

A Review of Teacher Induction in Special Education: Research, Practice, and Technology Solutions

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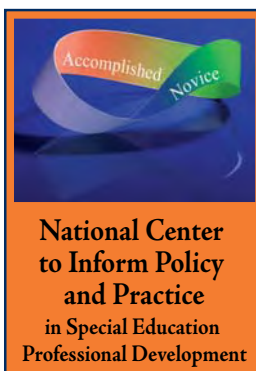
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TABLE OF CONTENTS

Introduction.....	2
Part I: Experiences and Concerns of Beginning Special Educators	6
Part II: Research on Special Education Teacher Induction	19
Part III: State and Local Induction Programs in Special Education	31
Part IV: Research on Induction and Technology	40
Part V: Induction Programs Incorporating Technology.....	47
Part VI: Summary and Recommendations for Practice and Research.....	57
Recommendations.....	58
References.....	65
Table 1. Overview of Research on Beginning Special Educators' Induction Experiences and Programs.	73
Table 2. New Special Educators' Concerns.....	78
Table 3. Studies of Special Education Induction by Themes within the Literature.	79
Table 4. Induction and Mentoring Programs for Special Educators.....	80
Table 5. Mentoring Beginning Special Education Teachers.	83
Table 6. Research on E-mentoring.....	84
Table 7. E-Mentoring Projects.....	94
Table 8. Induction Skill Sets.....	99
Table 9. Academy Skill Sets.....	101
Table 10. Research and Collaborative Learning: Academy Skill Sets	102
Table 11. Retention Rate for New SSD Teacher-Level Staff.....	103

INTRODUCTION

Educational leaders, researchers, and policymakers in the U.S. and other parts of the world recognize the potential of teacher induction to support new entrants, improve teacher quality, and increase retention (e.g., Arends & Ragazio-DiGilio, 2000; Guarino, Santibanez, & Daley, 2006; Howe, 2006; Strong, 2005). *Induction* is a concept often associated with mentoring, although it may involve careful “hiring procedures, protected initial assignments, steady provision of mentor and other support, and improved evaluation to help novices” (Darling-Hammond & Sykes, 2003, p. 36). Researchers have emphasized the importance of the early years, suggesting that new teachers’ early experiences influence teachers’ effectiveness, student achievement, and the attitudes they carry over an entire career (Feiman-Nemser, 2001a; Gold, 1996; Rosenholtz, 1989; Strong, 2005).

Well-planned induction is a needed strategy to address the serious and increasing shortage of qualified special education teachers [SETs] (Billingsley, Carlson, & Klein, 2004; Brownell, Hirsch, & Seo, 2004; McLeskey, Tyler, & Flippin, 2004). Boe and Cook (2006), using data from the Schools and Staffing surveys, found that the shortage of fully certified SETs increased from 7.4% in 1993-1994 to over 12% in 2001-2002. They point out that a major contributor to the shortage is the 44% of 1st-year SETs who are not fully certified. High rates of turnover also contribute to the shortage (McLeskey et al.), with new special educators leaving at 2.5 times the rate of other new teachers (Smith & Ingersoll, 2004). Part of the high turnover among early career special educators is likely due to fact that uncertified teachers are at a greater risk of leaving than their fully certified counterparts (Miller, Brownell, & Smith, 1999). The costs of high rates of turnover compromise teacher quality, school stability, and morale (McLeskey & Billingsley, 2008; Smith & Ingersoll) as well as the sustainability of inclusive practices (Sindelar, Shearer, Yendol-Hoppey, & Liebert, 2006). Induction has the potential to reduce teacher attrition (Guarino et al., 2006; Smith & Ingersoll) by supporting new teachers as they begin their work in schools.

Induction also has the potential to improve SET quality, as teachers are supported in applying what they learned in their preservice programs. Although induction is needed for all new teachers, more intensive induction is necessary for those with minimal preparation. Recent evidence suggests uncertified teachers are less prepared and also less likely to use effective practices than fully qualified teachers (Boe, Shin, & Cook, 2007; Nougaret, Scruggs, and Mastropieri, 2005). Boe and colleagues found that extensive teacher preparation in pedagogy and practice teaching was more effective than some or no preparation in producing new teachers who were certified, secured-in-field assignments, and reported being well-prepared to teach. Nougaret et al. also reported that 1st-year teachers completing traditional teacher preparation programs used more effective teaching practices and better management skills than those with emergency certificates. Given the high proportion of unqualified new entrants and the popularity of brief alternative routes, induction is essential to promote the use of effective practices.

