). Although some teacher education programs provide substantial support to general educators in learning how to teach students with disabilities, others offer minimal preparation for this work (Blanton, Pugach, & Florian, 2011).

To effectively support students with disabilities in inclusive classrooms, general education teachers need to have positive, professional dispositions that allow them to effectively teach students who have a diverse range of needs and skills. For the purposes of this review, *dispositions* are defined as the attitudes, beliefs, and sense of self-efficacy that teachers need to effectively motivate students and support their learning. In discussing preservice teachers’ dispositions, the standards of the Council for the Accreditation of Educator Preparation (CAEP, 2013) will be considered. There are two CAEP standards that specifically address candidate dispositions. Standard 9, Professional Learning and Ethical Practice, underscores the need for teachers to (a) grow professionally and consistently implement evidence of student learning in evaluating the effectiveness of their practice; and (b) adapt their practice to meet all students’ needs (CAEP, 2013; Conderman & Walker, 2015). Standard 10, Leadership and Collaboration, focuses on teachers: (a) taking on leadership roles and responsibility for students’ academic progress; (b) collaborating with students, families, school personnel, and members of the community to ensure students’ success; and (c) advancing the field of teaching (CAEP, 2013;

Conderman & Walker, 2015). Placing value on accommodating all students, practicing fairness, and commitment to the belief that all students can learn are important dispositions for teachers of students with disabilities (CAEP, 2013).

While attitudes and beliefs are often used in discussions of dispositions, *self-efficacy* is more complex and refers to the classroom teachers' beliefs about their own abilities to successfully engage in specific aspects of teaching and classroom management (Bandura, 1994; Tschannen-Moran & Hoy, 2001). In this review, self-efficacy refers to preservice teachers' beliefs that they can successfully teach students with disabilities and is particularly important since the overall academic achievement of this student population generally lags behind that of their peers without disabilities (Drame & Pugach, 2010). Educators who feel inadequately prepared to use effective practices may have lower self-efficacy and be less likely to attempt a task (Bandura, 1977). Alternatively, teachers with high self-efficacy appear more confident and willing to incorporate a wide variety of instructional strategies (Sharma & George, 2016; Zee & Koomen, 2016). Specht and colleagues (2016) and Sharma, Shaukat, and Furlough (2015) noted that preservice teachers who have opportunities to interact firsthand with students with disabilities tend to report higher levels of teaching efficacy and this may result in increased academic achievement for their students (Sharma & George, 2016; Woolfolk Hoy, Davis, & Pape, 2006; Woolfolk, Rosoff, & Hoy, 1990; Zee & Koomen, 2016).

Preservice teachers also need to have a basic understanding of key special education terms and concepts including what is meant by special education, understanding the characteristics and needs of students with disabilities in the 13 areas covered under IDEA (2004), and the needs of students with disabilities and their families. They also need a basic understanding of the legal protections for students with disabilities under IDEA (2004),

including key principles of the law (i.e., free appropriate education (FAPE), least restrictive environment (LRE), Individual Educational Plan (IEP), non-discriminatory assessment, and parent and student rights including due process). Beyond the basics of the law, preservice teachers need to understand what is meant by inclusive schools and why they are important (Jung, Cho, & Ambrosetti, 2011).

Preservice educators also need opportunities to participate in inclusive classrooms, collaborate and plan with special education colleagues (Blanton et al., 2011; Majoko, 2016), modify learning environments, differentiate instruction, and use a range of assessments (Alvarez-McHatton & Parker, 2013; Blanton et al., 2011; Jung et al., 2011). Optimally (in dual and merged programs) preservice special and general educators also need to participate together in collaborative planning meetings, incorporating evidence-based strategies as well as approaches for monitoring their students' progress over time (Blanton et al., 2011). Ultimately, preservice teachers must be able to teach and provide accommodations for diverse learners (CAEP, 2013; Council of Chief State School Officers [CCSSO], 2011).

Types of Preparation Programs

There are different types of teacher education programs through which teachers can enter the profession. Pugach and Blanton (2009) describe three such types, including discrete, integrated, and merged. In *discrete* programs, general and special educators learn separately and there are typically minimal interactions between program types, with coursework and fieldwork occurring separately between the two teacher groups. Preservice general educators in discrete programs may be required to take a separate course in special education. Similarly, preservice teachers pursuing certification in special education may be required to complete coursework in the general education curriculum. In *integrated models*, preservice teachers may pursue a single

certification in general education or a dual certification in general and special education.

Typically, general education certification is attained first and then educators choose whether to move forward in becoming certified in special education. Coursework and fieldwork are integrated across programs, simplifying the certification process for general education preservice teachers pursuing dual certification. In the third type, *merged programs*, programs are designed for teachers to receive certification in both general and special education. Pugach and Blanton indicate that merged programs offer nearly twice the content accessible in single-credential programs and address the concerns of many general education preservice teachers who feel underprepared to teach students with disabilities.

Across these varied types of programs, it is critical for preservice general educators to have opportunities to teach students with disabilities in field settings to dispel any misconceptions about disability that they may harbor and to allow for their development of positive dispositions and skills important for teaching students with disabilities (Blanton et al., 2011; Etherington & Boyce, 2017; Sokal & Sharma, 2017). Regardless of program type, preservice general educators need opportunities to teach students with disabilities in field-settings (Alvarez-McHatton & Parker, 2013; Carroll, Forlin, & Jobling, 2003; Benedict, Holdheide, Brownell, & Foley, 2016), although simply providing an increased number of field placements does not guarantee positive outcomes (Allsopp, DeMarie, Alvarez-McHatton, & Doone, 2006).

Prior to this review, Pugach (2005) published a review of the literature on preparing general educators to teach students with disabilities, synthesizing information from 17 empirical studies published between 1990 and 2002 and including a table outlining how national standards specify the role of general education teachers of students with disabilities. The studies in

Pugach's review provide data from the perspectives of candidates and instructors and measures of their perceived preparedness. Similar to this present review, the question guiding Pugach's synthesis was how do preservice programs contribute to general educators' preparedness to teach students with disabilities?

Literature Selection and Review Methodology

To identify studies that investigated preservice teacher preparation for inclusive settings, only those that included field experiences were considered, given the importance of firsthand interactions with students with disabilities. For the purpose of this review, field experiences are defined as opportunities for preservice teachers to interact directly with students with disabilities (i.e., field placements aligned with coursework, after-school tutoring, buddy system tutoring in the classroom). To be included these experiences needed to be at least three weeks in duration. In some cases, more than a single type of field experience was provided, such as after school tutoring and fieldtrips to community-based centers. An additional criterion was that studies be empirical and published in a peer-reviewed journal between 1996 and 2018.

A systematic search process was used to identify and gather empirical studies consistent with the above criteria. Electronic databases were used with the following keyword combinations to conduct Boolean searches in EBSCOhost as well as searches using Google Scholar: general education teacher preparation combined with disabilities, preservice teacher inclusion preparation, preservice teacher special education preparation, preservice teacher skills, knowledge, and dispositions. Ancestral searches of reference lists from reviews on inclusion and preservice teacher preparation were also conducted. Lastly, the professional vita and publications of each author included was read to uncover additional studies.

A total of 52 articles were identified using the process outlined above. Each article was reviewed to determine whether the criteria were met for this study. Peer-reviewed articles were excluded if they provided only a program description or did not investigate inclusion preparation outcomes for preservice general educators. Several studies were omitted because insufficient detail was given about the programs, how they were organized, and the content addressed.

Several international studies were included to reflect the growing global interest about inclusive teacher preparation. Since the 2008 United Nations Educational, Scientific, and Cultural Organization (UNESCO) International Conference, “Inclusive Education: The Way of the Future,” teacher educators in many parts of the world have begun to conduct research and publish information on programs and outcomes of inclusive preparation for preservice teachers (Blanton et al., 2011, p. 12). Selected research studies from Canada, the United Kingdom, and Australia were included, authored by individuals who have been frequently cited in their respective countries.

In summary, 23 studies met the inclusion criteria. Studies conducted outside of the U.S. comprised 22% of the total number of articles reviewed. The summary of information in Table 1 provides an overview of each research study, including (a) the research purpose or questions as well as the theoretical framework(s) provided by the authors; (b) the inclusive education components and the nature of inclusive experiences for preservice teachers; (c) the participants in each study; (d) the type of study and data gathered; (e) methods used for data collection and analysis; and (f) the key results of each study, highlighting outcomes for preservice teachers.

Analysis of Studies

After key information from the studies was summarized, each article was analyzed using open coding in order to identify emerging themes. A total of 23 codes were initially created and

later collapsed into 10 categories (e.g., dispositions, knowledge, skills, self-efficacy, collaboration, biases, differentiation, influence of supervising teachers, field experiences, and mediating variables). Memos were recorded for each of the categories. For example, one memo specified that there was limited research on the knowledge and skills of general education preservice teachers in the field and the academic performance of their students with disabilities. Afterward, theme matrices were drafted and refined. Finally, themes from the matrices became the headings for the conceptual model and findings of this study.

Findings

Preservice general education teacher outcomes are organized within three broad categories: dispositions, knowledge and skills. Dispositions include preservice teachers' attitudes, beliefs, and self-efficacy toward inclusion. The second type of outcome centers on knowledge and includes preservice teachers' ability to understand and identify what the practice of inclusion means and looks like, key inclusion terminology (e.g., categories, labels), and evidence based practices. The third type of outcome relates to skills and includes preservice teachers' ability to collaborate with colleagues and differentiate instruction. Findings are organized according to the variables in Figure 1 and are discussed in the following section, followed by a critique of the studies reviewed.

Field experiences varied and included traditional placements in inclusive classrooms, tutoring students with disabilities during and outside of the school day, and visits to community agencies serving citizens with disabilities. However, the majority of these experiences occurred within K-12 classrooms during the required student teaching experience. Variables associated with better outcomes (i.e., dispositions, knowledge, and skills) included placements in inclusive classrooms, effective collaboration with supervising teachers, and opportunities to develop

specific teaching skills. Figure 1, “Factors influencing preservice teachers’ inclusion preparation outcomes,” contains two variables that mediate preservice teachers’ outcomes: program types and student disability types. The model posits that although student disability type and teacher education program type are not directly related to preparation, they may impact preservice teachers’ dispositions.

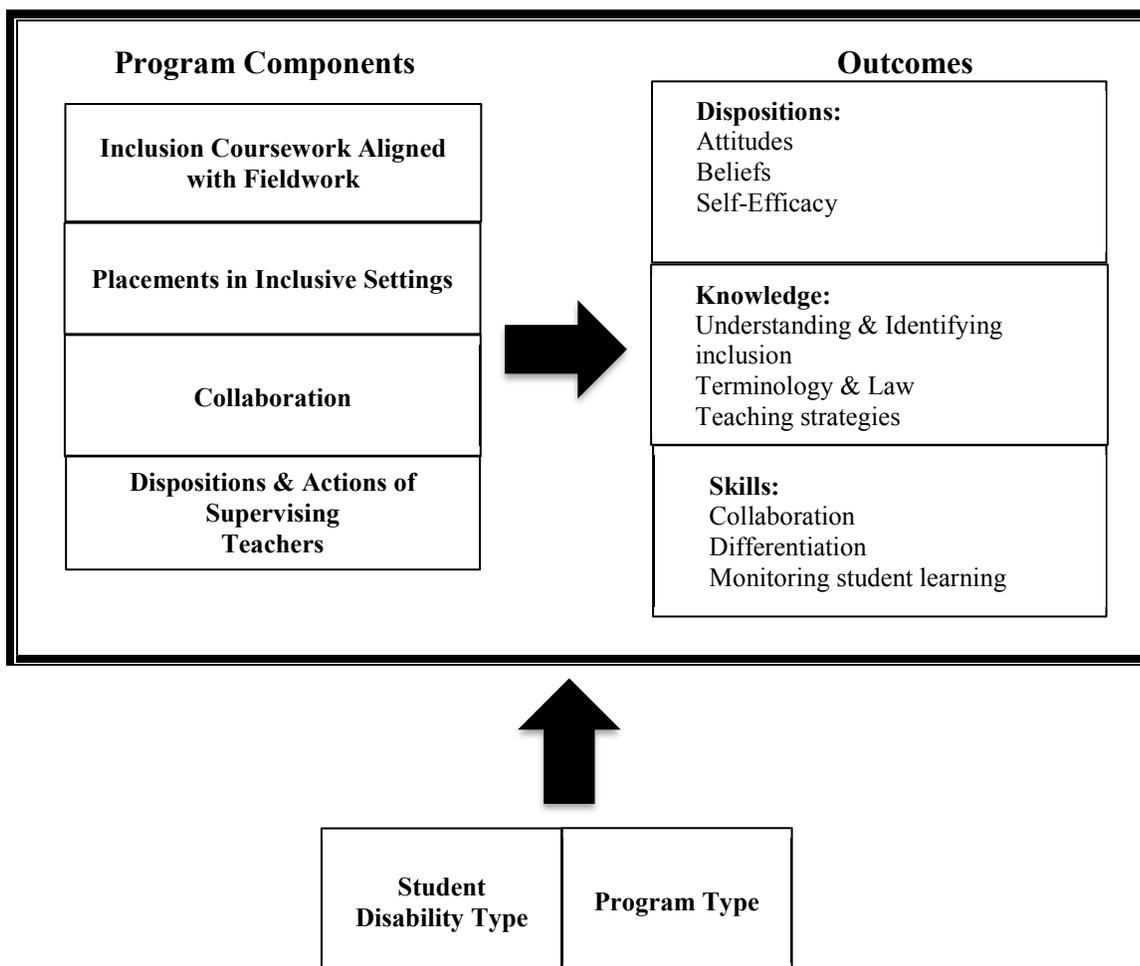


Figure 1. Factors influencing preservice teachers’ inclusion preparation outcomes

In Figure 1, preservice general educators’ outcomes are organized within three broad categories: dispositions, knowledge and skills. Dispositions include preservice teachers’ attitudes, beliefs and self-efficacy toward inclusion for students with disabilities and confidence

in effectively teaching them. Knowledge centers on preservice teachers' ability to understand and identify inclusion, use inclusion terminology appropriately, and effectively implement teaching strategies. Factors associated with desirable outcomes for preservice general educators included placements in inclusive settings, opportunities to observe and engage in collaboration, and the dispositions and actions of supervising teachers. Figure 1 also includes two mediating factors: program type and student disability type. The third type of outcome, skills, relates to ability to collaborate productively with colleagues, differentiate instruction, and monitor student progress. The final section of this review provides more details about the interrelationships among these factors as well as an overall critique of the research reviewed.

Outcomes for Preservice Teachers

Across the studies, researchers examined changes in preservice teachers' dispositions, knowledge, and skills as they completed their inclusion preparation. Most focused on shifts in participants' attitudes, beliefs, and efficacy, and the greatest gains were seen in these areas as opposed to knowledge and skills. Some findings, however, revealed that a number of preservice teachers were less than positive about teaching students with significant disabilities and questioned the appropriateness of inclusion for them (Cook, 2002; Gao & Mager, 2011; McCray & McHatton, 2011; Parker, Alvarez-McHatton, & Crisp, 2014). Researchers also investigated the influence of inclusion preparation on preservice teachers' knowledge of how to effectively teach students with disabilities and found that in some cases, participants had difficulty defining inclusion and recognizing its implementation (Gehrke & Cocchiarella, 2013; Gehrke et al., 2014; Hamre and Oyler, 2004). Additionally, a number of preservice teachers had limited knowledge about which teaching strategies were appropriate for students in inclusive settings and how and when to implement them. Fewer researchers examined preservice teachers' inclusion-related

skills including their ability to effectively collaborate, differentiate instruction, and monitor students' progress. Participants rated their own skills and in some cases, objective observers also critiqued them. Across the studies there were mixed results about preservice teachers' ability to teach students with disabilities.

Preservice teachers' dispositions. Overall, preservice teachers' dispositions improved as a result of their inclusion preparation. Such improvement, however, was not evenly distributed. A few studies (Cook, 2002; Gao & Mager, 2011; McCray & McHatton, 2011, Parker et al., 2014) revealed an underlying bias against inclusion for students with especially challenging needs. Other studies indicated that in cases where supervising teachers were unskilled or questioned inclusion, preservice teachers reported feeling ambivalent about teaching students with disabilities. In addition to affecting attitudes toward inclusion, field experiences also shaped preservice teachers' sense of efficacy (Atiles, Jones, & Kim, 2012; Hamman, Lechtenberger, Griffin-Shirley, & Zhou, 2013; Peebles & Mendaglio, 2014). In general, the outcomes of studies investigating preservice teachers' inclusion-related dispositions reinforced some of the findings of Pugach (2005), who reported that classroom teachers who feel confident and prepared to manage their students' learning are more positive about inclusion and have higher levels of efficacy.

Attitudes and beliefs. Across the studies that examined changes in preservice teachers' attitudes about inclusion, researchers noted significant improvement in participants' positivity by the completion of their programs. Although overall, there was an increase in participants' optimism through preservice education, in some cases a polarity developed in their attitude toward students with varied types of disabilities. As discussed previously, four studies examined how preservice teachers felt about including students with specific types of challenges (Cook,

2002; Gao & Mager, 2011; McHatton & McCray, 2007; Parker et al., 2014). Across these studies, results were the same. A majority of preservice teachers reported a preference for working with students with mild to moderate learning disabilities rather than those with significant learning difficulties.

Of the 13 studies that included information exclusively on attitudes and beliefs, one was based on the social model of disability versus an education-centered perspective. Forlin, Jobling, and Carroll (2001) explored the influence of a number of field experiences in a single inclusion preparation program. In addition to coursework and placements in inclusive classrooms, preservice teachers participated in a 10-week social justice class and community-based activities. Forlin et al. noted that at baseline data collection, preservice teachers reported high levels of sympathy toward people with disabilities and harbored a fear of becoming disabled themselves. The researchers noted a potential for such feelings to become an eventual barrier to inclusion once preservice teachers entered the field. For 10 weeks, preservice teachers worked one-on-one with children with disabilities in an inclusive school setting and tutored them outside of the school day. At the end of their preparation, participants reported feeling less preoccupied with becoming disabled and reported a greater sense of self-efficacy in helping individuals with exceptional needs. Overall, preservice teachers' reticence in working with persons with disabilities decreased significantly after these experiences.

Kim (2011) and Alvarez-McHatton and Parker (2013) investigated changes in the dispositions of preservice teachers who participated in courses co-taught by interdisciplinary teams and aligned collaborative field experiences. In Alvarez-McHatton and Parker's (2013) study, inclusion preparation included a management/instructional methods course, a field experience aligned with a campus-based course, and co-placement of preservice teachers (one

special education and one elementary education preservice teacher) in inclusive K-5 classrooms. Survey data was gathered at three points: (1) after orientation of the collaborative course; (2) at the end of the course; (3) and one year later, during participants' senior year. Like Kim (2011), Alvarez-McHatton and Parker (2013) found differences between elementary and special education preservice teachers' dispositions toward inclusion as they completed their preparation. For example, special education preservice teachers began their preparation with higher overall mean scores than their elementary education counterparts, but as time passed, their positivity toward inclusion remained relatively unchanged and had even decreased by the completion of their final internship.

Three studies in this review investigated how preservice teachers' gender influenced their attitudes toward students with disabilities (Beacham & Rouse, 2012; Carroll et al., 2003; Gao & Mager, 2011). Beacham & Rouse found that at the end of a one-year diploma graduate course, a significantly larger proportion of male students (19%) compared with female students (1%) strongly agreed that students with disabilities are better educated in alternative schools. At the conclusion of the study, more males (14%) than females (3%) also asserted that teaching children with learning difficulties takes too much time. In another study, however, Carroll et al. (2003) asked participants whether they felt discomfort in interacting with a person with a disability and noted no significant differences by gender. Similarly, Gao and Mager (2011) found that preservice teachers' efficacy, attitudes toward inclusive education, and positivity about diversity did not vary significantly between males and females.

Self-efficacy. The sense of control we have over the daily events in our lives and the affect that this "control" has on our decision-making, motivation, and ability to overcome adversity are all key components of efficacy (Bandura, 1994). In education, teachers' beliefs and

confidence in their ability to work successfully with students is referred to as self-efficacy. A strong sense of self-efficacy leads to enduring positivity and commitment to the practice of inclusion (Brownell & Pajares, 1999). Across the studies reviewed, preservice teachers generally reported high levels of efficacy in meeting the needs of diverse students but expressed concerns over possible obstacles to inclusion such as time limitations, shortage of support personnel, and inadequate facilities (Ryan, 2009). However, such concerns did not appear to significantly decrease preservice teachers' confidence in their ability to effectively implement inclusion.

Self-efficacy and confidence are dependent on the frequency of preservice teachers' opportunities to interact directly with students with disabilities. In four studies, field settings with high ratios of students with disabilities were positively correlated with significant increases in preservice teachers' self-efficacy (Atiles et al., 2012; Hamman et al., 2013; Peebles and Mendaglio, 2014; Ryan, 2009). In addition to preservice teachers' interactions with students, Peebles and Mendaglio (2014) noted that previous life experiences with family, community members, and classmates with disabilities were also factors that affected participants' confidence in supporting students with exceptionalities.

On the whole, preservice teachers entered their programs with expectations of how and in what ways students with disabilities would affect their role as future classroom teachers. In general, preservice teachers had positive feelings toward inclusion. However, not all students with disabilities bring similar characteristics and needs to the classroom. In cases where children had behavior difficulties and significant learning needs, preservice teachers were reticent about their ability to effectively meet such students' needs (Alvarez-McHatton & Parker, 2013; Cook, 2002). Across the literature, preservice teachers who had more frequent opportunities to interact with students with a wide range of disabilities developed a greater sense of optimism and

confidence about supporting all students in their future classrooms.

Preservice teachers' knowledge. As soon as new teachers enter the field, they must be able to recognize and instantly implement inclusion. Given the current, increasing emphasis on supporting students with disabilities, classroom teachers should be prepared to accommodate students with diverse needs on their first day in the classroom. In many cases, the inclusion preparation of new educators lags behind the rate of change in education reform (Cook, 2002; Hamman et al., 2013;). High quality preparation involves opportunities for preservice teachers to observe successful inclusion in real life classrooms (Conderman, Johnston-Rodriguez, & Hartman, 2009; Kim, 2011; Loreman, Forlin, and Sharma, 2007)). Many researchers note that preservice teachers' proficiency in recognizing and identifying inclusion is directly associated with the quality and quantity of their experiences in the field. As with attitudes and beliefs, preservice teachers' level of knowledge about inclusion varies widely with the design of their program (Cook, 2002; Kim, 2011). This is evident in the degree of difference among some of the findings in the studies reviewed.

There are key aspects of inclusion that are critical for future teachers to understand and value. Preservice teachers must have a sense of what inclusion means and knowledge of the practices that comprise effective support of all students. Less than half of the studies in this review included information on preservice teachers' skills and knowledge on inclusion. Researchers who did examine knowledge touched on diverse types of awareness and understanding that future educators must possess. Preservice teachers were evaluated on their ability to define and identify inclusion, show an understanding of the practicalities of designing inclusive support, and demonstrate a working knowledge of special education terminology and practices.

Understanding and identifying inclusion. Preparing future educators to meet the needs of all students goes beyond what they learn during coursework. Preservice teachers must have opportunities to observe and participate in inclusive classrooms to gain a realistic understanding of what supporting students with disabilities entails (Rouse, 2017). In their study on inclusion preparation, Gehrke and Cocchiarella's (2013) goal was to uncover possible gaps between what preservice teachers learned during coursework and in their field placements. They were primarily interested in preservice teachers' ability to define and identify examples of effective inclusion in real life settings. Participants were enrolled in special, elementary, and secondary education programs in a single school of education. Differences in preservice teachers' knowledge about inclusion surfaced relative to their level of teaching (elementary or secondary) and area of certification (special education or general education). A larger percentage of elementary preservice teachers than secondary preservice teachers could identify the positive outcomes of inclusion and appeared to have a clearer grasp of how to implement inclusion during field experiences. Overall, preservice teachers struggled with viewing inclusion as a concept and practicing inclusion in actual classrooms (Gehrke & Cocchiarella, 2013).

Before teachers can practice authentic, effective inclusion they must possess a working knowledge and appreciation of what inclusion means. In an effort to improve preservice teachers' perspectives and understanding, Hamre and Oyler (2004) conducted seven hour-long discussion sessions among a group of preservice general education teachers and teacher education faculty. The sessions coincided with preservice teachers' inclusion coursework and fieldwork and discussions centered on questions related to preservice teachers' interests in equity, normalcy, labels, and student belonging. On the whole, their questions were superficially or tangentially associated with inclusion and failed to touch on research-based inclusion practices

or the feasibility of creating heterogeneous instruction.

Knowledge of special education terminology. A few studies examined preservice teachers' understanding of key terms related to inclusion (e.g., disability categories and labels, acronyms, special education terms). In one study, Parker et al. (2014) reported that preservice general education teachers tended to use disability-related acronyms (e.g., OCD, LD, EBD) even though they admitted having little knowledge of the associated disability types, possibly in an attempt to “demonstrate their knowledge and assert themselves as an increasingly competent professional” (p. 147). Although the preservice teachers were aware of inclusion-related terminology, they clearly lacked a broad or deep understanding of the disabilities reflected in their classroom (Parker et al., 2014). In another study, Dee (2011) noted that preservice teachers at the undergraduate and graduate levels had limited knowledge of special education-related terms such as Individual Education Plan (IEP), adaptation, and modification, and rarely referenced these terms in their lesson plans or in their reflections on their instructional practice.

Teaching strategies. Some researchers suggest that preservice teachers also have a limited understanding of teaching strategies frequently used in inclusive classrooms. Cook (2002) investigated preservice teachers in a program infused with special education content and found that the majority of participants reported having limited knowledge of instructional strategies and the types of curricular adaptations necessary for teaching students with disabilities. The following comments were included in their responses to an open-ended survey question: “I keep learning about how I will be teaching inclusion kids, but have no idea how to do it” and “my weakness is the fact that I know nothing about it” (Cook, 2002, p. 269). Cook noted, “...the most discouraging finding of the investigation is that not one participant noted skill or experience with a particular instructional technique or curricular adaptation as a strength” (p. 273).

Similarly, Dee (2011) found that some preservice teachers were unfamiliar with strategies for adapting lessons and noted one preservice teacher as saying, “I don’t have the bank of knowledge, ideas, and resources to draw from...” (p. 62). However, Van Laarhoven et al. (2006) and Van Laarhoven, Munk, Lynch, Bosma, & Rouse (2007) noted different outcomes. In both studies, curricular probes were used to assess general and special education preservice teachers’ knowledge of critical competencies for inclusion including the use of instructional strategies. Van Laarhoven et al. (2006, 2007) found that probe scores increased from pre- to posttest for the majority of participants, with the largest effect sizes observed for general education preservice teachers.

Preservice teachers’ skills and practices. Classroom teachers are increasingly called upon to implement a variety of skills that were once considered beyond the scope of their responsibilities. “Adapting instruction and making modifications to content for special education students often represents a new skill set for veteran teachers and a foreboding challenge for new and preservice teachers” (Dee, 2011, p. 53). Across the studies reviewed, certain variables proved to have a significant influence on the degree to which preservice teachers developed specific skills such as the ability to adapt lessons, use evidence-based data, and collaborate with professionals in supporting students with disabilities.

Ability to collaborate. The studies that examined collaboration were based in either merged or integrated programs. In five studies, preservice general education and special education teachers were paired together in inclusive classrooms during their field experiences (Alvarez-McHatton & Parker, 2013; Hoppey & Mickelson, 2017; Parker et al., 2014; Van Laarhoven et al., 2006, 2007). In Alvarez-McHatton and Parker’s (2013) study, elementary and special education preservice teachers were placed together in inclusive classrooms and a cross-

departmental course. Alvarez-McHatton and Parker (2013) reported that both groups experienced positive increases overall in their attitudes toward inclusion, suggesting that collaborative experiences may be an effective way to affect future teachers' dispositions toward inclusion. Similarly, Hoppey and Mickelson (2017) reported positive outcomes for preservice teachers who participated in a 15-week clinical field experience as part of a highly structured collaborative partnership between an elementary school and a teacher education program. Hoppey and Mickelson noted that ongoing, productive collaboration between school faculty and preservice teachers in planning for and meeting the needs of students with disabilities markedly improved preservice teachers' skills and understanding of inclusive classrooms. In two other studies (a pilot and subsequent study) Van Laarhoven et al. (2006, 2007) noted that 91% of preservice teachers in their Project ACCEPT reported feeling positive about their collaborative experiences. They expressed that having opportunities to collaborate and co-teach prior to their employment greatly improved their ability to work effectively with others. In the fourth study, Parker et al. (2014) reported different outcomes. They hypothesized that preservice general education teachers would demonstrate an interest in students' IEPs and disability types and would reach out to the special education preservice teachers they were placed with in their field settings for such information. However, they appeared to have little or no interest in learning about their students' disability-related characteristics or IEP accommodations and tended to view students from a deficit perspective.

Ability to differentiate. Teachers are expected to meet the needs of all students with disabilities in their classrooms and in response, teacher educators often set goals related to differentiating instruction for students to achieve during their programs, with some including opportunities for preservice teachers to practice such skills. Maheady, Mallette, and Harper

(1996) investigated changes in preservice educators' skills in supporting students during their participation in a pair tutoring program. The aims of the program included developing preservice teachers' collaborative skills, the ability to collect and analyze data about student learning, and proficiency in using evidence-based instructional strategies.

The pair tutoring experience was part of a restructured four-year field based program known as the Reflective and Responsive Educator Program (RARE) (Maheady et al., 1996). RARE offered preservice teachers structured opportunities to teach students with disabilities in afterschool settings under the supervision of in-service teachers and university instructors. Data were gathered by teacher educators and analyzed in three areas: amount, nature, and effectiveness of services provided by preservice teachers during field placements. Preservice teachers were grouped in pairs and assigned to six-member Teaching Assistance Teams (TATs) based on their grade level assignment. Each TAT met weekly on campus during the field-based part of the course, providing opportunities for team members to exchange instructional ideas and interact socially. In addition to differentiating and delivering instruction to students, preservice teachers also gathered data on and charted students' (tutees) progress as they tutored. The outcomes of RARE were overwhelmingly positive (Maheady et al., 1996). Customer satisfaction surveys were sent to district and support personnel, preservice teachers, and tutees that in general rated RARE very highly and indicated a desire for the program to continue. Generally, students' performance increased and overall preservice teachers felt satisfied with the quality of intervention they provided. Ninety-eight percent indicated a preference for pair tutoring as a complement to their coursework. Most (96%) of the students they assisted felt that the program improved their targeted academic skills and all but 2 wished to re-enroll in the future (Maheady et al., 1996).

Project ACCEPT (Van Laarhoven et al., 2006, 2007) was another inclusion preparation program that offered preservice teachers' similar opportunities to develop skills and knowledge on differentiating instruction for students with disabilities. Researchers investigated how field work activities in Project ACCEPT shaped participants' dispositions and competency in implementing inclusion. Preservice teachers spent six or more hours in an inclusive setting collaborating with the classroom teacher on differentiating a lesson plan and delivering the lesson in their final visit to the classroom. At the end of the pilot year of ACCEPT (2006), preservice teachers earned high scores on differentiated lesson planning and implementation and reported a number of positive changes in their dispositions. At the end of the subsequent year (2007), all participants demonstrated improvements on almost all measures.

Similar to Maheady et al. (1996) and Van Laarhoven et al. (2006, 2007), Parker et al. (2014) aimed to develop preservice teachers' ability to design differentiated instruction and accommodate learners with exceptionalities by providing a purposefully paired course and field experience. They based their approach to fieldwork on the idea that multiple opportunities to work with students with a wide range of abilities helps preservice teachers connect the theoretical knowledge they acquire in coursework with demands for the practical application of strategies in the field. Participants were co-placed with preservice special educators in K-5 classrooms that included students with a variety of disabilities. Preservice teachers were able to discuss, observe, and teach the instructional strategies and management methods they had learned during coursework.

Although the goals and characteristics of field placements among the three studies above were similar, Parker et al.'s (2014) study yielded less positive outcomes. Their participants consistently viewed disability from a deficit perspective, as evidenced in their anecdotal

accounts. Occasionally, these preservice elementary teachers used their general educator status as a rationale for their low ability to identify and describe students' challenges and to avoid responsibility for learning additional ways to accommodate the needs of students with disabilities. Overall, participants in Parker et al.'s study were quick to question inclusion rather than accommodate students' needs and tended to suggest that students with exceptionalities in regular classrooms are sometimes detrimental to their peers' success.

Dee (2011) took a different approach and used content analysis to examine the nature, characteristics, and types of instructional adaptations that preservice teachers used to differentiate instruction for students with disabilities. Five work samples were randomly selected from the undergraduate and graduate programs in elementary education at Dee's institution. Each work sample contained a minimum of 10 lesson plans as well as reflections written by preservice teachers during a 15-week practicum in an inclusive classroom. Overall, Dee analyzed 107 lesson plans, assessing the quality of instructional adaptations and extent of differentiation. Six themes emerged reflecting the overall low ability of preservice teachers to design lessons that appropriately addressed all students' ability levels. On the whole, participants' lesson plans reflected little or no evidence of intentional preparation for students with IEPs. None of the plans provided individualized accommodations and preservice teachers' misunderstanding of key special education terminology was frequently reflected. There was an overreliance on manipulatives during teaching and minimal differentiation for students with specific disabilities. Preservice teachers appeared to assume that "the use of manipulatives, or the incorporation of kinesthetic activities into lesson plans, qualify as a satisfactory response to the mandate to differentiate (Dee, 2011, p. 65). In many cases, preservice teachers' self-reflections indicated that they were preoccupied with their actions rather than focused on the responses of their students.

Overall, the work samples reflected minimal evidence of careful planning or differentiation for students with disabilities (Dee, 2011).

Monitoring student progress. Although assessing student learning was addressed in only one study (Maheady et al., 1996), this skill is included in my conceptual model (see Figure 1) and findings because of its critical importance. Current education policy emphasizes that all students with disabilities must show annual yearly progress (ESSA, 2015) and holds teachers accountable for changes in students' learning. Additionally, three of the 22 high leverage practices (HLPs) promoted by the Council for Exceptional Children (CEC) focus specifically on monitoring students' progress. High Leverage Practices are emphasized as essential for all teachers in K-12 classrooms to master and demonstrate and are linked to improved learning outcomes for students (McLeskey et al., 2017). Students with disabilities have complex needs as well as strengths and effective teachers must "fully understand those strengths and needs" (McLeskey et al., 2017, p. 1). Knowing how to use and interpret student data, an example of an HLP, is critical in effectively supporting students' achievement (Fuchs, Deno, & Mirkin, 1984). Maheady et al. (1996) provided the only investigation into how an early, intensive inclusion preparation field experience aligned with an introductory course influenced preservice teachers' skills in teaching diverse learning groups, including those with disabilities. The pair tutoring experience required preservice general educators to gather, graph, and analyze curriculum-based assessment data on students' progress as each tutoring session ended and to use this data to guide their instructional design. Overall, most preservice teachers were able to adequately collect and graph their students' progress. According to Maheady et al., in general tutees showed improvements in oral fluency and comprehension skills and some students showed substantial gains. Preservice teachers rated pair tutoring sessions as "highly important and personally

satisfying” (Maheady et al., 1996, p. 294).

Factors Associated with Inclusion Preparation Outcomes

There were three elements of inclusion preparation (see Figure 1) that appeared most influential on changes in preservice teachers’ outcomes: placements in inclusive settings, collaboration, and the dispositions and actions of supervising teachers. Inclusive classrooms included one or more children with a disability and opportunities for preservice teachers to interact with and teach these children. Collaboration included observations of university faculty and classroom teachers collaborating across disciplines as well as opportunities to practice collaboration with supervising teachers and special education preservice teachers (in integrated and merged programs). The dispositions and actions of supervising teachers included positivity about inclusion and an ability to effectively teach students with disabilities. Their actions included a willingness to collaborate with preservice teachers and model effective strategies for teaching in inclusive classrooms.

Placements in inclusive settings. There is some evidence that the nature and types of field opportunities provided to preservice general educators have an influence on their self-efficacy in implementing inclusion as well as their attitudes toward children with disabilities. Guaranteeing inclusive classroom placements for preservice teachers was a key focus in all of the studies reviewed. Well-controlled field opportunities increase the likelihood that preservice general educators will be exposed to inclusive practices and prevent their preparation being “left to chance” (Hamman et al., 2013, p. 252).

Ensuring quality field experiences requires careful selection, planning and monitoring of placements as well as close collaboration between teacher education programs and schools. In several studies, teacher educators had little ability to control whether all field placements

included students with disabilities. In such cases, preservice teachers did not have opportunities to observe the types of planning and effort involved in effectively supporting inclusion. Gehrke et al. (2014) and Ryan (2009) reported similar inconsistencies in their participants' placements, as not all classrooms included at least one student with a disability. Hemmings and Woodcock (2011) noted that even when teacher educators went to great lengths to design quality field experiences there was no guarantee that preservice teachers would actually be placed in inclusive classrooms. Similarly, Mueller and Hindin (2011) noted that even though the majority of their partner schools were fully inclusive, not all placements for preservice teachers were assured to be inclusive 100% of the time. To decrease this uncertainty, preservice teachers were required to complete four separate field experiences. At least one of these placements was guaranteed to include students with disabilities.