Although induction has received a great deal of attention in general education since the 1980s, much less is known about induction in special education. For example, there are numerous literature reviews of the research on teacher induction and mentoring in general education (e.g., Arends & Ragazio-DiGilio, 2000; Feiman-Nemser, Schwille, Carver, & Yusko, 1999; Gold, 1996; Howe, 2006; Wang, Odell, & Schwille, 2008; Whisnant, Elliott, & Pyncheon, 2005), with some focused on mentoring according to standards-based reform (Wang & Odell, 2002) and the effects of induction on teacher retention (Guarino et al., 2006; Ingersoll & Kralik, 2004; Strong,

2005). Significant resources have also been invested in state induction programs (Brownell et al., 2004); however, no published research was found about the effectiveness of these programs in supporting new special educators.

In contrast to the considerable induction knowledge base in general education; there is only one recent review of induction research in special education, an online publication (Griffin, Winn, Otis-Wilborn, & Kilgore, 2003). Rosenberg, Griffin, Kilgore, and Carpenter (1997) also provided a conceptual model of teacher induction, drawing on multiple literatures, including induction, attrition, and leadership. They proposed two major factors that must be considered in the support of new teachers. The first factor considers individual characteristics and the preparedness of the new teacher, including demographics, cognitive and affective variables, belief systems, and professional knowledge and preparation. The second factor considers elements of the environment and tasks to be completed, including institutional climate and organization, administrative leadership and support, characteristics of work assignments, and opportunities for growth and advancement. The authors conclude that both individual and contextual variables must be considered in the design of induction programs for SETs.

A question that has been largely unaddressed is the relationship between special and general education induction. It seems logical that both teacher groups need similar types of experiences, yet there are contextual factors that need to be considered. For example, special educators' work is often organized differently from other teachers as they work across a range of classrooms and grades. Special educators are often responsible for extensive legal requirements and report to district supervisors as well as principals. Structuring induction programs for SETs also poses unique challenges given that there are fewer SETs in schools to serve as mentors. Providing mentors to teachers of students with low-incidence disabilities (e.g., visual impairments) is particularly challenging given that one teacher may serve an entire region or state. Although technologies such as e-mentoring might be used to connect mentors and beginning teachers across schools and geographical areas, no studies were found that applied this technology to the induction of special educators.

Although a great deal remains to be learned about the induction of SETs, there is a growing research base. A review of the existing literature is needed to provide policymakers and leaders with an understanding of beginning special educators' experiences, what is known about the design and outcomes of induction programs, and how technologies might be used in induction.

Purpose and Guiding Questions for Review

The purpose of this paper is to provide a comprehensive review of what is known about teacher induction in special education and to outline recommendations for the design of induction programs and further research.

Five questions guided our research:

- What are the experiences and concerns of new special educators in their first years of teaching?
- What is known about research related to the induction and mentoring of new SETs?
- What are the goals, content, processes, and outcomes of induction programs in state and local education agencies, and what are the underlying assumptions in the design of these programs?

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- How can technology be used to support new teachers?
 - What are the goals, content, processes, and outcomes of selected induction programs that incorporate technology as a major component?