In addition to or in lieu of placements in inclusive classrooms, two programs provided opportunities for preservice teachers to work one-to-one with students with disabilities. Carroll et al. (2003) described an arrangement where each teacher trainee provided support to a student with a disability in an inclusive classroom in addition to their practicum. In another study (Maheady et al., 1996), preservice teachers in the Reflective and Responsive Educator (RARE) program worked in pairs to tutor students with disabilities in an after-school program. In both cases, teacher educators carefully partnered with school districts to provide all preservice teachers the chance to work with students with disabilities in structured, well-supervised settings.

In Carroll et al.'s (2003) study, preservice teachers were part of a buddy system in local schools. The buddy system involved working one-on-one with a student with a disability during a three-week practicum in an inclusive school. All preservice teachers in the program were guaranteed an opportunity to work in inclusive settings and directly assisted at least one student

with a disability. This afforded each participant the chance to observe inclusion firsthand as well as practice strategies learned during coursework and observation.

Similarly, in the RARE program (Maheady et al., 1996) preservice teachers participated in paired tutoring aligned with an introductory course over two semesters. For eight to 10 weeks, they worked in tandem tutoring, observing, and critiquing each other. Teacher educators were frequently on-site to monitor tutoring, which occurred during hours outside of the regular school day. The after-school timing of the tutoring may have made it easier for teacher educators to regulate the nature of the tutoring experience, as there were no competing factors such as students' mandatory participation in content area classes or activities.

Collaboration. General and special educators must be able to work collaboratively to ensure that students with different needs and skills have the same level of access to the general curriculum as their classroom peers without disabilities (Olson et al., 2016). Researchers often have difficulty determining the type and frequency of collaboration in inclusive teacher education and whether collaboration is required or optional, particularly within discrete programs (Pugach & Blanton, 2009). The terminology used to describe collaboration varies from program to program, which sometimes presents researchers with challenges in identifying features of inclusion preparation that support such partnerships.

In the studies reviewed, preservice teachers' exposure to collaboration occurred in a variety of contexts and resulted in highly positive outcomes. Merged and integrated programs offered preservice general educators opportunities to learn and work alongside fellow preservice teachers from other disciplines. Frequently, coursework was collaboratively designed and co-taught by teacher educators from the fields of special and general education (Gehrke et al., 2014; Kim, 2011). In her earlier review on inclusion preparation, Pugach (2005) noted that there is

increasing collaboration among interdisciplinary faculty (general and special education) who frequently share responsibility for co-designing and co-teaching inclusion preparation coursework. Pugach added that

The quality of preparation for those preparing to be general education teachers receive in the name of inclusion should not be left to chance. Rather, it should be discussed and deliberated on as a function of faculty collaboration and reflect a fundamental level of shared understanding across special or general faculty who are delivering special education content and concepts (p. 567).

Field experiences often occurred in classrooms where teachers collaborated closely and consistently to implement inclusion for students with disabilities (Alvarez-McHatton & Parker, 2013; Parker et al., 2014).

Alternatively, preservice teachers in discrete programs had little or no exposure to preservice educators in other certification areas such as special education (Cook, 2002; Jung et al., 2011; Ryan, 2009). Their inclusion coursework was typically less comprehensive and designed primarily or exclusively by general education faculty. In studies on fieldwork in discrete programs, there was no discussion of opportunities to observe collaboration. There was also no elaboration on how collaboration was addressed in coursework in any of the programs. In studies where preservice teachers had little or no opportunities to observe collaboration, outcomes were less positive in terms of attitude and self-efficacy (Cook, 2002; Hemmings & Woodcock, 2011; Ryan, 2009).

Supervising teachers. Classroom teachers model a standard of practice and dispositions for the preservice teachers who observe and interact with them. The research in this review reflects that of all the features of fieldwork, supervising teachers are especially influential. The

outcomes of six studies (e.g., Dee, 2011; Hamman et al., 2013; Hemmings & Woodcock, 2011; Mueller & Hindin, 2011; Parker et al., 2014; Ryan, 2009) revealed a strong association between future teachers inclusion-related attitudes, skills, and self-efficacy and the types of supervising teachers they observed and interacted with in the field.

In cases where preservice teachers worked with conscientious, collaborative classroom teachers, their proficiency and dispositions in implementing inclusion were markedly positive (Hamman et al., 2013; Ryan, 2009). Alternatively, when supervising teachers displayed limited knowledge and negativity about inclusion, preservice teachers finished their practicum feeling insecure and underprepared. Hamman et al. (2013) examined how the characteristics of supervising teachers and practicum settings impacted preservice teachers' efficacy in supporting inclusion. Their findings indicated that supervising teachers significantly shaped preservice teachers' sense of self-efficacy. This suggests that when preservice teachers engage in consistent, productive collaboration with supervising teachers, the outcomes are positive; however, when such collaborations are nonexistent or superficial, the consequences can be counterproductive (Hamman et al., 2013). Similarly, Ryan (2009) reported that preservice teachers' confidence was influenced by the quality of collaborative exchanges they shared with classroom teachers. Ryan noted an association between supervising teachers' skills and knowledge about inclusion and preservice teachers' level of expertise in supporting students with disabilities.

Other studies yielded less positive outcomes. In Mueller and Hindin's (2011) program, preservice teachers completed four field experiences, one of which was in an inclusive classroom. They noted that only 30% of the participants in their study reported positive dispositions toward inclusion during their placements. Similarly, Dee (2011) asserted that preservice teachers' self-reflections indicated a lack of strong role models to demonstrate

differentiation in the classroom. In a third study, Hemmings and Woodcock (2011) found that almost one fifth of preservice teachers reported feeling unprepared at the end of their practicum due to the poor level of knowledge and skills of their supervising teachers. Approximately 10% indicated that supervising teachers' apathy and low confidence were obstacles to the effective implementation of inclusion (Hemmings & Woodcock, 2011).

Alternatively, some preservice teachers' positive experiences in the field reinforced the constructive influence of supervising teachers who are highly committed to the inclusion of students with disabilities. Parker et al. (2014) measured the impact of a co-taught classroom upon preservice teachers' dispositions, skills, and inclusion-related knowledge. Each preservice teacher was co-placed with a special education counterpart in an inclusive classroom where a special educator collaborated closely with the classroom teacher. Preservice teachers' responses were overwhelmingly positive (Parker et al., 2014). One participant stated, "...The teachers did a great job of accommodating for each student as it is needed, and they are not only reserved for special education learners" (Parker et al., 2014, p. 146). This preservice teacher had "conceptualized" (Parker et al., p. 146) that all students stand to gain from a variety of learning approaches, multiple modalities of learning, and access to accommodations. Although Atilas et al. (2012) did not investigate the influence of supervising teachers, they openly addressed the need for teacher educators to conscientiously place preservice educators in classrooms where capable supervising teachers model best practices.

Mediating Variables

In addition to features of field experiences, there were two mediating factors (e.g., teacher education program type and student disability type, see Figure 1) that appeared to influence outcomes for preservice teachers. Both were associated with changes in inclusion-

related attitudes and beliefs. Program type was also related to preservice educators' ability to effectively collaborate and the type of classroom that they were likely to be placed in (inclusive versus non-inclusive).

Program type. Differences in the way merged, integrated, and discrete certification programs are structured may affect how future educators are prepared to implement inclusion. Such differences may play a role in shaping preservice teachers' views of inclusion as well as their knowledge and skills. However, the literature reveals that outcomes for preservice teachers vary not only by program type but also among universities who sponsor similar types of teacher education programs.

Kim (2011) surveyed 110 preservice teachers from 10 different programs and concluded that participants from merged programs had significantly more positive outcomes in three essential areas related to inclusion: overall teacher attitudes, sense of professional responsibility, and ability to collaborate. Alternatively, Gao and Mager (2011) reported that although preservice teachers in their merged program experienced increased positivity about inclusion during their preparation, they were inconsistent in their willingness to serve students with particular disabilities. However, there was no indication of whether field experiences occurred in inclusive classrooms or in segregated special education classrooms. Perhaps differences in the nature of field experiences in the merged programs described by Kim (2011) and Gao and Mager (2011) account for the variations in their participants' inclusion attitudes.

Gehrke et al. (2014) also investigated outcomes for preservice teachers in a merged program. Their findings were less positive than those of Kim (2011) and Gao and Mager (2011), and related to skills and knowledge rather than dispositions. Gehrke et al. exposed gaps in preservice teachers' ability to recognize specific characteristics of inclusion in practice, along

with the disconnection between what participants felt they had learned about inclusive practices in coursework versus in the field. The nature of field experiences reported by preservice teachers in Gehrke et al.'s program was much less consistent (e.g., opportunities to observe inclusion were not guaranteed and inclusion-related practices differed in each setting) than that of field placements described by Kim (2011) and Gao and Mager (2011). Although the comprehensive preparation provided in merged programs may be regarded as the most holistic approach to inclusion preparation, the inconsistent outcomes among studies in this review do not sufficiently support this idea.

Student disability type. A number of preservice teachers feel that not all students with disabilities are their responsibility. In some studies, preservice teachers tended to harbor negativity about students with specific types of disabilities such as emotional behavior disorder and intellectual disability. Regardless of teaching efficacy or general positivity about inclusion, a majority of preservice teachers in four studies appeared to be challenged by students with emotional behavior disorders (Cook, 2002; Gao & Mager, 2011; McHatton & McCray, 2007; Parker et al., 2014). When questioned about the feasibility of inclusion for all students with disabilities, most preservice teachers were not welcoming of every student. McHatton and McCray (2007) noted that although preservice teachers' positivity about inclusion increased significantly by the end of their inclusion preparation, their optimism was limited to students with learning disabilities. Overall, participants were much less positive about inclusion for students with emotional challenges, intellectual disability, and multiple disabilities.

Teachers' perception that students with certain types of challenges are not their responsibility reflects a division of labor mindset (Blanton et al., 2011; Etherington & Boyce, 2017). Cook (2002) reported that regardless of preservice teachers' amount of inclusion

preparation or the number of years they were enrolled in their program, across the board they were reticent about inclusion for all students with disabilities. One study, however, yielded very different results. Kim (2011) found that regardless of differences in participants' teacher preparation programs, 100% appeared to support inclusion.

The idea of not being responsible for every student in the classroom is counterproductive and creates an additional barrier to inclusion (Etherington & Boyce, 2017). Blanton et al. (2011) assert that such a viewpoint divides general and special educators at the preservice level and eventually within the classroom. Although special education teachers provide specialized support to students with disabilities, it is essential for general educators to recognize their own responsibility in ensuring success for these students.

Critique of Studies

Researchers over the last two decades have reported an increased interest in preparing teachers to serve students with disabilities. As a whole, the research base is limited and the majority of studies lack clear theoretical and conceptual frameworks. Most of the research has examined changes in preservice teachers' attitudes toward inclusion, with fewer investigating their development of essential knowledge and skills. There was an overreliance on self-report data, with few instances of triangulated data collected through third party observations. In addition, only one study investigated the impact of inclusive preparation on teacher practices in the first years in the classroom (i.e. Van Laarhoven et al., 2006), therefore, little is known about the impact of inclusion preparation longitudinally on general educators' dispositions and practices. In the following critique, comparisons are drawn between the research base reviewed in this study and Pugach's (2005) earlier review of research about preparing general educators to teach students with disabilities.

Lack of Theoretical Frameworks and Constructs

Although theory was referenced in the literature reviewed, theoretical frameworks and constructs were incorporated in only nine of the 23 studies (see Table 1). In each case, researchers linked theory with changes in preservice teachers' attitudes toward teaching students with disabilities. In addition, Maheady et al. (1996) used a conceptual framework to guide their discussion of preservice teachers' development of inclusion-related skills. In another study, Gao & Mager, 2011 used theory to frame their examination of the association between collaboration and preservice teachers' self-efficacy. In total, 11 theories and constructs were referenced including the following: constructivist learning theory (Gao & Mager, 2011), inclusion philosophy (Gao & Mager, 2011), construct of teacher beliefs (Pajares, 1992, referenced by Alvarez-McHatton & Parker, 2013 and McHatton & McCray, 2011), concept of practicing good stewardship (Goodlad, 1991, referenced by Mueller & Hindin, 2011), social consciousness theory (Mueller & Hindin, 2011), Granott's (1993, 2005) framework (Hamman et al., 2013), Niemeyer and Proctor's (2002) framework (Ryan, 2009), reflective and responsive practices (Maheady et al., 1996), tolerance theory (Cook, 2002), and transformative learning theory (Gehrke et al., 2014). In two studies (e.g., Mueller & Hindin 2011; Gao & Mager, 2011), researchers discussed the relationship between preservice teachers' inclusion-related attitudes and two separate frameworks (as opposed to a single theory or construct).

In her review Pugach (2005) noted, "A unifying conceptual framework should lead preservice teachers to make thoughtful, informed instructional decisions and to articulate the relationship among the pedagogies they choose within that framework" (p. 564). Pugach goes on to ask whether comprehensive theoretical frameworks drive inclusion preparation programs, adding that if frameworks are indeed integrated into programs, what are they specifically and

how do preservice teachers interpret the scope of methodologies necessary to teach a wide variety of students? Although programs and research were undergirded by theory in some of the studies reviewed, there was not enough information to adequately answer Pugach's questions.

Inadequate Research on Knowledge and Skills

Although preservice teachers' dispositions were addressed in almost all of the studies reviewed, knowledge and skills were examined in just 10. According to Zagona, Kurth, & MacFarland (2017), "There is a need to investigate educators' preparedness for inclusive education, including their skills and knowledge, rather than solely exploring their beliefs and dispositions because educators' knowledge of inclusive education may differ from their beliefs" (Zagona et al. citing Pajares, 1992, p. 164). Further, teachers beliefs including their willingness to teach students with disabilities may be impacted by their perceived instructional preparedness and inclusion-related knowledge (Ajuwon et al., 2012; Lohrmann & Bambara, 2006).

In her earlier review, Pugach (2005) noted a scarcity of research on preservice teachers' capacity to effectively teach students with disabilities. Although some researchers in the present review examined skills and/or knowledge (e.g., Cook, 2002; Dee, 2011; Gehrke & Cocchiarella, 2013; Gehrke et al., 2014; Hamre & Oyler, 2004; Hoppey & Mickelson, 2017; Maheady et al., 1996; Parker et al., 2014; Van Laarhoven et al., 2006, 2007), few did so exclusively. Most emphasized the importance of developing teachers' dispositions toward teaching or interacting with students with disabilities. A single researcher (Dee, 2011) investigated only inclusion-related skills and two others limited their studies to teachers' knowledge about inclusion (Gehrke & Cocchiarella, 2013; Gehrke et al., 2014).

Overreliance on Self-Report Data

Overwhelmingly, researchers relied on self-report measures to gauge changes in preservice teachers' dispositions and/or their skills and knowledge related to inclusion. Self-reports related to self-efficacy, perception of knowledge, and inclusion-related strengths and weaknesses may have limited validity (Cook, 2002). For example, preservice teachers may report an inflated sense of positivity about students with disabilities in general without having had an opportunity to teach students with varied disabilities. Twenty-one of the 23 studies included self-report data from participants. Only seven of the 23 included triangulated data from second and third party observers such as teacher educators, supervising teachers, special education directors, and students served in the field (Dee, 2011; Gehrke et al., 2014; Maheady et al., 1996; Mueller & Hindin, 2011; Parker et al., 2014; Van Laarhoven et al., 2006, 2007).

Although considering preservice teachers' perceptions of their abilities is important, incorporating second and third party data may provide more reliable evidence of their proficiency. In addition, incorporating observational data about how preservice teachers' specific practices compare to what they learned during coursework would strengthen this research base. Whether data was self-reported or observed, in some cases future educators do not have an adequate level of knowledge and skills to effectively implement inclusion (e.g., Cook, 2002; Dee, 2011). However, preservice educators in two studies (Maheady et al., 1996; Van Laarhoven et al., 2006, 2007) demonstrated an especially strong capacity overall to teach students with disabilities.

Follow Up Studies After Program Completion

Only one of the articles included information about the extent to which preservice experiences influence new teachers' work as they enter the field. Van Laarhoven et al. (2006)

asked former preservice teachers about the helpfulness of particular aspects of Project ACCEPT in a follow-up survey two years after completing their program. A majority of Project ACCEPT participants (91%) were positive about their experiences, stating that practicing collaboration and co-teaching prior to employment greatly improved their ability to work effectively with others. They added that hands-on experiences with assistive technologies and taking part in simulations were also beneficial. In addition to positive comments, there were negative statements indicating that participants would have preferred having fewer guest speakers during coursework and more time to collaborate with their peers.

In another study, Alvarez-McHatton and Parker (2013) asked participants to complete a survey during their senior year, one year after finishing their inclusion preparation (however, respondents were still enrolled in the teacher education program). Ninety-three percent considered inclusion a “desirable practice” and 100% indicated a willingness to make adaptations for students with disabilities. The only area in which senior preservice teachers diverged in their responses was on the following survey statement: “Inclusive schools do not risk lowering their performance on high-stakes testing” (Alvarez-McHatton & Parker, p. 194). Less than half (38%) of preservice general educators agreed.

Research Conducted by Teacher Educators in Their Own Institutions

In just two studies (Cook, 2002; Kim, 2001) teacher educators compared programs of which they were not part. However, the vast majority of studies were conducted by researchers who used changes in preservice teachers’ attitudes and/or skills and knowledge as indicators of their programs’ effectiveness. Pugach (2005) made a similar observation and added that most of the research in her review was generated by special education faculty with occasional support from general teacher educators. Compounding this issue is the tendency of general and special

teacher educators to publish their research in separate journals, attend separate conferences, and talk among themselves rather than with colleagues across disciplines (Blanton, Pugach, & Boveda, 2014). The problem with focusing exclusively on single programs and a single discipline (e.g., special education or general education) is that only partial perspectives are provided on the issues being investigated (Cochran-Smith et al., 2012). Looking across studies and disciplines and taking into account differing research designs, assumptions, and ways of knowing leads to a fuller, richer understanding (Cochran-Smith et al., 2012). Future researchers should consider conducting studies involving preservice teachers from other programs and across disciplines, as well as studying the preparation of general educators across institutions to provide findings that are more reflective of and can be generalized to the larger population of preservice teachers.

Discussion and Implications

Findings of this review underscore the importance of embedding critical competencies within inclusion preparation. Developing preservice educators' proficiency in certain skill areas is essential for their success in teaching students with disabilities (Fernández, 2016; Maheady et al., 1996; McLeskey et al., 2017). Some of the researchers provided evidence that when specific practices (e.g., monitoring student progress, differentiation, classroom management, and interdisciplinary collaboration) are systematically addressed, the outcomes for preservice teachers can be overwhelmingly positive (e.g., Alvarez-McHatton & Parker, 2013; Hoppey and Mickelson, 2017; Maheady et al., 1996; Parker et al., 2014; Van Laarhoven et al., 2006, 2007). However, in programs where inclusive field placements are not guaranteed and coursework is limited to a single class on teaching students with disabilities, outcomes are often less positive

(Kim, 2011). In such cases, preservice educators tend to be broadly prepared for inclusion without adequate opportunities to develop expertise in particular skills.

As discussed earlier, High Leverage Practices (HLPs) related to collaboration, assessment, social/emotional/behavioral practices, and instruction may be a valuable approach for ensuring that preservice teachers are prepared in the most essential skills for inclusion. Although HLPs were designed for special educators, they may be modified for general education teachers (McLeskey et al., 2017). In her earlier review, Pugach (2005) noted the need for teacher educators across disciplines to consistently discuss critical inclusion-related practices and “the larger goals of the curriculum in terms of meaningful and authentic instruction for students with disabilities” (p. 573). High Leverage Practices are comprised of such skills and teachers’ effective implementation of them has been shown to make a measurable difference in the academic achievement of their students with disabilities (McLeskey et al., 2017).

Teacher education programs vary widely in the amounts and types of opportunities they offer preservice teachers to develop essential skills. Researchers suggest that a majority of programs provide educators with limited access to special education expertise (Pugach & Blanton, 2009) and do not promote an inclusive agenda (Blanton et al., 2011). For example, discrete programs tend to require a single course in special education and significantly fewer field experiences than merged or integrated programs (Kim, 2011). In the case of traditional programs that offer dual certification, preservice teachers essentially participate in two discrete programs, perpetuating the idea that general and special education are somehow separate (Blanton et al., 2011). The most promising programs are integrated and fully merged models where general and special education faculty collaborate on a shared core curriculum that addresses the most essential practices for teaching students with disabilities (Blanton et al.,

2011). Dual certification programs appear to be more successful than others in preparing teachers for inclusion because they move beyond special and general education as separate, isolated endeavors and “marshal these efforts into a broad conception of inclusive education” (Blanton et al., 2011, p. 30).

Some of the findings in this review indicate that strategically planned field placements are especially valuable in preparing future educators to teach students with disabilities (e.g., Gehrke et al., 2014; Hamman et al., 2013; Hoppey & Mickelson, 2017; Kim, 2011; Maheady et al., 2002; Peebles & Mendaglio, 2014; Van Laarhoven et al., 2006, 2007). According to Nagro, deBettencourt, Rosenberg, Carran, and Weiss (2017), “Teacher educators consider field experiences the most important aspects of teacher preparation programs and the key to career readiness (p. 8). In extant literature, firsthand experiences are emphasized for their importance in preparing preservice teachers for diverse classrooms (e.g., Cochran-Smith, 1991; Etherington & Boyce, 2017; Gay & Howard, 2000; Nagro et al., 2017; Pugach & Blanton, 2009). Aligning these experiences with inclusion coursework provides a framework for exploring, internalizing, and practicing key information and strategies (Sokal & Sharma, 2017) and helps dispel pre-existing misconceptions about special education including fear of the unknown, biases, and erroneous beliefs (McHatton & Parker, 2013). Hoppey and Mickelson (2017) assert that creating strong, purposeful partnerships between schools and universities that link program goals, coursework, and fieldwork promotes the development of preservice teachers’ inclusion-related skills and understanding. However, Darling-Hammond (2010) cautions that without careful planning for high quality placements, preservice teachers are at risk for being assigned to classrooms that reinforce their misconceptions about teaching children with disabilities rather than diminish them.

Even in cases where preservice educators have opportunities to teach students with disabilities, some continue to question inclusion for students with certain disability types (Cook, 2002; Gao & Mager, 2011; McHatton & McCray, 2007; Parker et al., 2014). Existing research indicates that teachers' support of inclusion may vary not only by students' disability type (mild versus challenging) but also by the amount of effort required to implement inclusion (Cook, 2001, 2002; Scruggs & Mastropieri, 1996). For example, in an extensive meta-analysis of research on teachers' attitudes toward mainstreaming students with disabilities, Scruggs and Mastropieri (1996) asserted that teachers are most amenable to teaching students with mild disabilities who require minimal adaptations to instruction and curriculum. Alternatively, they reported that teachers were less likely to endorse mainstreaming for students with more significant intellectual, physical, and behavioral needs.

Sharma, Forlin, Loreman, and Earle (2006) reported similar biases on an international level, noting a relationship between preservice teachers' acceptance of students with disabilities and their perceptions of the severity of disability. Sharma et al. (2006) and Majoko (2016) cautioned that ultimately, such bias could lead to a decreased possibility of inclusion for some students. However, Sharma et al. reported that in most cases the preservice teachers in their study felt more positive about inclusion after they participated in additional training and opportunities to interact with students and other individuals with disabilities. Similarly, the findings in this review indicate that preservice teachers who have more frequent, productive opportunities to interact with students across a wide range of disability types possess a greater sense of optimism and confidence about teaching in inclusive classrooms.

According to the findings in this review, supervising teachers can make a measurable difference, positively or negatively, in preservice educators' readiness for inclusion. Some

preservice teachers attributed their gains in confidence and desire to teach students with disabilities to the influence of their supervising teachers who modeled positivity and effectively implemented inclusion (Pugach, 2005). In the larger base of research on the mentorship provided by classroom teachers, some researchers note a relationship between skilled supervising teachers and preservice educators' gains in self-efficacy (Giangreco, Dennis, Cloninger, Edelman, and Schattman, 1991; Pugach, 2005). In turn, teaching efficacy has been associated with increases in student achievement (Woolfolk et al., 2006; Sharma & George, 2016; Woolfolk et al., 1990), which is especially important for students with disabilities who consistently score lower than their peers without disabilities on high stakes testing (Feng & Sass, 2010; Nougaret et al., 2005). Yet, Hamman et al. (2013) note that,

Few researchers...have specifically focused on the processes and qualities of collaboration between cooperating and student teachers as a mechanism of influence, or examined how this collaboration might be related to new general-education teachers' capability for working with students who receive special education services (p. 245).

Limitations

The high degree of heterogeneity among programs made it challenging to identify themes and patterns across the studies. For example, goals for inclusion preparation fieldwork varied widely among programs, and in some cases, fieldwork was not inclusive which made it difficult to compare how preservice teachers developed inclusion-related dispositions, knowledge, and skills. In addition, programs differed in how they defined key terminology, such as collaboration. This ambiguity in definitions made comparing programmatic features and their relative influence on preservice teachers difficult. Lastly, the overall findings of this review do not reflect the long

term influence of inclusion preparation fieldwork on practicing teachers, as the majority of data across the studies was collected before participants entered the profession.

Recommendation for Teacher Educators

Based on the findings of this review, three recommendations may help faculty structure inclusion-related coursework and field opportunities to ensure that preservice general educators develop the dispositions, knowledge, and skills necessary for effectively implementing inclusion.

Developing Preservice Teachers' Sense of Responsibility for All Learners

When preservice teachers are taught to support students categorically, they begin to associate particular types of teachers as being responsible for particular students identified with various labels. In cases where preservice teachers encounter students with extreme behavior or learning needs, they tend to disengage themselves from the role of supporter and defer to the expertise of a special education teacher. Focusing on disability as a set of labels and characteristics reinforces the notion that a separate category of teacher, the special educator, is needed to effectively teach students with disabilities (Forlin, 2010).

When instructional planning is based on disability labels and characteristics, important considerations and skills required to effectively teach students with diverse needs are overlooked. Fieldwork within inclusion preparation should be structured to support the viewpoint that classrooms are heterogeneous learning communities comprised of individuals who embody a wide range of needs, strengths, and learning styles. "An important part of teachers' professionalism includes an ethic of persistence and a belief in the learning capacity of every student in their classroom" (Blanton et al., 2011, p. 9). Preservice teachers should enter their eventual classrooms believing that every student has the potential to learn and develop skills that ultimately lead to future opportunities and wellbeing. Taking this approach blurs the

demarcations of responsibility and practice that persist among teachers from different certification areas. Teacher educators should help preservice teachers realize that different types of learners require different degrees of effort from their teachers. Knowing and embracing this idea is critical for preservice teachers' development of accountability and commitment to all students.

Providing More Well-Designed Field Experiences

The broader base of literature on inclusion preparation recommends that all preservice teachers be provided with multiple, high quality opportunities to observe successful inclusion in the field (Garriott, Miller, & Snyder, 2003; Loreman et al., 2007; Shippen, Crites, Houchins, Ramsey, & Simon, 2005). Even in cases where teacher educators attempt to create inclusive placements, a number of variables such as unskilled supervising teachers or a lack of students with disabilities in classrooms limits preservice teachers' exposure to effective inclusion. The law of probability is not favorable when it comes to preservice teachers having adequate opportunities to interact with students with diverse learning needs or observe others supporting them. To ensure adequate experiences in working with students who represent a wide range of abilities, fieldwork opportunities need to be numerous and well designed. Teacher educators should explore opportunities in real-life settings beyond placements in classrooms to ensure that preservice teachers have experiences interacting with and assisting students with disabilities. Expanding the number and quality of opportunities for preservice teachers may enhance their ability to apply what they learn during their fieldwork to their future classrooms. When opportunities increase for preservice teachers to work with individuals with exceptionalities, so does the likelihood that they will develop the practices and mindset essential for inclusion (Pugach, 2005).

Developing Preservice Teachers' Ability to Monitor Student Progress

In today's schools, classroom teachers are expected to teach students with disabilities in the general curriculum and monitor their progress in achieving to the same standards expected of all students. According to Fuchs and Fuchs (2002), "When teachers use systematic progress monitoring to track their students' progress...they are better able to identify students in need of additional or different forms of instruction, they design stronger instructional programs, and their students achieve better" (p. 1). Although how and when to effectively use student data are challenging for teachers, there is limited research on how preservice teachers are prepared to monitor their students' learning (DeLuca & Klinger, 2010; Fuchs, & Fuchs, 2002; National Council on Teacher Quality, 2012). Additional research is needed to identify approaches for preparing future general educators to effectively design and implement assessments and use student data to inform their instructional design and delivery.

Directions for Future Research

In the last two decades, there has been a scarcity of research on how and the extent to which preservice general educators acquire and demonstrate essential skills for teaching students with disabilities. Overwhelmingly, researchers have focused on preservice educators' inclusion-related dispositions. Attitudes, beliefs, and self-efficacy are important considerations in preparing teachers to implement inclusion, but there is a need for increased research exploring how teacher education programs promote the development of essential inclusion-related skills and practices. Examining how preservice teachers acquire knowledge and skills may reveal ways to improve existing features of inclusion preparation.

Increasingly, state and federal agencies hold educators accountable for their students' achievement. How capable are preservice teachers of effectively assessing the learning needs of

their students with disabilities and monitoring their progress in the general curriculum? How do they use student data to individualize instruction to ensure gains in student learning? These questions are rarely posed in the research on developing preservice general educators' capacity to support students with disabilities. Broader studies and coordinated investigations across universities are needed to provide a clearer view of how inclusion preparation develops these critical abilities. Such information may be helpful to teacher educators in considering ways to develop preservice educators' ability to monitor their students' learning.

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Appendix A

Table A1.

Studies investigating the preparation of general educators for inclusive settings

Authors/ date	Research purpose/ theoretical framework	Pedagogical techniques/ inclusive experiences	Number/ description of participants	Methods/ Data sources	Results	Goals of fieldwork
Alvarez-McHatton & Parker (2013)	Explored changes in SE PSTs and EE PSTs' attitudes toward inclusion after participating in a co-taught course and aligned collaborative fieldwork; Theoretical Framework: Construct of teacher beliefs (Pajares, 1992)	On-campus behavioral management course linked to K-12 field experience, and (c) placing PSTs in co-teaching pairs (one EE and one SE)	PSTs in junior or senior year in 31 EE PSTs and 25 SE PSTs	Quantitative study: Attitudes Toward Inclusion survey; Assessed EE and SE PSETs' attitudes toward inclusion at 3 points (1) after orientation of collaborative course, (2) at end of course, and (3) one year later.	Positive increases in EE PSTs' attitudes following course/field experience. SE PSTs had overall higher overall mean scores than EE PSTs but their attitudes were relatively unchanged and slightly decreased after final internship (Time 3)	Promote PSTs' positive attitudes toward inclusion of students with disabilities
Atiles & Jones (2012)	Examined association of inclusive field placements with increases PSTs' reported efficacy in teaching students with disabilities; No theory specified	Coursework and aligned field work in inclusive classrooms	Discrete program: 165 undergraduate students enrolled in EE teacher education	Quantitative study: participants completed two questionnaires: (1) items about field placement and experience working with children with disabilities; (2) modified version of Teachers Sense of Efficacy Scale.	Significant positive correlation between engagement in inclusive field experiences and PSTs' self-efficacy. Classrooms with higher ratios of children with disabilities provided more opportunities for PSTs to develop stronger sense of efficacy.	Develop PSTs' self-efficacy and confidence in working with students with a range of disabilities

Authors/ date	Research purpose/ theoretical framework	Pedagogical techniques/ inclusive experiences	Number/ description of participants	Methods/ Data sources	Results	Goals of fieldwork
Beacham & Rouse (2012)	Studied PSTs' attitudes about inclusion over the course of their inclusion preparation and the extent to which their views of EE and SDE PSTs' views on inclusion differ; No theory specified	Graduate level (5 th year) coursework and fieldwork within a one-year inclusion program with social justice emphasis	Discrete program: 216 EE and SDE PSTs completed both the pre- and post-course surveys	Quantitative study: pre- and post-questionnaires compared beliefs and attitudes of PSTs enrolled in one cohort of reformed course. Pre-post questionnaires (e.g., experiences, expectations, views about children, perceptions about inclusive education)	Overall, students' views at beginning of course supportive of inclusion; At end no significant change in views; More SDE than EE PSTs felt that children should be grouped in school according to ability – 21% of SDE PSTs compared with 13% EE PSTs	Dispel myths and negativity about teaching students with disabilities
Carroll, Forlin, & Jobling (2003)	Investigated association of demographic and previous contact/comfort with those with disabilities; Studied effect of redesigned SE course on PSTs' levels of comfort toward disability; No theory specified	Redesigned 10-week course with 1-hour lectures, 2-hour individual tutoring of child with disability; 3-week practicum in inclusive school and other experiences	Integrated program: 220 PSTs (both EE, SDE and other) who completed a SE course with related experiences	Quantitative Study: Pre and post questionnaire; Interactions with Disabled Persons Scale (IDP) (Gething, 1994) and 12 items including age, gender, level	Increased interactions with people with disabilities resulted in significantly lower levels of discomfort. No significant differences between participants enrolled in different programs. At course completion, PSTs indicated improved outcomes (e.g., coping, teaching students with disabilities)	Diminish discomfort and develop confidence in supporting the needs of persons with disabilities

Authors/ date	Research purpose/ theoretical framework	Pedagogical techniques/ inclusive experiences	Number/ description of participants	Methods/ Data sources	Results	Goals of fieldwork
Cook (2002)	Examined PSTs' attitudes toward inclusion and strengths and weaknesses. Attitudes analyzed by disability type. Tolerance Theory (Gerber, 1988): given limited resources teachers are unable to meet the needs of all students in inclusive classrooms	Series of four seminar courses on disability and inclusion, and aligned fieldwork. SE and inclusion curricula infused in coursework PSTs worked with students with disabilities only when they were assigned to an inclusive classroom (by chance)	Discrete program: 181 EE PSTs enrolled in program that infused SE content into a series of GE seminar courses	Mixed Methods Study: Instrument: Modified Opinions Relative to Integration of Students with Disabilities (ORI) scale; some open-ended questions to elicit thoughtful responses about preparedness to support inclusion. Answers coded and inter-rater reliability checks conducted	PSTs reported increased positivity toward inclusion for students with LD than with EBD, ID, or MD. No association between class standing and inclusion attitude. Four themes emerged related to inclusion: personal characteristics, dispositions, talents; teaching experience training, instructional knowledge and skills	Provide PSTs with traditional experiences in student teaching (not all PSTs had were assigned to classrooms that included students with disabilities)
Dee (2011)	Investigated differentiation within work sample lesson plans prepared by EE PSTs to gain a greater understanding of appropriateness of adaptations for diverse learners. Fused concepts of differentiation and inclusion; Theoretical Framework: None specified	Coursework and aligned 15-week student teaching experience in grades 3, 4, or 5	Discrete program: five undergraduate GE PSTs and 5 graduate level GE PSTs	Qualitative Study: Nature, characteristics, and types of instructional adaptations of PSTs' sample lesson plans from final stage of teacher ed were analyzed using content analysis (107 lessons total; at least 10/PST). Data sorted/coded by themes and patterns aligned with differentiation methods	Six themes emerged: no evidence of purposeful planning, strategies for supporting students' learning needs meaningful planning, differentiation, or reference to IEPs. Author critical of culture in PSTs' classrooms based on data	Offer PSTs an opportunity to practice and improve instructional strategies for students with disabilities

Authors/ date	Research purpose/ theoretical framework	Pedagogical techniques/ inclusive experiences	Number/ description of participants	Methods/ Data sources	Results	Goals of fieldwork
Gao & Mager (2011)	Explored relationship between PSTs' efficacy and attitudes toward school diversity as a result of inclusion preparation; Theoretical Framework: Constructivist learning theory; inclusion philosophy	Four-year dual-certification program at a private university in one eastern state of the U.S.; courses aligned with fieldwork through program; 9 field placements, one 20-hour K-12 observation opportunity	Merged program: 216 PSTs from all 7 phases of program; ultimately 168 participants	Quantitative study: Survey implemented three weeks before semester's end. One-way ANOVA tests identified mean differences between variables: general teacher efficacy, personal teacher efficacy, professional beliefs of diversity, and inclusion attitudes, using gender, ethnicity, and cohort as independent variables.	Three major findings: (1) PSTs showed positive attitude, efficacy, and professionalism toward inclusion/diversity. (2) PSTs in SE Practicum less positive toward inclusion than other senior PSTs (3) Children with EBD appeared to challenge all PSTs regardless of sense of efficacy or positivity about inclusion	Support PSTs' learning through engagement, and to develop their positivity about working with students with disabilities
Gehrke & Cocchiarella (2013)	Identified aspects of coursework and field experiences that shaped PSTs' ability to define, identify, and implement inclusion. Theoretical Framework: Not specified	Inclusive TEP; coursework integrated with field practicum	Integrated program: 125 EE PSTs, SDE PSTs, and SE PSTs enrolled in separate TEPs	Mixed Methods; Single-measure self-report study of PSTs' ability to define and recognize inclusion. Survey questions centered on PSTs' knowledge of inclusion.	Inconsistency across TEPs within one college; disconnect between PSTs' inclusion knowledge during coursework and field experiences. SE PSTs had low confidence in ability to implement inclusion in practice	Offer PSTs opportunities to interact with and support students with disabilities in general education settings