Literature Search Procedures

The scope of this paper is on special education induction during the first years of employment. Our overall search included several steps. Initially, an electronic search was conducted with the research literature from 1990 to mid-2008 using the terms *induction*, *mentor*, *mentoring*, *teacher support*, *technology*, *electronic support*, *e-mentoring*, *e-pedagogy*, *online mentoring*, *tele-mentoring*, *cyber-mentoring*, and *virtual mentoring* in combination with words used to describe new SETs (i.e., *beginning*, *beginner*, *novice*, *early career*, and *first-year*). Next, we reviewed the references of published research to locate additional studies. We also conducted an electronic hand-search of national peer-reviewed journals in special education since 1990, reviewing titles and abstracts for relevant material. These journals included *Exceptional Children*, *The Journal of Special Education*, *Teacher Education and Special Education*, *Remedial and Special Education*, *The Journal of Special Education Leadership*, *The Journal of Special Education Technology*, and *Exceptionality*. In addition, we broadened our search to include technology-related induction literature in general education, given the lack of research in special education. We used the same electronic search terms as above (e.g., *e-mentoring*, *e-pedagogy*) and expanded the terms to include *technology and teacher education* and *online professional development* in combination with words used to refer to new teachers (see above). We excluded literature focused on preservice preparation (e.g., preservice teachers' adjustment to teaching, internship) and general teacher induction. Additional criteria are included in each section of the paper consistent with the stated purposes.

Overview of Induction Research in Special Education

As stated earlier, the purpose of this review is to synthesize the knowledge base on teacher induction in special education. The concept of induction has been defined in different ways by researchers and practitioners and has evolved over time. In this review, we define *induction* as the period after preservice teaching extending into the first years in the classroom. In a conceptual review of the induction literature, Feiman-Nemser et al. (1999) provide differentiation about different meanings of induction. The first meaning considers induction as a phase in development with a focus on new teachers' concerns and problems of practice. Most of the special education literature falls in this category, with reports about the concerns of new special educators. The second meaning of induction considers teacher socialization and the people and places surrounding a new teacher's entry into the profession. Some of the special education studies address aspects of teacher socialization, including the contexts in which new teachers work (Zeichner & Gore, 1990). In particular, Kilgore and Griffin (1998) framed their study in the teacher socialization literature; and other qualitative studies address the influence of contextual variables on teachers' 1st-year experiences. Although there are few studies in the special education literature that address teacher socialization, such studies are important because the school environment can have a great effect on the development of SETs and determine whether they stagnate or continue to develop professionally (Pugach, 1992). Finally, the third meaning of induction refers to formal induction programs, including the components of such programs. Although there are a number of special education induction studies, few consider the

impact of induction on teacher retention and no studies were found that focused on how induction impacts student achievement in special education.

Organization of Findings

Table 1 provides an overview of all published induction-related studies in special education and shows the range of purposes and methods used across the existing literature. Although most of the studies listed in **Table 1** are research studies, some were published personal accounts rather than systematic studies. For example, a special issue in the *Journal of Special Education* (2001) provided teacher and faculty accounts of the 1st teaching year across a range of settings (e.g., Busch, Pederson, Espin, & Weissenburger, 2001; Carter & Scruggs, 2001; Lovingfoss, Molloy, Harris, & Graham, 2001; MacDonald & Speece, 2001; Mastropieri, 2001). Although no elements of systematic studies are included, these accounts do provide well-developed teacher and faculty perspectives on the 1st year. An analysis of **Table 1** illustrates two major types of beginning teacher studies in special education. The first are studies of the experiences of new SETs, the second are investigations of formal induction programs; some addressed both experiences and induction.

Induction findings are organized in five sections. Part I is a synthesis of the literature relating to new teachers' experiences and concerns and how the context of work influences their entry into teaching. In Part II, we examine research on induction programs, including the content, processes, and effects of induction programs. Part III presents a review of special education induction programs to illustrate how such programs are conceptualized in state education agencies [SEAs] and local education agencies [LEAs] and the evaluation data on these programs. In Part IV, we consider the knowledge base on technology and induction. Part V analyzes technology-related induction programs illustrating the nature and scope of these programs in LEAs and SEAs. Because of the lack of research on technology and special education induction, the last two parts rely on general education research. In the final section, we provide a brief summary, outline recommendations for practice, and consider directions for future research.

PART I: EXPERIENCES AND CONCERNS OF BEGINNING SPECIAL EDUCATORS

The 1st year of teaching is an important and unique stage in teacher development and has often been described as an intense experience in which new teachers adjust to the varied and complex demands of teaching. Yet the induction phase is about more than just adjusting to teaching; during these critical first years, new teachers establish teaching routines and practices that they will use for many years (Feiman-Nemser, 2001a). In Part I of this paper, we briefly outline some of the major challenges of learning to teach, across both general and special education studies. Next, we include a careful examination of the findings from 18 published articles that primarily address the concerns of beginning special educators.

The study of beginning teachers' experiences is important for several reasons. First, faculty in preservice settings can attend to what is known about new teachers' struggles and design their programs to better prepare prospective teachers in specific areas (Busch et al., 2001; Kilgore & Griffin, 1998). Preservice teachers may also benefit from reading accounts of new teachers' experiences so they can develop more realistic expectations about the 1st year (Billingsley & Tomchin, 1992) and realize that they are not alone in their struggles (Busch et al.). Second, some special educators leave in the early years because of poor work conditions (Ingersoll, 2001; Johnson & Birkeland, 2003). If we can identify and improve these conditions, we should be able to improve retention (Billingsley, 2005). Similarly, school leaders may find information about teachers' experiences a valuable resource for preparing mentors and planning induction programs. In this section, general themes about new teachers' experiences during their first years are explored using the broader induction literature. Following this general description is an analysis of the research studies on the experiences of new special educators.

The Challenging First Year

The transition from teacher preparation to the 1st year of teaching has been described as “abrupt and lonely, not gradual and supported” (Feiman-Nemser et al., 1999, p. 15) and sometimes accompanied by feelings of self-doubt, anxiety, frustration, and stress (Arends & Ragazio-DiGilio, 2000; Gold, 1996; Johnson & Birkeland, 2003). The learning curve is high for new teachers as they assume full teaching responsibilities while at the same time becoming familiar with district and school policies, curriculum, and assessment policies and procedures. These new teachers also need to build relationships with administrators, teachers, paraprofessionals, other service providers, and families.

The range and volume of responsibilities can feel insurmountable given that new teachers lack established routines. New teachers tend to underestimate the amount of time that is needed to complete tasks, overestimate their abilities, and hold unrealistic and idealistic expectations (Billingsley & Tomchin, 1992; Gold, 1996). New teachers may be unhappy with aspects of the job that do not meet their expectations or correspond to a “textbook” view of their work (MacDonald & Speece, 2001, p. 89). Given these challenges, it is not surprising that both general and special educators often report feeling overwhelmed in the 1st year.

For the most part in the U.S, beginning teachers have the same responsibilities as their more experienced counterparts; yet they lack the knowledge and skills of their more experienced peers (Feiman-Nemser et al., 1999). In a sense, new teachers are given two jobs; they teach at the same time they must learn to teach (Feiman-Nemser, 2001a). Even those who are well prepared

struggle as they learn how to apply their knowledge in new contexts. As one new special educator stated, “I felt like I had learned most of the stuff in college, but all of it didn’t quite stick. It was stuff that I knew I had learned, but I didn’t remember or know exactly how to apply it in my particular situation” (Whitaker, 2000a, p. 29). For the many unqualified new special educators, the learning curve is even steeper.

Even with the challenges new teachers face, the literature suggests they are often reluctant to seek help (Feiman-Nemser, 2001a). Beginning teachers often have questions but believe they should already know how their schools work, what their students need, and how to teach (Johnson & Kardos, 2002). As one special educator stated, “It’s hard the first time you go and ask...It kind of makes you feel dumb...they are going to think I can’t handle this” (Whitaker, 2000a, p. 32). New teachers may be especially reluctant to seek help from administrators or mentor teachers responsible for their evaluations (Billingsley, 2005; Griffin et al., 2003).

An Overview of the Research on New Special Educators’ Concerns

There are far more studies of GETs’ induction experiences than special educators. The frequently cited study by Veenman (1984) indicated that the top-ranked problems among general educators included classroom discipline, motivating students, dealing with individual differences, assessing students’ work, relations with parents, organization of class work, time, and activities, insufficient materials and supplies, and dealing with problems of individual students. Insufficient planning time, heavy teaching loads, relations with colleagues and principals, dealing with students from different cultures and backgrounds as well as slow learners were also identified. Other researchers (Dollase, 1992; Gold, 1996; Johnson & Birkeland, 2003) reported similar results.