Authors/ date	Research purpose/ theoretical framework	Pedagogical techniques/ inclusive experiences	Number/ description of participants	Methods/ Data sources	Results	Goals of fieldwork
Gehrke, Cocchiarella, Harris, & Puckett (2014)	Examined changes in PSTs' ability to identify elements of inclusion, and their perceptions of effectiveness of coursework and fieldwork; Theoretical Framework: Transformative Learning Theory	Inclusive TEP offering dual certification; Inclusion coursework aligned with fieldwork; PSTs experienced a range of contexts both within and across districts	Merged program: 85 PSTs enrolled in the student teaching phase of the first year of a dual certification TEP	Mixed Method study: During their final semester, PSTs completed a research based 22-item Perceptions of Inclusion Survey. In addition, five SE Directors for the six districts in which students were placed participated in individual interviews	PSTs felt coursework information misaligned with fieldwork experiences – fieldwork over coursework increased their ability to identify elements of effective inclusion and gain new knowledge on inclusion in a variety of contexts. Not all districts provided PSTs with same degree of opportunities to engage in inclusion	Develop PSTs' ability to identify key components of effective inclusion for students with disabilities
Hamman, Lechtenberger, Griffin-Shirley, & Zhou (2013)	Examined affect of supervising teachers and practicum settings on PSTs' efficacy in supporting inclusion. Theoretical Framework: Granott's (1993, 2005) framework for the classification of dyadic interaction	Inclusive teacher prep program; coursework integrated with field practicum	Discrete program: 337 PSTs at a large, university in the southwestern U.S., completing their teaching practicum (EE 51%; SDE 49%)	Quantitative study: Data gathered from gen ed PSTs' responses to questionnaires about collaboration with cooperating teachers, practicum setting, and self-efficacy	PSTs' efficacy influenced equally from both the practicum (e.g., presence of students receiving sped services), and interactions with cooperating teachers on inclusion-instruction. Cooperating teachers significantly impacted PSTs' capabilities	Provide firsthand opportunities for the development of inclusion-related efficacy
Hamre & Oyler (2004)	Explored themes of inexperience, equity, normalcy, labels, and belonging in PSTs' inclusive field experiences. Sought to improve inclusion preparation by reflecting on/refining curriculum and instruction; Theoretical Framework: Not specified	Coursework and aligned fieldwork in two contiguous placements; 33% of PSTs from underrepresented groups (Asian American women largest group); TEP focused on equity and multicultural education	Discrete program: Between 6 and 12 EE PSTs	Qualitative study: Interview and observation of 7-hour group sessions; sustained oral inquiry/collective discussion (Cochran-Smith & Lytle, 1993).	PSTs commitment to inclusion varied with level of experience with disability; consistently chose beliefs and moral judgments as topics for generating discussion; did not address practicalities of designing heterogeneous instruction	Increase awareness of the logistics involved in creating an effective service delivery model for implementing inclusion for students with disabilities

Authors/ date	Research purpose/ theoretical framework	Pedagogical techniques/ inclusive experiences	Number/ description of participants	Methods/ Data sources	Results	Goals of fieldwork
Hemmings & Woodcock (2011)	Explored PSTs' views about their readiness to teach in inclusive classrooms; Theoretical Framework: Not specified	Coursework and one-month field experiences in inclusive settings	Discrete program: 97 PSTs in first phase of study; 101 PSTs in second, follow-up phase cohort four and a half months later	Mixed Methods study with only qualitative data being used in present study. Survey, divided into a variety of question formats; Likert scales and open-ended questions. Focus was analysis of open-ended questions yielding qualitative data	Approximately 70% of PSTs felt underprepared to teach students with disabilities in inclusive settings. Vast majority focused on human qualities and human resource issues	Prepare GE PSTs to meet the challenges of implementing effective inclusion for students with disabilities
Hoppy & Mickelson (2017)	Explored partnership structures and the practice of coteaching in developing PSTs' collaboration skills for inclusion. Theoretical Framework: Not specified	Partnership between an elementary school and local university to enhance clinical practice of inclusion; coursework, 15-week field experience, and small-group seminars	Dual certification program: 26 PSTs (17 EE, 9 pursuing dual certification)	Qualitative study: Interviews were the primary data source, and secondary data sources included journals, observation forms, lesson plans, and field notes	Partnerships that linked program goals, coursework, and fieldwork promoted the development of PST collaboration skills and understanding of inclusive classrooms.	Enhance the clinical component of teacher preparation with a focus on improving PSTs' ability to teach within inclusive classrooms.
Jung, Cho & Ambrosetti (2011)	Investigated and compared SE PSTs, EE PSTs, and SDE PSTs' confidence in teaching students with disabilities Theoretical Framework: Not specified	Course and an aligned fieldwork component occurring early in the program	Discrete programs: 287 participants from 3 EE, SDE, and SE programs within one college of education	Quantitative study: Questionnaire consisting of 7 demographic questions and 25 statements on PSTs' confidence levels in working with students with disabilities. Descriptive statistics and one-way ANOVA applied to compare confidence levels of the three groups	Significantly more SE PSTs than EE PSTs and SDE PSTs reported high level of confidence in ability in inclusion-related skills	Offer PSTs opportunities to teach with disabilities in general education settings.

Authors/ date	Research purpose/ theoretical framework	Pedagogical techniques/ inclusive experiences	Number/ description of participants	Methods/ Data sources	Results	Goals of fieldwork
Kim (2011)	Explored influence of ten TEPs on PSTs' inclusion attitudes and self-perception of preparedness; Theoretical Framework: None specified	Inclusive teacher prep program consisting of coursework aligned with field placements	Merged, integrated, and discrete programs; PSTs from 10 TEPs of varying type	Quantitative study: Teachers' Attitudes Toward Inclusion scale. Participants completed survey at end of senior year. Descriptive and inferential statistics used to analyze data. PSTs pursuing same certification (single certification or dual certification) from different types of TEPs were compared	PSTs pursuing dual certification had significantly more field experiences in a wider variety of contexts than those pursuing single certification. PSTs from merged and integrated programs significantly more positive toward inclusion than those in discrete programs.	Instill a sense of equity, commitment, and proficiency in supporting all students in inclusive settings
Maheady, Mallette, & Harper (1996)	Investigated whether GE PSTs' dispositions and skills in supporting students with disabilities improved based during a Pair Tutoring program. Theoretical Framework: Belief that students learn best from reflective, responsive teachers and by doing – Reflective and responsive instructional practices framework	PSTs in Pair Tutoring program, part of a restructured 4-year field based program (RARE Reflective and Responsive Educator Program); PSTs worked in tandem tutoring, observing, & critiquing each other	Discrete program: 264 ECE, EE, and SDE PSTs within after-school tutoring pairs; 18 cooperating teachers, school students, and building administrators	Mixed Methods study: Peer reviews completed by fellow students & cooperating teachers, PST journals, customer satisfaction surveys; PSTs tested out instructional strategies learned during coursework, collaborated with peers and a teaching assistance group, and charted/graphed student outcomes	PSTs (tutors) adequately gathered/charted curriculum-based assessment data on students (tutees). Generally, tutees' oral fluency and reading comprehension skills increased. All stakeholders rated tutoring program very highly	Develop PSTs' positivity and skills in the following areas: collaboration, data collection and analysis, ability to provide evidence-based instruction, and rapport-building with school students with and without disabilities

Authors/ date	Research purpose/ theoretical framework	Pedagogical techniques/ inclusive experiences	Number/ description of participants	Methods/ Data sources	Results	Goals of fieldwork
McHatton & McCray (2011)	Investigated EE and SDE PSTs' attitudes toward inclusion before/after completing a course on inclusion, and their perceptions of professional development and continued needs after taking a course on inclusion. Theoretical Framework: Construct of Teacher Beliefs (Pajares, 1992)	Assignments centered on disability type and specific instructional approaches for implementing inclusion. Most PSTs were in final internship or at end of program, after completion of field work	Discrete program: 77 EE and 36 SDE PSTs enrolled in an inclusion	Mixed Methods study: Survey instrument with 22 Likert-type items and a 5-point scale; all items addressed inclusion perception. Data collected during first class session; second survey at the end of the course on inclusion perceptions and sense of self-efficacy.	PSTs more positive toward inclusion by course end. Most positive about inclusion of students with certain disabilities, like LD; Few felt better prepared to meet needs of students with disabilities. PSTs desired more information on instructional approaches and disability characteristics	Develop PSTs' positive dispositions toward all students with disabilities, and support their instructional success in inclusive settings
Mueller & Hindin (2011)	Assessed and determined factors that influence PSTs' dispositions toward inclusion; Theoretical Framework: Social Consciousness Theory Socially conscious teachers act as leaders, and understand, respect, and value diversity; Goodlad's (1991) concept of practicing good stewardship	Coursework and aligned field experiences in inclusive settings	Merged program: 60 sophomore or junior PSTs in a merged program	Mixed Methods study: PSTs' dispositions assessed using three data sources: entry and exit surveys, field evaluations, and micro-case scenarios. Dispositions of PSTs measured over time using quantitative and qualitative methods. Micro-case scenarios implemented (scenarios depict a supervising teacher and intern in a problematic situation)	Findings of scenarios: 93% of PSTs drew on information from past or current classes, 55% from field experiences, and 27% from personal experiences, in identifying problems and alternative options in inclusion scenarios	Develop PSTs' positive dispositions toward students with disabilities

Authors/ date	Research purpose/ theoretical framework	Pedagogical techniques/ inclusive experiences	Number/ description of participants	Methods/ Data sources	Results	Goals of fieldwork
Parker, Alvarez-McHatton, & Crisp (2014)	Explored how an inclusion course aligned with an inclusive field experience impacted GE PSTs' developing beliefs (knowledge, dispositions, perspective) about disability in K-12 students; Theoretical Framework: None specified	Coursework and aligned field experiences in inclusive setting; study occurred during first inclusive field experience. GE and SE PSTs co-placed in inclusive K-5 classroom, where a SE teacher collaborates with classroom teacher	Discrete program: three EE PSTs from the paired inclusion course/field experience	Qualitative study: PSTs submitted 15 reflections describing experiences with an assigned topic that intersected with course and fieldwork across one semester and posted two follow-up responses to peers' reflections each week to extend discussion on topic.	Course, fieldwork, peers, supervising teachers, and students impacted PSTs' perception of disability; viewed disability using medical model and behavior; used labels and sped terminology; used GE status as rationale for inability to identify/describe students and disabilities and elude responsibility of learning about students with disabilities	Provide PSTs an opportunity to observe collaboration between teachers who support student with disabilities and participate in managing an inclusive classroom
Peebles & Mendaglio (2014)	Explored effects of coursework field experience on PSTs' self-efficacy for teaching for inclusion and the features of field experience that have greatest affect on PST efficacy Theoretical Framework: None specified	10 week inclusion course and 3-week field experience in inclusive setting	Discrete program: 141 PSTs enrolled in 2nd semester of a 4-semester general education teacher preparation program. PSTs enrolled in either EE or SDE programs	Quantitative study: Teacher Efficacy for Inclusive Practice (TEIP) scale (Sharma, Loreman, and Forlin, 2011) and Direct Experience Questionnaire (DEQ) used to measure type and amount of experience with students with exceptional needs during field experience.	Course and fieldwork resulted in significant gains in PSTs' efficacy. Those with prior experience had significantly higher levels of efficacy; both groups showed significant gains after course and fieldwork. Combination of coursework and field experience resulted in highest gains to efficacy	To provide PSTs with holistic experience in implementing inclusion for students with disabilities

Authors/ date	Research purpose/ theoretical framework	Pedagogical techniques/ inclusive experiences	Number/ description of participants	Methods/ Data sources	Results	Goals of fieldwork
Ryan (2009)	<p>Researcher elicited, examined, and reported PSTs' attitudes toward inclusion; Theoretical Framework: If PSTs' inclusive practices are developed, then their attitudes as in-service educators' will be more positive because of greater peer interaction and influence (Niemeyer & Proctor, 2002)</p>	<p>Inclusion coursework and 3 practice teaching sessions for a total of 13 weeks of placement in EE and SDE inclusion classrooms</p>	<p>Discrete program: 160 GE PSTs (K-12)</p>	<p>Mixed Methods study: Survey adapted by researcher, asked closed-end questions about inclusion. PSTs invited to add descriptive information to responses by writing on the lines (open ended) after each statement. Completion of survey followed course completion</p>	<p>PSTs (25%) desired additional practice of inclusion to increase confidence. Eighty-eight percent agreed with inclusion, but noted obstacles (time, facilities, money, personnel issues); over 87% would test strategies to meet students' needs but note (91%) difficulty implementing inclusion</p>	<p>Provide firsthand opportunities for PSTs to interact with students with disabilities</p>
<p>Van Laarhoven, Munk, Lynch, Wyland, Dorsch, Zurita, ...Rouse (2006)</p>	<p>Investigated the effectiveness of a program (ACCEPT) in its pilot year, designed to prepare PSTs for inclusive schools and interdisciplinary collaboration; Theoretical Framework: None specified</p>	<p>(Project ACCEPT) Integrated course and clinical experiences: instructional modules, simulation lessons, and firsthand with assistive technology</p>	<p>Integrated program: 84 PSTs of different teaching areas (EE, SDE, and SE) participated in ACCEPT across 3 semesters/sections of course on collaborative teaching in inclusive settings</p>	<p>Mixed Method Study: Compared performance of experimental group in coursework and fieldwork with control group doing traditional coursework. Surveys assessed attitudes toward inclusion and use of instructional adaptations. Curricular probes assessed knowledge and critical competencies. Outcome surveys sent 2 years afterward</p>	<p>Significantly more growth in experimental groups. Posttest scores for SE and GE experimental group similar. All cohorts scored high on lesson planning and implementation; program positively impacted general and SE PSTs' attitudes, knowledge, skills, and in-service performance</p>	<p>Develop PSTs' dispositions and skills by providing them with holistic experiences in inclusive classrooms with students with disabilities</p>

Authors/ date	Research purpose/ theoretical framework	Pedagogical techniques/ inclusive experiences	Number/ description of participants	Methods/ Data sources	Results	Goals of fieldwork
Van Laarhoven, Munk, Lynch, Bosma & Rouse (2007)	Investigated the effectiveness of a program (ACCEPT) in its second year, designed to prepare PSTs for inclusive schools and interdisciplinary collaboration. Explored changes in PSTs' dispositions toward inclusion and competency in strategy implementation; Theoretical Framework: None specified	Coursework and field experiences in inclusive settings	Integrated program; Experimental group: 53 PSTs (15 SE, 13, 25 EE). Control group: 3 sections of traditional curriculum to prepare PSTs for inclusive settings	Mixed Method Study: Pretest and posttest measures using surveys and curricular probes; Compared performance of experimental group participating in fieldwork and coursework in inclusive classroom, with control group only doing traditional coursework.	All PSTs' content knowledge and dispositions improved. More gains between SE and GE experimental groups, especially in content knowledge. GE experimental group experienced most growth from on almost all measures	Develop PSTs' dispositions and skills by providing them with holistic experiences in inclusive classrooms with students with disabilities

Note: TEP = teacher education program; PST = preservice teacher; GE = general education; EE = elementary education; SDE = secondary education; SE = special education; ECE = early childhood education; K-5 = kindergarten through fifth grade; IEP = individualized education plan; IDEA = Individuals with Disabilities Act; NCLB = No Child Left Behind Act

Special Education Teacher Preparation: Does More Make a Difference?

Amanda B. Banks

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Bonnie S. Billingsley, Committee Chair
Thomas O. Williams, Jr.
Mary Alice Barksdale
Donna F. Fogelsong

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Amanda B. Banks

ABSTRACT

The increased inclusion of students with disabilities in general education classrooms and teachers' accountability for their academic achievement demand that new special educators are well prepared to teach as they enter the classroom. Most studies on teacher preparation have been conducted in general education and indicate that teachers who complete more methods coursework and practice teaching report feeling better prepared. My research extends this work to early career special educators and examines 1) the extent to which more and less preparation predict early career teachers' perceived instructional preparedness during their first year of teaching; and 2) the characteristics of educators' preparation (e.g., certification route, extent of methods coursework and practice teaching, reading specialization, degree level, degree in special education, and perceived preparedness) and how these differ between educators with more and less preparation. Descriptive statistics were used to provide an overview of special educators' demographic and preparation characteristics as well as their school context and overall level of perceived preparedness in a national sample of special educators. Cross-tabulation analyses were used to compare educators' perceived preparedness in eight instructional areas. Additionally, multiple regression analysis was used to determine whether specific elements of teacher preparation predicted educators' preparedness to teach. Findings indicated that more preparation predicted educators' preparedness as they began teaching and overall, they felt least prepared to use student data to inform instruction. Additionally, the majority of educators with more versus less preparation entered the profession through traditional certification routes.

Special Education Teacher Preparation: Does More Make a Difference?

In today's schools, special education teachers are expected to teach students with disabilities in the general curriculum, ensure their achievement to the same standards expected of all students, and monitor their progress in Multi-Tiered Systems of Supports (MTSS). Special educators also work in increasingly inclusive environments (Kena et al., 2016) and some collaborate and co-teach with general educators (Blanton, Pugach, & Boveda, 2014; Friend, Cook, Hurley-Chamberlain, & Shamberger, 2010; McHatton & Parker, 2013; Pugach & Peck, 2016). Collaborating teachers are expected to (a) collect and interpret initial and ongoing assessment data, (b) monitor students' progress and (c) adapt instruction based on student data (Conderman & Johnston-Rodriguez, 2009). As early career special educators enter the classroom, they need to be ready to use a wide range of skills to support their students' achievement (Brownell, Sindelar, Kiely, & Danielson, 2010; Leko, Brownell, Sindelar, & Kiely, 2015; Pugach & Peck, 2016). The extent to which they are ready for this work depends largely on the nature and scope of their initial preparation (Boe, Shin, & Cook, 2007; Brownell, Ross, Colón, & McCallum, 2005; Brownell et al., 2010; Feng & Sass, 2013; Leko et al., 2015).

Learning content and pedagogical knowledge are important aspects of preparation, as well as having opportunities to use specific practices in real-life settings, and these experiences can positively influence early career special educators' confidence and ability to deliver instruction (Leko et al., 2015; Lignugaris/Kraft, Sindelar, McCary, & Kimerling, 2014; Maheady, Mallette, & Harper, 1996; Ross & Lignugaris/Kraft, 2015). However, differences in teacher preparation programs such as varied goals, courses, and length of field experiences make it difficult to identify the impact of preparation on special educators' practices (Brownell et al., 2010). Studies

of the effects of specific features of teacher preparation that prove more influential than others on developing special educators' readiness to teach may be helpful to teacher educators.