Table 2 summarizes new teachers’ concerns and is organized by type of study, i.e., case studies (single teachers’ accounts of their 1st year), other qualitative studies, and surveys. The qualitative studies provide descriptions from the perspective of new special educators as they began their teaching careers. These studies describe a range of elements about new teachers’ backgrounds, current settings, and experiences; however, the majority of the findings relate to new teachers’ concerns. Although this literature base provides some knowledge about the experiences of new special educators, it is important to acknowledge the limitations of this small group of studies. The majority of the 18 studies are small-scale studies, including six single case studies. However, four larger scale surveys include 596 teachers in Florida and Wisconsin (Griffin et al., 2009), 147 teachers from seven states (White & Mason, 2006) and 156 teachers from North Carolina (Whitaker, 2003). (For more detail, see **Table 1**). Unfortunately, the three studies have few similarly worded items, making it difficult to draw conclusions across these studies. Findings from the White and Mason study, which were fairly consistent with the content analysis of the interviews and case studies, provide data on both the rank order of teachers’ responses (based on their self-assessed need for assistance) and the urgency of these items (based on whether they requested assistance). For example, “special education paperwork” and “IEPs” were the highest ranked items in both need for assistance and urgency. Finally, Seitz (1994) conducted a survey of 103 teachers of students with visual impairments in Illinois and gathered open-ended data about work problems.

The conceptual base for some of the studies is weak; however, this is not surprising given that the earlier, qualitative studies were exploratory in nature. Most of the data across studies were gathered prior to 2000, even though some of the studies were published several years later.

Consequently, only two studies (i.e., Gehrke & McCoy, 2007; Gehrke & Murri, 2006) addressed the concerns of SETs working under the context of No Child Left Behind [NCLB] (2001). Finally, there were no systematic investigations of SET experiences in different kinds of districts (e.g., high and low poverty) or the needs of those entering with different levels of preparation (e.g., alternative vs. traditional preparation).

Although the literature on new special educators' concerns is limited, the findings are surprisingly consistent. This review organizes teachers' concerns into three broad categories, inclusion, collaboration, and interactions with adults; pedagogical concerns; and managing roles. **Table 2** cross-references these broad categories (and subcategories) with the published studies. The next sections provide an integrative review of the three major themes, followed by a summary and discussion.

Inclusion, Collaboration, and Interactions with Adults

Learning to interact positively and productively with other adults is an important dimension of learning to teach. New teachers also rely on others in the school as sources of support as they navigate the school culture, learn policies and procedures, and work to solve problems. Interactions with adults, which can be helpful, are also a challenging aspect of learning to teach (Griffin et al., 2009; Whitaker, 2003; White & Mason, 2006). Researchers have reported that teachers are more likely to stay when they are supported and feel part of the school (Johnson & Birkeland, 2003; Rosenholtz, 1989). Problematic interactions and communication may lead to perceptions of poor school climate, a factor associated with SET turnover (Billingsley, 2004; Miller et al., 1999). Griffin et al. reported that new special educators who indicated school climate as a problem in their 1st year of teaching had less supportive relationships with colleagues than teachers who did not choose school climate as a top problem. A review of **Table 2** suggests that inclusion, collaboration, and interactions with other adults (i.e., parents, aides, and administrators) were significant challenges for many new special educators. The challenges that SETs reported are described in detail in this section.

Inclusion and collaboration with general educators. Collaboration between general and special educators has received increasing attention in teacher preparation programs and beginning special educators expect to work with others to assure that students with disabilities have access to and make progress in the general education curriculum (Brownell, Leko, Kamman, & King, 2008). However, the majority of the research studies suggested that special educators experienced a climate that was not supportive of inclusion and collaboration. In some cases teachers felt isolated or desired greater integration. Billingsley et al. (2004) reported that 21% of new teachers did not feel a sense of belonging in their schools, while 79% of teachers of students with visual impairments reported they felt isolated during their 1st year (Seitz, 1994). Interviews with teachers illustrated the isolation—and sometimes alienation—that new teachers encountered. As one teacher stated, “They don’t see me as a base class. I’d like to be more involved in the whole school” (Kilgore & Griffin, 1998, p. 164). Another stated, “Most [of the GETs] associate with me on an acquaintance level....There are a couple of teachers I eat lunch with and that’s about it” (Kilgore & Griffin, p. 163). Other new teachers described receiving a “cold shoulder” (Gehrke & McCoy, 2007, p. 497) or experienced feelings of alienation and ostracism from general educators who did not understand what they do (Carter & Scruggs, 2001; Kilgore & Griffin). In one challenging situation, a new SET transferred out of a school during the school year due in part to the stress she experienced in her interactions with general educators. She stated, “Our acceptance at the school was, at best, reserved and grudging” (Carter