Teacher Preparedness, Efficacy, and Preparation

Researchers have used a range of terms to describe the extent to which teachers experience confidence in their readiness to teach and their effectiveness, including *teacher efficacy*, *instructional preparedness*, and *teacher preparation*. In this study, teacher efficacy refers to the level of confidence and beliefs that teachers have in their ability to directly influence the engagement and learning outcomes of their students (Allinder, 1995; Atilas, Jones, & Kim, 2012; Bandura, 1994, 1997; Brady & Woolfson, 2008; Brownell & Pajares, 1999). Both teacher preparation and supports available during the first year in the classroom may influence new teachers' sense of efficacy (Atilas et al., 2012) and their reported readiness to teach (Darling-Hammond, Cheung, & Frelow, 2002).

A related term, *instructional preparedness*, describes educators' perceptions of their ability to effectively perform teaching-related responsibilities, including lesson planning, instructional delivery and classroom management. Early career educators' instructional preparedness may be influenced by preservice internships (Brownell et al., 2010), extent of practice teaching and methods-related coursework (Boe et al., 2007; Ingvarson, Beavis, & Kleinhenz, 2007; Ronfeldt, Schwartz, & Jacob, 2014), and their demographic characteristics (Ingvarson et al., 2007; Ronfeldt et al., 2014). Working conditions such as administrative support, school facilities, and class size may also influence novice teachers' instructional practices (Johnson, Kraft, & Papay, 2012). For example, early career special educators with large caseloads or who teach in segregated settings with no opportunities for collaboration may feel that although they are adequately prepared, their working conditions prevent them from being able to fully use their

skills and knowledge. In this study, instructional preparedness refers to teachers' perceived readiness to perform essential teaching practices, whereas, teacher efficacy refers to teachers' belief that they can successfully their students and move them forward in learning (Guskey and Passaro, 1994). According to Bandura (1977), teacher preparedness is linked to teacher efficacy, but the two terms are used in distinctly different ways in this study.

The third term, *teacher preparation*, refers to the process through which prospective teachers acquire the knowledge, dispositions, skills, and practices to effectively teach during the preservice period (Cochran-Smith, 2003; Darling-Hammond, 2010; Mason-Williams, 2015; Mason-Williams & Gagnon, 2016; Ronfeldt et al., 2014). Examples of features common to many teacher education programs include coursework in content and pedagogy, practice teaching, tutoring, and mentorships.

Teacher Preparation and Quality

In recent years, questions about how educators are prepared and who is best qualified to teach in America's schools have ranked near the top of the U.S. educational agenda (Cochran-Smith et al., 2012). There is a lack of consensus, however, on what constitutes qualified, well-prepared teachers (Brownell et al., 2010; Carlson, Lee, & Schroll, 2004; Feng & Sass, 2010). There is also limited research on the particular features of teacher education that might cause some programs to be more successful than others in graduating teachers who are prepared (Clotfelter, Ladd, & Vigdor, 2007; Feng & Sass, 2010; Ronfeldt et al., 2014).

General Education Teacher Preparation

Across the studies in general education, teachers' quality, preservice preparation, and qualifications have been examined in terms of their relationship to teacher preparedness, effectiveness, retention, and school context. A number of researchers have compared alternative

and traditional routes to teacher certification in general education (Cochran-Smith & Villegas, 2015; Ronfeldt et al., 2014) and special education (Rosenberg & Sindelar, 2005). Two extensive reviews indicate that a great deal of heterogeneity exists within traditional and alternative certification programs as well as between them (Cochran-Smith & Villegas, 2015; Ludlow, 2013). Ludlow suggested that these differences might be due in part to disparities among state policies governing these programs. Cochran-Smith and Villegas broadened Ludlow's assertion by stating that "there is as much variation within as between 'alternative' and traditional pathways" (p. 16). In addition to heterogeneity, several trends were noted across alternative certification programs: 1) no statistically significant differences in the academic achievement of students whose teachers were traditionally or alternatively certified; 2) inconclusive research on the enrollment of higher quality teachers in alternative pathways; 3) great diversity among participants of alternative certification routes; and 4) a higher probability that alternatively certified teachers will teach in high-minority schools (Ludlow, 2013).

In addition to certification route, researchers have explored relationships between various amounts of teacher preparation (e.g., methods-related coursework and practice teaching) and beginning teachers' quality and preparedness (Boe et al., 2007; Darling-Hammond et al., 2002; Ingvarson et al., 2007; Ronfeldt et al., 2014). The majority of findings have indicated that general educators with greater levels of preparation feel significantly better prepared to teach than those with less preparation. Boe et al. (2007) used national data from the 1999-2000 Schools and Staffing Survey (SASS) to examine the relationships between amount of teacher preparation and beginning special and general educators' (with five or fewer years of teaching) perceptions of being well prepared to teach. Findings indicated that extensive preparation in pedagogy and practice teaching was more effective than some or no preparation in producing

beginning teachers who reported feeling well prepared in pedagogy and to teach subject matter. Ronfeldt et al. (2014) conducted a similar, nationally representative study of early career general educators' (with five or fewer years of teaching experience) perceived instructional preparedness based on their amount of completed methods-related coursework and weeks of practice teaching and examined how results varied based on the rating of teachers' undergraduate institution and school poverty level. Ronfeldt and colleagues used data from the 2003-2004 and 2007-2008 SASS Teacher Questionnaires and Teacher Follow Up Surveys, as well as Barron's Rating of College Competitiveness and the Common Core of Data. Findings indicated that teachers who completed more methods-related coursework and practice reported feeling more instructionally prepared and were less likely to leave the field of teaching, regardless of their preparation route.

In addition to certification route and preservice preparation, researchers have also explored the influence of degree level on teacher effectiveness. According to Harris and Sass (2011), many of the student-fixed-effects and random-assignment studies conducted in the last 10 years have included a measure of degree level. Although a few studies (Betts, Zau, & Rice, 2003; Dee, 2004; Nye, Konstantopoulos, & Hedges, 2004) have found positive correlations between holding a master's degree and elementary students' math achievement, most have indicated either insignificant or in some cases even negative associations between holding a master's degree and students' achievement in math or reading (Harris & Sass, 2011; Ladd & Sorensen, 2015). Alternatively, in an earlier review of the literature Rice (2003) found that teachers' advanced degrees were positively correlated with high school students' achievement in math and science.

The contexts in which more and less prepared teachers are employed have also been considered. Research findings indicate that well-prepared, credentialed general educators are

unevenly distributed among wealthier schools and that teachers with fewer qualifications are more likely to teach in schools populated by higher percentages of students in poverty, particularly in urban areas (Goldhaber, Lavery, & Theobald, 2015; Isenberg et al., 2013; Kalogrides & Loeb, 2013; Kalogrides, Loeb, & Béteille, 2013; Lankford, Loeb, & Wyckoff, 2002; Mason-Williams & Gagnon, 2016). Goldhaber et al. (2015) reported that across all grade levels (K-12) there tends to be a concentration of less qualified, less prepared teachers in schools where student poverty and low academic performance are issues.

Preparation and Special Educators' Preparedness

Of the many aspects of teacher preparation, research indicates that certification route (traditional versus alternative or emergency preparation) (Nougaret, Scruggs, & Mastropieri, 2005; Sindelar, Daunic, & Rennells, 2004) and extent of methods related coursework and practice teaching (Boe et al., 2007) influence new special educators' perceived preparedness. Associations have also been noted between special educators' degree level, degree major, and their preparedness in the first several years of teaching (Boe et al., 2007). In addition to special educators' preparation and demographic characteristics, some researchers have examined the qualifications of special educators across schools of varying levels of poverty (e.g., Fall & Billingsley, 2008; Mason-Williams, 2015; Mason-Williams & Gagnon, 2016).

Certification route. To increase teacher quantity and quality, policymakers have increasingly focused on improving their preparation in traditional certification programs while simultaneously endorsing the proliferation of alternative routes (Rosenberg & Sindelar, 2005). To mitigate the chronic shortage of special educators, a number of states and districts have instituted alternative programs to reduce the amount of time it takes for candidates to gain certification (Brownell et al., 2010; Connelly, Rosenberg, & Larson, 2014). At the same time,

state policy has reinforced the critical need for all preservice teachers, including special educators, to have extended field-based experiences and methods coursework (Rosenberg & Sindelar, 2005). Many states place minimum requirements on the amount of student teaching and coursework that a preservice teacher must complete before entering the classroom, however, the requirements for coursework and field experiences vary widely between states (U.S. Bureau of Labor Statistics, 2011).

Although current policy endorses both traditional and alternative certification routes, there is insufficient research to draw conclusions or make generalizations about their relative effectiveness (Billingsley, 2011; Rosenberg & Sindelar, 2005). In their review, Rosenberg and Sindelar (2005) located only 10 data-based studies, each investigating a single alternative route to certification (ARC) program that was uniquely structured, which made comparison between programs difficult. ARC programs that graduated well-prepared, skilled special education teachers tended to be collaboratively planned and co-delivered by Institutions of Higher Education (IHEs) and Local Education Agencies (LEAs). These programs, were longer in duration, and implemented an array of beneficial learning activities (Rosenberg & Sindelar, 2005). However, the long-term success of these ARC programs is unknown. The principal outcomes included program completion rates, demographics, and simple self-reported measures of proficiency (Rosenberg & Sindelar, 2005). Contrary to the research in general education, little is known about the influence of ARC programs on the quality and preparedness of early career special educators (Rosenberg & Sindelar 2005). One study compared differences in the teaching effectiveness of traditionally licensed and emergency provisionally licensed special education teachers (Nougaret et al., 2005). Nougaret et al. compared 20 traditionally licensed first-year teachers and 20 first-year teachers with emergency provisional licensure. They

observed participants teaching and asked teachers to rate their own teaching effectiveness across a variety of PRAXIS domains. Findings indicated that the traditionally licensed first-year teachers substantially outperformed those who held emergency licensure in the areas of planning and preparation, classroom environment, and instruction (Nougaret et al., 2005). Traditionally licensed teachers also used more effective instructional techniques such as questioning and discussion to stimulate students' participation.

Methods coursework and practice teaching. Two critical factors in preparing teachers are extent and quality of methods-related coursework and field preparation (Darling-Hammond et al., 2002; Nougaret et al., 2005). Darling-Hammond et al. examined teacher preparation data from approximately 3,000 beginning teachers (with three or fewer years of experience) in New York City to investigate their perceived instructional readiness, beliefs, and intention to stay in teaching. Darling-Hammond and colleagues noted that teachers who from traditional teacher education programs reported significantly higher levels of preparedness than their counterparts from alternative programs or with no preparation. Additionally, teachers' views of preparedness varied across individual programs, with graduates from particular programs feeling markedly better prepared. Darling-Hammond et al. also noted that the extent to which teachers felt well prepared was significantly associated with their perceived teaching efficacy, their sense of responsibility for student learning, and their plans to remain in teaching. In a study on both beginning general and special educators, Boe et al. (2007) found that beginning special education teachers with extensive practice teaching and pedagogical coursework felt significantly more prepared for teaching than their counterparts with some or no practice teaching and minimal pedagogical coursework.

Reading specialization. Research indicates that during the early elementary grades explicit, rigorous intervention in language and reading skills reduces the likelihood that students will require subsequent reading intervention (Brownell et al., 2010). This level of responsive teaching demands that special educators be highly experienced in supporting struggling students and knowledgeable about language, literacy, and students' possible processing difficulties. Some teacher preparation programs offer special education teachers opportunities to qualify for a specialization or concentration in reading. To date, research related to special education teachers' proficiency in reading instruction has centered on the nature and extent of their teacher preparation and their capacity to promote students' reading achievement (Brownell et al., 2010).

Leko and Brownell (2011) conducted a qualitative study to investigate which factors shape preservice special education teachers' ability to teach reading to students with high incidence disabilities. Using an activity theory framework researchers interviewed, observed, and collected data on six preservice special educators, their reading course instructors, field supervisors, and practicum cooperating teachers. Data were analyzed using grounded theory and four elements emerged as primary influences on participants' acquisition of skills to teach reading: (a) opportunities to acquire knowledge through firsthand experiences, (b) personal characteristics, (c) the desire to assimilate knowledge, and (d) the availability of knowledge. Opportunities to acquire knowledge in practice emerged as the single most critical element of special education teacher reading preparation.

Some researchers view students' reading achievement as a primary measure of their teachers' capacity to teach. Feng and Sass (2013) conducted a quantitative study that investigated the extent to which special educators' ability to promote the academic achievement of their students was influenced by their preservice preparation and in-service training. Large-scale data

from the state of Florida's data warehouse was used, providing individual-level longitudinal information on public school students and teachers in the State of Florida from 1995 to the present. Feng and Sass conducted a secondary analysis of this data, initially examining the value added by special education certification. Subsequently, Feng and Sass reassessed the data with other measures of pre-service education including the amount of coursework teachers completed during their preservice preparation and whether they held a bachelor's degree in special education. Findings indicated that special educators who completed extensive coursework produced significantly higher student outcomes in reading than teachers who completed less coursework in special education (Feng & Sass, 2013).

Degree major. In addition to the impact of extensive methods coursework and weeks of practice teaching, holding a degree major in special education may influence new special educators' readiness to teach. In general, fully certified special educators either major in special education in traditional teacher education programs or complete substantial coursework in special education before entering the profession (Feng & Sass, 2013). Furthermore, almost 75% of special educators hold a special education degree rather than a general education or a non-education degree (Mason-Williams & Gagnon, 2016). However, research on the extent to which holding a degree in special education affects special educators' perceived instructional preparedness is almost nonexistent. In one nationally representative study on the preparedness and qualifications of special education teachers and general educators, Boe et al. (2007) explored whether special education teachers' degree major study affected their perceived instructional preparedness and noted that for first-time special education teachers (with 5 or fewer years in the profession), degree major was not a statistically significant predictor of their perceived ability to teach.

School Poverty Level and Special Educator Quality

Compared with the research in general education, relatively little is known about how or the extent to which special educators' qualifications and preparedness vary across schools of differing socioeconomic status. In the last decade, findings of a small number of nationally representative studies investigating special educator quality have echoed the outcomes of similar studies in general education, revealing that special educators in high poverty schools are significantly less qualified than their counterparts in low poverty schools (Fall & Billingsley, 2008; Mason-Williams, 2015; Mason-Williams & Gagnon, 2016). Across these studies, measures of teacher quality have included certification and degree level, extent of teacher preparation, and teaching experience (Boe et al., 2007; Carlson et al., 2004; Fall & Billingsley, 2008; Mason-Williams, 2015; Mason-Williams & Gagnon, 2016). Fall and Billingsley (2008) conducted a secondary analysis of data gathered from a sample of 935 early career special education teachers from the Study of Personnel Needs in Special Education (SPeNSE) and employed a framework adapted from Carlson et al., comparing the experience, credentials, self-efficacy, preservice preparation, and induction of early career special education teachers in low- and high-poverty schools. Teacher participants reported receiving similar induction opportunities, including formal mentoring, informal supports, and in-service opportunities. Fall and Billingsley's findings indicated that teachers in high-poverty schools had significantly fewer credentials (lower certification and degree levels, and lower scores on tests required for certification) and less preservice preparation than teachers in low-poverty schools. Alternatively, teachers in both low- and high-poverty districts gave themselves relatively high ratings on using appropriate instructional techniques, planning effective lessons, and working with parents. Although Fall and Billingsley found that early career special educators' credentials and amount

of preservice preparation varied by school poverty level, their findings revealed no significant differences in the perceived instructional preparedness of early career special education teachers based on school poverty.

In another large-scale study, Mason-Williams (2015) examined the distribution of special educators across schools of varying levels of poverty based on their relative qualifications and preservice preparation. Mason-Williams conducted a secondary analysis of data from the 2003-2004 Schools and Staffing Survey, employing Berne and Steifel's (1994) equal opportunity standard, to determine the degree of educational equity in the placement of special educators from a resource allocation perspective. The SASS dataset included information on 62,000 special education teachers in public and private school settings. Descriptive and bivariate analyses were employed to examine seven preparation and qualification measures (e.g., amount of preservice preparation, degree major, degree level, certification in special education, certification in education, type of preparation program, and teaching experience) closely aligned with variables used in similar studies in general education. Replicating an approach used by Boe et al. (2007), Mason-Williams divided special education teachers into three categories (e.g., having extensive preparation, some preparation, or no preparation) based on the number of methods courses and weeks of practice teaching they completed during their preservice preparation. The National School Lunch Program (NSLP) was used to measure student poverty and schools were ranked and divided into quartiles based on their proportion of students eligible for the NSLP. Quartile 4 represented high-poverty schools (with more than 60% of students qualifying for the NSLP), and Quartile 1 represented low-poverty schools (with fewer than 17% of students qualifying for the NSLP). Mason-Williams's findings indicated that, overall, 83% of special education teachers completed extensive training, 13% completed some training, and 4% completed no preparation.

However, as the poverty level of a school increased the percentage of special educators' with the qualification measures decreased proportionately. Excluding degree level, all relationships were statistically significant.

Based on research in both general and special education, teachers with fewer qualifications and limited preparation tend to feel less prepared to teach students and manage their classrooms (Boe et al., 2007; Ronfeldt et al., 2014). Understanding the implications of this for special educators and their students requires a broader understanding of how specific elements of teacher preparation affect teachers in their first few years in the classroom (Ronfeldt et al., 2014). Examining the influence of preservice preparation may yield new insights on what is most essential in supporting early career special educators' readiness to teach. Toward this end, given policymakers' investment in quality education for students with disabilities, changes in teachers' roles, and the dearth of existing research on special educators' quality and preparedness, exploring these relationships is critical. All too often, policymakers consider reducing preparation requirements in order to increase the number of well-qualified and underrepresented special educators (Ronfeldt et al. 2014). Two research questions guided this study:

1. To what extent do more and less preparation predict early career special educators' perceived instructional preparedness during their first year of teaching, controlling for demographic and school characteristics?
2. What are characteristics of early career special educators' preparation (e.g., certification route, number of methods courses, weeks of practice teaching, reading specialization, degree level, degree in special education, perceived preparedness,) and how do these differ between those with more and less preparation?

Methods and Data Analyses

This study relies on data provided by the 2011-2012 School and Staffing Survey (SASS).