& Scruggs, p. 102). Another new teacher was discouraged by GETs who made fun of her students and referred to them as “dumb” and questioned why they received school awards (Otis-Wilborn, Winn, Griffin, & Kilgore, 2005, p. 147).

Over half of new special educators (54%) reported problems collaborating with their general education colleagues (White & Mason, 2006); and these problems were particularly frustrating as new teachers struggled to seek more inclusive settings for their students (Gehrke & McCoy, 2007; Kilgore & Griffin, 1998; Otis-Wilborn et al., 2005). Qualitative data suggested general educators were reluctant or unwilling to work with students with disabilities (Billingsley & Tomchin, 1992; Carter & Scruggs, 2001; Conderman & Stephens, 2000; Gehrke & Murri, 2006; Kilgore & Griffin, 1998; Otis-Wilborn et al.; Mastropieri, 2001) and even excluded students with disabilities from general education and school-wide activities (Otis-Wilborn et al.). Some general educators were “openly hostile” about including students with disabilities (Mastropieri, 2001, p. 69), making blatant statements such as “I don’t have those kids in my class” (Gehrke & Murri, p. 183). “Some of them take the attitude if they cannot hack it then they should not be in there” (Billingsley & Tomchin, p. 108). From the earliest (Billingsley & Tomchin) to the more recent studies (Gehrke & Murri; Gehrke & McCoy), special educators reported problems with some general educators who were reluctant to take responsibility for students with disabilities or make needed accommodations.

Although negative attitudes about including students were challenging to special educators, other mitigating factors made it difficult for collaboration to occur or reduced opportunities for special educators to monitor their students’ progress in general education settings (Billingsley & Tomchin, 1992; Kilgore, Griffin, Otis-Wilborn, & Winn, 2003; Seitz, 1994). Sometimes the physical location of teachers in portable classrooms or areas separate from general education reduced special educators’ opportunities to interact with other teachers in the school (Billingsley & Tomchin, 1992; Griffin et al., 2009; Kilgore & Griffin, 1998; Kilgore et al.; Otis-Wilborn et al., 2005). Heavy caseloads also interfered with collaboration; for example, one beginning teacher was assigned a caseload of 50 students with 30 different teachers (Kilgore et al.) and itinerant teachers reported inadequate opportunities to collaborate with teachers across schools (Billingsley & Tomchin; Seitz, 1994). Because of the lack of collaboration, special educators sometimes relied on students to find out about the content and activities in general education classes (Otis-Wilborn et al.).

Other barriers to special educators’ collaboration with others included discomfort with collaborative models (Otis-Wilborn et al., 2005); dissimilar beliefs about collaboration (MacDonald & Speece, 2001); and inadequate knowledge or skills about how to collaborate and include students (Busch et al., 2001; Gehrke & Murri, 2006). Gehrke and Murri emphasized the need for a stronger emphasis on preparing teachers for inclusion and collaboration.

Given the above problems, it is not surprising that new special educators expressed concern about how their students were faring in inclusive classes. Teachers indicated their students were segregated. As one teacher pointed out, “My kids are missing a lot—they are missing all the enrichment activities that other kids are getting...” (Kilgore & Griffin, 1998, p. 162). Other students struggled due to reading difficulties, challenging texts, and unrealistic or low expectations (Busch et al., 2001; Gehrke & McCoy, 2007; Gehrke & Murri, 2006; Otis-Wilborn et al., 2005). New teachers reported that some students received insufficient help because general educators did not see these students as their responsibility (Gehrke & McCoy; Gehrke & Murri).