Tourkin et al. (2010) described the purpose and procedure of the SASS as a data instrument:

The SASS is conducted by the National Center for Education Statistics (NCES) on behalf of the U.S. Department of Education in order to collect extensive data on American public and private elementary and secondary schools. The SASS provides data on the characteristics and qualifications of teachers and principals, teacher hiring practices, professional development, class size, and other conditions in schools across the nation. SASS is a large-scale sample survey of K-12 school districts, schools, teachers, library media centers, and administrators in the USA. The SASS was designed to produce national, regional, and state estimates for public elementary and secondary schools and related components (e.g., schools, teachers, principals, school districts, and school library media centers); national estimates for BIE-funded and public charter schools and related components (e.g., schools, teachers, principals, and school library media centers); and national, regional, and affiliation strata estimates for the private school sector (e.g., schools, teachers, and principals). Therefore, the SASS is an excellent resource for analysis and reporting on elementary and secondary educational issues. The SASS is comprised of five sets of questionnaires: School District Questionnaires, Principal Questionnaires, School Questionnaires, Teacher Questionnaires, and School Library Media Center Questionnaires. The Teacher Questionnaires include the Teacher Questionnaire for public school teachers and Private School Teacher Questionnaire (pp. 8-9).

This study relied on data from the 2011–2012 SASS Teacher Questionnaire (TQ) to answer each of the research questions.

Sample and Study Variables

All respondents were full-time early career teachers teaching in public schools (subject-matter code 110 [Special Education] for [TQ] question 16 “MAIN teaching assignment field at THIS school?”). The final sample yielded a total of 51,340 special education teachers ($n = 777$ unweighted). Due to the possibility that effects of preservice preparation may diminish with teaching experience, the sample is limited to teachers with three or fewer years of total teaching experience. The sample excludes short-term substitute teachers.

Table B1 (see Appendix B) provides a detailed description of each of the demographic and teacher preparation variables included in this study. This table contains the specific question (and code) from the restricted-use SASS Teacher Questionnaire (TQ) as well as variables developed by the Institute of Education Sciences (IES) and the National Center for Education Statistics (NCES) that are part of the restricted-use data files. All estimates are weighted using SASS-provided survey sampling weights based on sector, location, school level, and school population. SASS provides survey weights meant to be used for the entire survey sample.

Preparation and demographic variables. Special education teacher preparation variables in this study included number of completed methods courses and weeks of practice teaching, certification route, reading specialization, degree level, special education major, and perceived level of preparedness (see Table B1, Appendix B). Extent of completed methods courses and weeks of practice teaching are essential elements of many teacher education programs and are proxies for teacher preparation in the SASS 2011-2012 dataset. In this investigation, they are combined into a single variable with two levels of measurement: more

preparation and less preparation, so that comparisons can be made between the perceived preparedness and preparation characteristics of educators in both groups (e.g., those with more preparation and those with less).

Demographic variables include years of total teaching experience, age, gender, race/ethnicity, and school poverty level (see Table B1). This study examines the extent to which early career special educators' perceived level of instructional preparedness (the dependent variable) is affected by teachers' preparation, demographic, and school poverty (independent variables).

Analytic Approach

First, the independent and dependent variables in the study are presented. Next, a descriptive overview of the preparation and qualifications of the sample of special educators in the SASS 2011-2012 data set is provided using univariate statistics (in percentages and means, when appropriate). The central tendency (mean and median) and dispersion (range and standard deviation) of the variables are also examined. Three cross-tabulation tables are provided to explore how early career special educators' demographic, school, and preparation characteristics and perceived instructional preparedness varied between those with more and less preparation. The first cross-tabulation (see Table C1 in Appendix C) examines how early career special educators' total years of teaching experience, age, gender, race/ethnicity, and school poverty level varied by whether they had more or less preparation. The second cross-tabulation (see Table D1 in Appendix D) explores how early career special educators with more and less preparation varied in the number of methods courses and weeks of practice teaching they completed as well as their certification route (alternative or traditional), whether they held a specialization in reading, their degree level (bachelor's or master's), and whether they majored in

special education. The third cross-tabulation (see Table E1 in Appendix E) examines how teachers' perceived instructional preparedness across eight key teaching areas varied among teachers with more and less preparation. A correlation matrix is also provided (see Table F1 in Appendix F), which measures the dependence between the independent variables; the closer the correlation coefficients are to one in a correlation matrix, the stronger the dependence between the data variables.

Multiple Linear Regression

Multiple linear regression is commonly relied upon to determine whether a relationship exists between a continuous dependent variable and two or more independent variables (Fox, 1997). Multiple regression coefficients are computed to account for the relationship between a given predictor and outcome variable, as well as the relationships with other predictors. By conducting a multiple regression, researchers can determine the overall fit (variance explained) of a model and the relative contribution of each of the predictors to the total variance (Maddala & Lahiri, 1992). The goal of this study is to explain as much of the variance as possible in teachers' perceived preparedness via methods coursework and practice teaching.

The regression model includes several covariates. In statistics, a covariate is a variable that may be related to the outcome but is not of primary interest (Fox, 1997). Gender, age, and race/ethnicity were used as covariates (controls). Covariates contribute to the overall R^2 by absorbing some of the variance, thus leaving more of the variance to be explained by the primary predictor variable (e.g., amount of completed methods courses and weeks of practice teaching). Only continuous and dichotomous predictor variables may be used in multiple regression. The following model is estimated for the instructional preparedness outcome:

$$y = \beta_0 + (x_1)(\beta_1) + (x_2)(\beta_2) + \dots + (x_8)(\beta_8)$$

The β -value in β_0 represents the intercept (constant) in the regression equation; whereas, subsequent β -values represent parameters for each of the predictor variables. Parameters reveal the relationship from one category to the next. Dichotomous coding is used for each of the independent variables, with one x-value assigned to each. Preservice teacher preparation is treated as a combined variable including extent of methods coursework and practice teaching (more preparation coded as 1 and includes ≥ 3 methods courses and ≥ 12 weeks of practice teaching; all other amounts of coursework coded as 0) and is represented by x_1 . A sufficient number of completed courses in reading instruction to qualify for a specialization in reading (no specialization = 0; specialization = 1) is represented by x_2 . The route by which respondents entered the profession of teaching (traditional = 0; alternative = 1) is represented by x_3 . Degree major in special education (all other majors = 0; special education major = 1) is represented by x_4 . The school level at which respondents taught (secondary = 0; elementary = 1) is represented by x_5 . Race and ethnicity were treated as a dichotomous variable (White = 0; non-White = 1), represented by x_6 . Gender (male = 0; female = 1) is represented by x_7 . School poverty (high poverty = 1; all other levels = 0) is represented by x_8 .

To ascertain the magnitude of the effect (accuracy of the regression model), R^2 , also known as the *coefficient of determination*, was examined. R squared is a statistical measure of how close the data fit the regression line, or the degree to which amount of preservice preparation explains the variance of perceived preparedness. The closer that R^2 is to one, the more the variation in preservice preparation is directly related to the variation in preparedness

(the stronger the correlation between the two). The coefficient significance value was then examined. When the significance value is less than .05, there is a statistically significant goodness of fit between the model and the data (e.g., preparation effectively predicts preparedness). Lastly, the standard error of the estimate was examined. The standard error is somewhat analogous to standard deviation and indicates the degree to which actual outcome values might deviate, positively or negatively, from the predicted estimates. Ideally, the standard error of the estimate should be small, which would indicate a very small variation or error possibility in my prediction.

Collinearity. Optimally in regression models there should be a high level of correlation between the independent variable and the dependent variables, and little or no correlation between each of the dependent variables (Belsley, 1991). Such a model is statistically robust and predicts reliably across numerous samples of variables from the same statistical population (Belsley, 1991). Collinearity tests were conducted between my predictor variables to safeguard against redundancy, and omit any variables that might be redundant (see table F1 in Appendix F). No collinearity was found to exist between the variables in this study.

Linearity. There must be a linear relationship between (a) the dependent variable and each of the independent variables, and (b) the dependent variable and the independent variables collectively. Scatterplots and partial regression plots using SPSS were created and examined to visually check for linearity. The following assumptions were made about the multiple linear regression model: 1) a linear relationship exists between amount of preservice preparation (predictor variables) and level of perceived preparedness (outcome variable); 2) the values of each of the variables are normally distributed; 3) the variance is the same across all levels of the

independent variables (homoscedasticity); and 4) the variance in the sample is equal to that of the population.

In order for the analyses in this study to be considered nationally representative, sampling weights were used to adjust for the reduced sampling size.

Results

First an overview of the demographic characteristics and school contexts of early career special educators with more and less preparation is described, as well as their preparation characteristics and perceived levels of instructional preparedness. The second part of this section includes the results of a regression analysis conducted to determine which variables or combination of variables predicted early career special educators' perceived instructional preparedness.

Teachers' Demographic Characteristics and School Contexts

In the 2011-2012 SASS dataset, there were 51,340 teachers who were full-time special educators with 3 or fewer years of overall teaching experience ($M=2.14$ years). As Table C1 indicates, early career special educators were primarily White (81%) and female (85%) ranging in age from 21 to 65 years, with a median age of 27 and a mean age of 30. Table C1 also indicates the distribution of teachers over high, mid- and lower poverty schools. The majority of early career special educators (57%) taught in schools where 26% to 74% of students qualified for the National School Lunch Program (NLSP), 29% taught in schools where 75% of students qualified; and 15% taught in schools where 25% or less of students qualified.

In addition to the demographic and school characteristics of early career teachers overall, variation in these characteristics among those with more and less preparation is also considered. Teachers with more preparation had 2.05 years experience compared to those with less

preparation (2.22 years). A higher percentage of teachers of color had less preparation (13%) than more preparation (7%), likely because these teachers are recruited into alternative certification programs. Of the teachers from the more prepared group, 86% were female and 14% were male; and 84% of those with less preparation were female and 16% were male. Teachers with more preparation ranged in age from 22-65 with a median age of 26; and those with less preparation ranged in age from 21-64, with a median age of 29. The average age of the more prepared group was 29, whereas, the mean age of less prepared teachers was 32. A higher percentage of teachers with more preparation (32%) than less preparation (26%) taught in high poverty schools; however, in mid-poverty schools, there was a greater percentage of teachers with less preparation (63%) than more (50%); in the end, a higher percentage of teachers with more preparation (18%) versus less (11%) taught in low poverty schools.

Teachers' Preparation

Table D1 (see Appendix D) presents findings related to special educators' preparation routes, degree levels, and whether they held a major in special education and a specialization in reading. Across the entire sample, teachers' experience ranged from one to three years, with a mean of 2.14. Almost half of new teachers were highly prepared or had more preparation (49%), having taken at least three methods courses and 12 or more weeks of practice teaching, while 51% had less preparation, having completed fewer methods courses and weeks of practice teaching. Over 71% of early career special educators completed traditional preparation programs while 29% entered through alternative routes. Over half of the sample (59%) held a bachelor's degree while 40% held a master's degree or higher. The majority of educators held a degree in special education (63%) and 21% qualified for a specialization in reading based on the number of courses they completed.

In addition to examining the preparation characteristics of early career special educators overall, the preservice preparation of both groups of teachers (more and less prepared) was also compared (see table D1). The majority of more prepared teachers (83%) entered teaching through traditional programs while fewer in the less prepared group (41%) entered through traditional routes. Alternatively, a majority of teachers with less preparation (59%) versus those with more (17%) entered teaching through alternative routes. Twenty-six percent of the more prepared teachers held a specialization in reading versus 18% of teachers with less preparation; however, a greater percentage of the less prepared group (42%) held a master's degree than the more prepared group (36%). Sixty-five percent of teachers in the more prepared group majored in special education versus 62% in the less prepared group.

Teachers' Perceived Instructional Preparedness

Table E1 provides a summary of more and less prepared teachers on the composite of the dependent variable and on the eight items and is ordered by variable means, ranging from high to low, for teachers with more preparation. There was a statistically significant difference between more prepared ($M = 24,923$) versus less prepared teachers ($M = 26,413$) on the composite of the eight preparedness variables ($F(1,225) = 1.52, t(225) = 2.50, p < .05$).

On the individual items, both groups reported the highest level of preparedness for differentiating instruction, with 79% of more prepared teachers feeling very well or well prepared compared to 67% of the less prepared group. Teachers with more preparation reported feeling more prepared to use a variety of instructional methods, with 74% feeling well or very well prepared compared to 55% of the less prepared teachers. Overall, teachers felt least prepared to use student assessment data to inform instruction, with 68% of the more prepared group reporting feeling well or very well prepared compared to 51% of the less prepared group.

Regression Analysis

Correlation and multiple regression analyses were conducted to examine the relationship between early career special educators' perceived instructional preparedness and various potential predictors. The intercorrelations among the variables in the regression model are shown in Table F1 (Total weighted N = 51,340). Table G1 indicates the results of a multiple regression analysis used to determine whether specific variables including more preparation, certification route, specialization in reading, special education major, school level (e.g., elementary versus secondary), gender, race/ethnicity, and school poverty level were statistically significant predictors of early career special educators' perceived readiness to teach. Table G1 shows the results for the overall model-fit and for each variable. The overall model was statistically significant, with the p-value being .041. Upon close examination, more preparation was the only statistically significant predictor of respondents' perceived preparedness and accounted for 7% of the explained variance ($R^2 = .07$, $F(8,80) = 2.14$, $p < .041$). Although the other variables were investigated, they were not statistically significant.

Discussion

This study provides evidence from a national sample of special educators that those with more preparation felt better prepared to teach in their first year than their counterparts with less preparation. These findings are consistent with previous research in general and special education, indicating that early career educators who complete more methods coursework and weeks of practice teaching perceive themselves as more instructionally prepared in their first year of teaching. Boe et al. (2007) examined perceptions of preparedness among a nationally

representative sample of early career special and general educators and found that extensive teacher preparation was more effective than some or none in helping new teachers feel well prepared in pedagogical skills and content matter. In another nationally representative study, Ronfeldt et al. (2014) found that early career general educators who completed more methods-related coursework and weeks of practice teaching felt better prepared and were more likely to remain in the profession.

Additionally, educators who perceive themselves as better prepared to teach tend to have higher levels of teaching efficacy (Zee & Koomen, 2016), which often results in positive outcomes not only for themselves but also for their students. In extant literature, the relationship between teaching efficacy and student achievement is consistent and positive (Woolfolk Hoy, Davis, & Pape, 2006; Sharma & George, 2016; Woolfolk, Rosoff, & Hoy, 1990). Teachers who report higher levels of efficacy also appear to feel more confident and are more likely to implement a wider variety of instructional tasks to support students' learning than teachers with lower levels of efficacy (Sharma & George, 2016; Zee & Koomen, 2016). According to Hoy and Spero (2005), students' success positively affects teachers' efficacy and reinforces their continued use of effective strategies and approaches.

In the present study, early career special educators with more and less preparation varied the most in their perceived preparedness to use a variety of instructional methods. Seventy-four percent of teachers with more preparation felt well prepared or prepared in this area as opposed to 55% of those with less preparation. Similarly, Boe et al. (2007) found that both special and general educators with extensive preparation were more likely to use a variety of instructional methods than their counterparts with less preparation. Although Ronfeldt et al. (2014) did not specifically examine new general educators' readiness to use a variety of instructional methods,

they combined this skill with three others (e.g., teach your subject matter, assess students, and select and adapt curriculum and instructional materials) to create a composite measure for preparedness. They found that teachers who completed more practice teaching and more methods-related courses felt significantly better instructionally prepared.

Using assessment results to monitor students' learning was the lowest rated skill for both the more and less prepared groups, although extensive research over the last three decades has indicated that monitoring students' progress and interpreting student data are essential for teachers in making instructional decisions (Deno, 2003; Fuchs, Deno, & Mirkin, 1984). Fuchs and Fuchs (2002) assert, "When teachers use systematic progress monitoring to track their students' progress...they are better able to identify students in need of additional or different forms of instruction, they design stronger instructional programs, and their students achieve better" (p. 1). How and when to use student data are longstanding challenges for both new and experienced teachers and there is minimal research on the effectiveness of assessment preparation in teacher education. In studies that have examined this topic, teachers in both general and special education often struggle with interpreting and using data to inform instruction (DeLuca & Klinger, 2010; Fuchs, & Fuchs, 2002; National Council on Teacher Quality, 2012). Research is needed to explore and identify effective methods for preparing preservice special educators to monitor students' learning and to use student data to inform instruction. A focus on the recently published high-leverage practices may help improve special educators' practices in these areas (HLPs 4-6) if they are incorporated into teacher preparation. For example, progress monitoring is clearly addressed in HLP 6, which emphasizes the need for curriculum-based measures as well as other assessments so that "teachers study their practice to improve student learning, validate reasoned hypotheses about salient instructional features, and

enhance instructional decision making” (McLeskey et al., 2017, p. 47). Induction programs should also consider specific supports to help new teachers use progress monitoring to inform instruction.

In many cases, special educators are broadly prepared to practice numerous skills without adequate opportunities to develop expertise in any of them (Leko et al., 2015; Pugach & Blanton, 2009). The findings of this study indicate that approximately half of new special educators completed less than 12 weeks of practice teaching, which may be inadequate. Other factors such as the poor alignment of coursework with field experiences and differences in how special educators learn specific practices during coursework versus how they see these practices carried out by their supervising teachers may also affect new teachers’ perception of being able to effectively teach (Blanton, Pugach, & Florian, 2011; McDonald et al., 2014).

Some of the findings of the present study are similar to the outcomes of qualitative research on special educators’ preparation. For example, the majority of new educators felt less than prepared to meet state content standards and to teach subject matter. However, this study does not include information on why this is the case. The questions in the SASS TQ do not elicit such information from respondents. Several qualitative studies with this finding offer possible explanations. Gehrke and Murri (2006) reported that teaching content was a major challenge for many teachers because they lacked adequate knowledge about regular education standards and needed further preparation in “knowing and understanding” (p. 187) the general education curriculum. One new educator commented, “How can you modify something you don’t know?” (Gehrke & Murri, 2006, p. 187). In another study, Otis-Wilborn, Winn, Griffin, and Kilgore (2005) found that creating curriculum for a wide-variety of student ability levels and ages was problematic for beginning special educators. This was especially the case for teachers in resource

classrooms, where some reported feeling unprepared for the content they were teaching, particularly in science and social studies. Otis-Wilborn et al. (2005) noted, “The dilemma for special educator programs is providing the deep content knowledge in addition to or at the expense of specialized discipline-based knowledge in special education” (p. 149).

In general, traditionally certified special educators have more preservice preparation than those with alternative certification (Boe et al., 2007; Fall & Billingsley, 2008; Nougaret et al., 2005; Rosenberg & Sindelar, 2005). The findings of this present study indicate that the majority of more prepared special educators enter teaching through traditional programs (83%) versus alternative routes (17%). Of the less prepared group, 59% were alternatively certified and 41% were traditionally certified. In an attempt to resolve chronic teacher shortages, many alternative programs are briefer in duration and allow educators to enter the classroom immediately or soon after they begin coursework (Brownell, Bishop, & Sindelar, 2018; Rosenberg & Sindelar, 2005; Sindelar & Marks, 1993). However, there is also variation in the amount of preparation required among traditional programs versus alternative programs, which results in some traditionally prepared teachers having less preparation than some alternatively prepared teachers. However, in many cases alternatively prepared teachers spend less time in student teaching and have fewer methods courses, which leaves them feeling less instructionally prepared overall than traditionally prepared teachers. Nougaret et al. (2005) caution that the persistent shortage of special educators may result in a teacher workforce permanently comprised of undertrained teachers. Further:

It seems clear...that states, the federal government, and local school districts must do everything possible to promote quality special education teacher education and to limit the extent to which untrained - and less effective - teachers are given responsibility for

educating the nation's children with disabilities. (Nougaret et al. (2005), p. 277)

Teacher educators and policymakers should rethink cutting corners on required preparation (e.g., amount of coursework and practice teaching) for special educators across routes of certification.

Better-prepared special educators are more skilled in supporting their students' learning than teachers with less preparation (Feng & Sass, 2010, 2013; Nougaret et al., 2005). This is especially important for students with disabilities who generally score below their peers without disabilities on high stakes tests (Feng & Sass, 2010; Nougaret et al., 2005). Although the findings of this present study indicate that special educators with more preparation feel better prepared to teach than those with less preparation, the relationship between preparation and teacher effectiveness was not addressed. Several studies, however, have explored how preservice preparation impacts special educators' classroom practice (Nougaret et al., 2005) and the achievement of students with disabilities (Feng & Sass, 2010; Feng & Sass, 2013). For example, Nougaret et al. (2005) found that special educators with more preparation had more effective teaching skills than less prepared teachers and were more successful in preparing and delivering instruction and maintaining a positive classroom environment. In another study, Feng and Sass (2010) noted a statistically significant relationship between students' reading achievement and their teachers' certification in special education. Feng and Sass noted that teachers who were certified in special education typically majored in special education or completed at least 30 hours of special education coursework prior to teaching. They also found a smaller but statistically significant, positive association between the math achievement of students with disabilities and their teachers' certification in special education (Feng & Sass, 2010).

In addition to instructional effectiveness, teacher preparation has also been linked to special educators' intentions to remain in the field. Boe, Cook, and Sunderland (2006) found that

teacher retention is directly related to amount of teacher preparation and that attrition rates among beginning teachers with minimal preparation are twice as high as rates for those with more extensive preparation. Ronfeldt et al. (2014) reported that among general educators nationally, an extra week of practice teaching increased their likelihood of remaining in teaching an additional year by 4%, and that the estimated affects of additional preparation on teacher retention are positive and similar in magnitude across preparation routes.

Recommendations for Teacher Educators

Strategically planned practice teaching placements in real life classrooms with expert cooperating teachers should be provided to preservice teachers across numerous semesters (Brownell, Chard, Benedict, & Lignugaris/Kraft, 2015; Brownell et al., 2005; Ingersoll & Strong, 2011; McDonald et al., 2014; Washburn-Moses, 2005) rather than during a 12-week period or even a single year. In a review of the literature on critical features of special education teacher preparation, Brownell et al. (2005) noted that exemplary programs “stressed the importance of extensive, well-planned, and well-supervised field experiences” (p. 247).

Providing extensive placements in real life classrooms is an important starting point, but teacher educators must do more than simply increase the amount of time that future educators spend in classroom placements. In order to fundamentally change teacher preparation, the current gap between what preservice teachers learn in the field versus during coursework must be addressed (McDonald et al., 2014). Providing field experiences that are closely aligned with coursework and that allow preservice teachers to link theory with practice may result in more knowledgeable, skilled beginning teachers (Brownell et al., 2005).

In addition to closely aligned field experiences and methods coursework, the importance of using student data should be emphasized and techniques for using such data should be taught

and practiced throughout the entire sequence of teacher preparation (Fuchs & Fuchs, 2002; Maheady et al., 1996; McLeskey et al., 2017). According to McLeskey et al. (2017), special educators use student data differently than general education teachers and are expected to:

...collect detailed information about students; develop detailed processes for tracking the progress students are making; ensure that students' families' and general education teachers' understandings are incorporated in the collection of information and its use in designing instruction; and, be thorough in the use of assessment data to design and evaluate instruction tailored carefully to students' needs (p. 3).

For students with disabilities, having teachers who are knowledgeable about using student data is essential. For example, analyzing data is crucial for evaluating students' academic, behavioral, and functional strengths and for developing students' IEPs, designing and evaluating instruction, and monitoring student progress (McLeskey et al., 2017). Streamlined approaches such as high leverage practices (HLPs) should be incorporated in special education teacher preparation to ensure the development of essential instructional skills including using student data (Council for Exceptional Children, 2017; McLeskey et al., 2017).

Limitations of the Study

This study is limited to the scope of data available in the 2011-2012 SASS dataset. Although the SASS TQ asked respondents to indicate the extent of their preparation, the survey did not elicit information about the nature of their preparation. Thus, it is difficult to determine from the SASS dataset exactly which features of preservice preparation are most influential in preparing new educators to teach. Another possible limitation is that teacher interpretations of terminology and questions differed from the intended meanings of the researchers. This in turn, may have decreased the accurate evaluation of what was being measured. Another limitation is

related to how “more preparation” was defined in this study. The term more preparation is based on two questions in the SASS TQ related to the extent of completed methods coursework and practice teaching, although there are undoubtedly many other factors involved in preparing preservice teachers.

Recommendations for Future Research

Although this study indicates that on a national level new special educators with more preparation rated themselves as better prepared to teach overall than those with less preparation, research is needed to investigate why certain features of coursework and practice teaching result in more positive outcomes for graduates of some programs than for others (Brownell et al., 2015). Identifying how methods coursework and practice teaching make a difference in teachers’ knowledge, skills and practices is essential for ensuring that they are adequately prepared (Leko et al., 2015).

This present study provides general information about new special educators’ preparation characteristics (e.g., alternative and traditional preparation) but does not explore the nature of their training. More information is needed about the aspects of both coursework and practice teaching that make a difference in improving new special educators’ self-efficacy and effectiveness. Qualitative studies and mixed methods designs may provide some insights on this and offer explanations for why many teachers across both groups (more and less prepared) feel less than fully prepared in some key instructional areas. Additionally, adding third party observations of new teachers’ practices in the classroom would provide objective, triangulated data that may broaden what is known about new special educators’ instructional preparedness. To date, most of the studies on teacher preparedness in both general and special education have relied largely on self-report data.

Lastly, in addition to the preparation variables investigated in this study there may be other factors that influence early career special educators' sense of instructional preparedness. For example, work environment (e.g., school culture, resources, caseload size, administrative support, and opportunities for professional collaboration) as well as induction and professional development may impact the degree to which new teachers feel ready to teach. Researchers should consider including such variables in studies that investigate teachers' perceived preparedness.

The ultimate goal of preparing high quality special educators is to positively impact the learning progress of students with disabilities. However, few quantitative studies have investigated the association between teacher preparation on the academic achievement of students (Feng & Sass, 2013). Feng and Sass noted that students with disabilities whose teachers were certified in special education scored substantially better on achievement tests than students with similar ability levels whose teachers were not certified in special education. They surmised that the extensive coursework completed by teachers with special education certification may have positively impacted their students' achievement. However, requirements for special education licensure vary across states and certification routes, making it difficult to draw broad conclusions about the association between licensure and student learning. Research is needed to extend Feng and Sass's focus to teachers with more and less preparation (e.g., number of completed methods courses and weeks of practice teaching) and more directly examine the relationship between the extent of special educators' preparation and their students' academic success. In addition, attention should be directed to how teacher preparation programs prepare special educators to use student data to inform their design of effective instruction and the extent to which this skill is emphasized at the preservice level.

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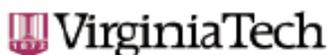
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Appendix A

IRB Approval Letter



Office of Research Compliance
 Institutional Review Board
 North End Center, Suite 4120, Virginia Tech
 300 Turner Street NW
 Blacksburg, Virginia 24061
 540/231-4606 Fax 540/231-0959
 email irb@vt.edu
 website <http://www.irb.vt.edu>

MEMORANDUM

DATE: November 27, 2017
TO: Thomas O Williams Jr, Amanda Brooks Banks, Bonnie S Billingsley
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)
PROTOCOL TITLE: Special Education Teacher Preparation: Does More Make a Difference in Promoting Instructional Preparedness?
IRB NUMBER: 17-1119

Effective November 27, 2017, the Virginia Tech Institutional Review Board (IRB) approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<http://www.irb.vt.edu/pages/responsibilities.htm>

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As: **Exempt, under 45 CFR 46.110 category(ies) 4**
 Protocol Approval Date: **November 27, 2017**
 Protocol Expiration Date: **N/A**
 Continuing Review Due Date*: **N/A**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Invent the Future

Appendix B

Relevant variables included in study

Table B1

Relevant variables included in study

Variable	Question Content	Variable No.	Response Option
Preparation features ^a			
Number of methods courses	Have you ever taken any graduate or undergraduate courses that focused solely on teaching methods or teaching strategies? If yes, how many courses?	0206	1-Yes 2 -No
		0207	1- 1 or 2 courses 2- 3 or 4 courses 3- 5 or 9 courses 4- 10 or more
Practice teaching	Did you have practice or student teaching?	0208	1-Yes 2-No
	How long did your practice or student teaching last?	0209	1-Four or less weeks 2-Five to seven weeks 3-Eight to eleven weeks 4-Twelve or more
Other preparation features			
Experience	How many school years have you worked as an elementary- or secondary-level teacher in public,	0042	NA

public charter or private schools? Include the current school year. Do NOT include time spent as a student teacher. Record whole years, not fractions or months.

Alternative route	Did you enter teaching through an alternative certification program? (Definition of alternative provided in questionnaire)	0311	1-No 0-Yes
Reading specialization	Did any of your coursework result in a concentration or specialization in reading?	0205	1-Yes 0-No
Highest degree held by the teacher	HIDER ^b	NA	1-Bachelor's 2-Master's or higher
Major field of study Special education or other	ASSIGN03	NA	1-Special education 2-Other
Dimensions of perceived preparedness			
Instructional Preparedness	Handle a range of classroom management or discipline situations?	2011	1-Not at all prepared 2-Somewhat prepared 3-Well prepared 4-Very well prepared
Combined values for this variable range from 8-32:	Use a variety of instructional methods?	2012	
1 to 8 = not at all prepared 9-16 = somewhat prepared	Teach your subject matter?	2013	
17-24 = well prepared 25-32 = very well prepared	Use computers in classroom instruction?	2014	
	Assess students?	2015	

	Differentiate instruction in the classroom?	2106	
	Use data from student assessments to inform instruction?	2107	
	Meet state content standards?	2108	
Teachers' demographic characteristics			
Age	TOTYREXP ^b	NA	NA
Gender	Are you male or female?	0525	1-Male 2-Female
Race and ethnicity	RACETH_T ^b	N/A	0-Non-minority (White) 1-Minority (all groups except White)
School characteristics (poverty level)			
National School Lunch Program (NSLP)	NSLAPP_S ^b	N/A	1-Low-poverty schools 2-Middle-poverty schools 3-High-poverty schools
Schools will be ranked and divided into 3 categories based on proportion of students eligible for NSLP.	Of districts that participated in National School Lunch Program (NSLP), percentage of their K–12 enrollment that was approved for free or reduced-price lunches. Variable is continuous unless district does not participate in the NSLP.		
Category 1= low-poverty			

schools (25% or fewer students qualify for the NSLP).

Category 2=middle-poverty schools (between 26% and 74% of students qualify for the NSLP).

Category 3=high-poverty schools (75% or more students qualify for the NSLP).

^aHigh preparation features is a combined variable including number of completed methods courses and weeks of practice teaching. *High preparation* includes 3 or more methods courses and 12 or more weeks of practice teaching. All other amounts of preparation are considered *other preparation*. ^bSASS created variable.

Appendix C

Teachers' demographic and school characteristics

Table C1.

Teachers' demographic and school characteristics in percentages

Variable	Special Education Teacher Weighted N	All Teachers	More Prepared	Less Prepared
Teachers' demographic characteristics	51,340			
Experience (mean & range, in years)		M = 2.14, SD = 0.84 Range = 1-3	M= 2.05 SD= .83 Range =1-3	M= 2.22 SD= .84 Range =1-3
Age		M=30 Range=21-65 Median=27	M=29 Range=22-65 Median=26	M=32 Range=21-64 Median=29
Male		15.2	14.1	16.2
Female		84.8	85.9	83.6
Teachers of color (all groups except White)		18.9	6.7	12.8
White teachers		81.1	93.3	87.2
School characteristics	51,340			
Poverty level ^a				
Low		14.6	18.4	11.1
Medium		56.5	49.6	62.9
High		28.9	32.0	26.0

^aSchools are ranked and divided into 3 categories based on proportion of students eligible for NSLP: 1= low-poverty schools (25% or fewer students qualify for the NSLP), 2=middle category (between 26% and 74% of students qualify for the NSLP), and 3=high-poverty schools (75% or more students qualify for the NSLP).

Appendix D
Teachers' preparation features

Table D1.
Teachers' preparation features (in percentages unless otherwise noted)

Variable	Special Education Teacher Weighted N=51,340	All Teachers	More Prepared	Less Prepared
Preparation features				
More prepared ^a		49.0		
Less prepared		51.0		
Other preparation features				
Alternative cert. route		29.3	17.2	59.3
Traditional cert. route		70.7	82.8	40.7
Number of methods-related courses				
0 methods courses		12.9	0.00	25.1
1-2 methods courses		18.9	0.00	36.7
3-4 methods courses		38.2	47.0	19.4
5-9 methods courses		20.4	31.8	10.1
10 or more methods courses		14.8	21.2	8.7
Weeks of practice teaching				
0 weeks		11.2	0.00	21.8
1-4 weeks		4.50	0.00	8.70
5-7 weeks		6.20	0.00	12.1
8-11 weeks		11.5	0.00	22.3
12 or more weeks		66.6	100	35.1
Reading specialization		21.8	26.3	17.5
Master's degree or higher		39.4	36.2	42.4
Bachelor's degree		58.5	63.8	57.6
Degree in special education		63.3	65.1	61.5

^aMore prepared teachers completed at least three or more methods courses and 12 or more weeks of practice teaching.

Appendix E

Teachers' perceived levels of instructional preparedness by level of preparation

Table E1.

Teachers' perceived levels of instructional preparedness by level of preparation (in percentage unless otherwise noted)

Instructional area	M ^a	More preparation (Likert responses ^b)				M ^a	Less preparation (Likert responses ^b)			
		4	3	2	1		4	3	2	1
Differentiate instruction in the classroom	3.08	30.50	48.60	19.00	1.80	2.84	19.50	47.90	30.00	2.60
Use a variety of instructional methods	3.00	27.00	46.60	25.90	0.40	2.66	12.90	42.50	42.40	2.20
Use computers in classroom instruction	3.01	30.40	41.80	25.80	1.90	2.79	23.40	38.70	31.40	6.50
Teach your subject matter	2.96	22.80	50.70	25.50	0.90	2.80	16.50	50.10	30.60	2.80
Assess students	2.86	18.60	49.40	31.60	0.40	2.73	15.10	46.40	34.90	3.60
Handle a range of classroom management or discipline situations	2.85	20.60	45.00	33.40	1.00	2.68	14.40	40.90	42.60	2.10
Meet state content standards	2.82	16.00	53.30	27.20	3.50	2.66	13.80	42.10	40.60	3.50
Use data from student assessments to inform instruction	2.81	18.10	49.50	28.00	4.40	2.61	15.30	35.70	43.30	5.70

^aMean scores are based on a 4-point Likert scale and are arranged from highest to lowest for more prepared teachers.

^bLikert responses include percentages of responses to each point on the Likert scale.

Appendix G
Predictors of early career teachers' perceived preparedness

Table G1.

Predictors of early career teachers' perceived preparedness

Predictor	Early career teachers' perceived preparedness		
	B	S.E.	95% CI
More preparation (0=less; 1=more prep)	1.52*	.609	[.312, 2.73]
Certification route	-.265	.923	[-2.10, 1.57]
Reading specialization (0=no spec.; 1=spec.)	.100	.771	[1.43, 1.63]
Special education major	.436	.803	[-1.16, 2.03]
School level (0=secondary; 1=elem.)	-.293	.761	[-1.80, 1.21]
Gender (0=male; 1=female)	-.780	.689	[-2.15, .590]
Race/ethnicity (0 = White; 1= teachers of Color)	.927	1.29	[-1.65, 3.50]
Poverty level (0=other pov.; 1=high pov.)	-1.23	.924	[3.07, .605]
R^2	.07		
F	2.14*		

* $p < .05$

Conclusion to the Dissertation

Amanda B. Banks

Graduating highly qualified, prepared educators has been a longstanding goal of teacher education. Accountability for the academic achievement of students with disabilities and their increased access to the general curriculum and classroom has changed the roles and responsibilities of many teachers. New educators' degree of instructional preparedness depends largely on the scope of their initial preparation. However, what matters most in preparing educators to teach students with disabilities has not been clearly determined. The heterogeneity among programs (e.g., varied goals, differences in required coursework and weeks of practice teaching, and program type) has made it difficult to pinpoint which elements are most essential. Additionally, the majority of studies on teacher preparation focus on developing positive teacher dispositions rather than skills. In conducting a review of the literature and analyzing data from a nationally representative data set, I determined that methods coursework and field experiences are particularly influential in preparing new educators to effectively teach students with disabilities.

The first manuscript examined how traditional teacher preparation programs prepare educators to teach students with disabilities in inclusive classrooms and provided evidence that inclusion preparation fieldwork in inclusive settings with positive, skilled supervising teachers is essential for the development of the dispositions, knowledge, and skills necessary to teach students with disabilities. In some cases, field experiences extended beyond traditional student teaching to include pair tutoring and one-on-one support of targeted students in the classroom. Programs that appeared most successful in preparing preservice teachers relied upon close collaboration with districts, schools, and university faculty across disciplines (e.g., general and

special education) and provided well-structured experiences that fostered key skills such as the monitoring of students' progress and classroom management. This manuscript reinforces the importance of abundant field experiences to support information learned during coursework.

The second manuscript extended the existing research on teacher preparation by focusing exclusively on early career special educators and whether more initial preparation made a difference in their perceived instructional preparedness. Educators' demographics, preparation characteristics, and school poverty levels were also examined and comparisons were drawn between teachers with more preparation and less preparation. This study supports the findings of extant research in both general and special education, indicating that completing more methods coursework and weeks of practice teaching is significantly linked to feeling instructionally prepared during the first year of teaching. This study also found that most better-prepared educators enter the profession through traditional programs versus alternative routes, which has important implications related to certification requirements for prospective special educators. Students with disabilities are a vulnerable population who tend to score lower on achievement tests than their peers without disabilities and cutting corners on teacher preparation has potentially detrimental implications for their present and future success.