Teachers' problems collaborating and including their students also suggests a critical need for leadership. As Kilgore et al. (2003) stated, "Their efforts to achieve this goal [inclusion] were often frustrated because their schools had not adopted a school-wide philosophy, strategies, or structures to support the inclusion of students with disabilities into general education programs" (p. 41). They went on to explain that the schools did not have effective methods of communication, time for joint planning, or shared professional development, leading not only to student segregation, but also teacher segregation.

Although the above findings suggest that many new special educators struggled in their work with general educators, 34% of new special educators ranked general educators as very supportive and some provided positive examples of GET-SET collaboration (e.g., Busch et al., 2001). Griffin et al. (2009) emphasized the importance of physical proximity and frequency of interactions to teacher collaboration. They found that teachers who perceived success in collaboration were more likely to teach near or next to general educators or to teach in integrated classrooms (Griffin et al.). These researchers suggested that new teachers who taught in close proximity had more opportunities than those in segregated settings to interact, thus were better able to practice and hone their skills. Griffin and colleagues also reported that special educators who ranked communication/collaboration as a top accomplishment also interacted more frequently with general educators in their schools. Conversely, novice teachers who reported that communication/collaboration was a pressing problem also gave significantly lower ratings to their relationships with principals and their general and special education colleagues (Griffin et al., 2009). Kilgore and colleagues (2003) described how one teacher attributed her close work with general educators, in part, to their geographic proximity to her classrooms: "Two teachers who are right across the hall from me gave me the most emotional support and general support... I'm surrounded by [general educators]... There is not an ESE unit or hall in this school" (p. 42).

Although general educators provided some support, a clear theme across studies is that new special educators relied on other special educators for support (e.g., Billingsley & Tomchin, 1992; Billingsley et al., 2004; Gehrke & McCoy, 2007; Gehrke & Murri, 2006; Griffin et al., 2003; Kilgore et al., 2003; Whitaker, 2003). New teachers viewed other special educators as most supportive, with 69% of new teachers indicating very supportive relationships with other special educators (Griffin et al., 2009). New teachers described the benefits of teacher support, indicating other teachers are essential to their survival (Boyer, 2001) and influential in helping them achieve their goals (Kilgore et al.; Mastroperi, 2001). However, Pugach (1992) makes the point that if special education is delivered as a fully integrated service, special educators may find a broader sense of collegiality.

Interactions with administrators. Principals have an important role to play in the support of new SETs; and emotional and instructional support can buffer the stress of the 1st teaching years (Billingsley, 2005; Gold, 1996; Johnson & Birkeland, 2003; Rosenholtz, 1989). For example, among special educators in general, those with strong principal support reported greater job satisfaction, higher levels of commitment, more professional development opportunities, greater colleague support, fewer role problems, and less stress and burnout than their less supported peers (Billingsley; Cross & Billingsley, 1994; Gersten, Keating, Yovanoff, & Harniss, 2001).

New special educators in survey studies rated their administrators as fairly supportive, with 87% of new special educators indicating their principals were either very supportive (50%) or somewhat supportive (37%) (Griffin et al., 2009). Similarly, Billingsley et al. (2004) reported that 90% of new special educators agreed that school administrators are supportive, although

only 76% indicated that principals understand what they do. In one study (Bishop, Brownell, Klingner, Leko, & Galman, 2009), researchers considered teachers' views of what constituted support. Bishop and colleagues indicated that the most accomplished new teachers equated administrative support with instructional support (e.g., instructional ideas, feedback) as opposed to the least accomplished teachers, who viewed administrative support as unobtrusive.

Qualitative studies suggest that some teachers experienced inadequate administrative support (Bishop et al., 2009; Gehrke & Murri, 2006; Kilgore & Griffin, 1998); inadequate support for inclusion (Carter & Scruggs, 2001); and a lack of confidence in teacher decisions (Gehrke & McCoy, 2007). In one study, special educators reported they rarely saw their administrators, and principals did not want to be bothered with behavioral problems and further resented the effort expended on students with disabilities (Kilgore & Griffin). The lack of communication between building and central administration was problematic for some teachers, with lack of agreement between district and building administrators (Carter & Scruggs), leaving new teachers in the middle (Gehrke & Murri).

Researchers also gave accounts of positive interactions and support between administrators and SETs. For example, Boyer and Lee (2001) indicated that the school principal acknowledged the new teachers' efforts and her students' progress while helping her negotiate resistance as she worked toward greater inclusion. Others described their principals as accessible and helpful in solving problems (Kilgore et al., 2003).

Interactions with paraprofessionals. Paraprofessionals have important roles in serving students with disabilities, and their work is usually supervised by SETs. These assistants are an important source of support for new teachers (Boyer, 2001; Gehrke & Murri, 2006; Kilgore et al., 2003; Lovingfoss et al., 2001); however, about a third (34%) of new special educators reported needing assistance in working with paraprofessionals (White & Mason, 2006). New teachers face the challenge of supervising paraprofessionals who are older and more familiar with the schools and students than they are (Billingsley & Tomchin, 1992), which may lead to tensions (Lovingfoss et al.). Specific challenges encountered by teachers included learning how to set expectations (Billingsley & Tomchin); determining a structure and schedule for paraprofessionals (Gehrke & Murri); dealing with paraprofessionals who interact inappropriately with students (Billingsley & Tomchin); working with paraprofessionals who have few skills (Kilgore & Griffin, 1998); and finding time to work with paraprofessionals (Gehrke & Murri). One teacher reported that the paraprofessional was unwilling to do certain tasks, which created not only interpersonal problems, but also had a negative impact in the classroom environment (Carter & Scruggs, 2001).

Teachers across several studies indicated they received inadequate preparation for supervising, managing, and coordinating paraprofessionals and recommended additional preparation for this aspect of their work (Billingsley & Tomchin, 1992; Busch et al., 2001; Gehrke & Murri, 2006; Lovingfoss et al., 2001). As one new teacher stated, "I feel like I could have used a class like that... dealing with other people....[It's been] very, very difficult with older adults..." (Gehrke & Murri, p. 184).

Interactions with parents. Almost half (48%) of new teachers indicated they needed help with planning and conducting parent-family conferences; and 88% of these teachers sought out help for these interactions (White & Mason, 2006). Problems identified in several studies included low parent involvement; being uncomfortable conducting different types of meetings

(Busch et al., 2001); feeling anxiety about initial interactions (Lovingfoss et al., 2001); and determining an appropriate amount of interaction (Conderman & Stephens, 2000). Boyer and Lee (2001) described the challenges a 1st-year teacher faced not only in parent interactions, but also in undergoing the intense scrutiny of advocates early in the school year.

Pedagogical Concerns

Special educators reported many of the same pedagogical challenges as GETs. White and Mason (2006) reported that many new special educators indicated that they needed help with materials (70%); behavior management (60%); instructional strategies (58%); assessments (54%); and learning the curriculum (46%). However, the pedagogical contexts of special educators' work varied considerably depending on the specifics of their assignments (e.g., service-delivery model, age and range of students taught, content areas assigned).

Curriculum, teaching, & assessment. New special educators often feel inadequately prepared to meet the complex needs of students across a range of curriculum areas, including academics, social skills, assessment, learning strategies, transition, technology, and alternative instructional delivery formats (e.g., peer tutoring, cooperative learning) (Mastropieri, 2001). They struggle to carry out their major responsibilities, learning content, preparing lessons, and creating materials across multiple grade levels while monitoring student performance and coordinating their efforts with general educators. Across the 18 studies (see **Table 2**), new teachers focused more on behavioral, material, and curriculum challenges, and reported relatively fewer challenges with assessment.

The lack of knowledge about teaching specific content areas was particularly challenging when teachers had responsibility for multiple subjects. Many special educators have responsibility for teaching several content areas across a range of classrooms (Billingsley & Tomchin, 1992; Bishop et al., 2009; Gehrke & McCoy, 2007; Gehrke & Murri, 2006; Kilgore et al., 2003). One new teacher was surprised that her assignment required her to teach government, social studies, and science because she didn't have any background in these areas. She stated, "I am learning the material with my students" (Otis-Wilborn et al., 2005). Another new teacher who taught several content subjects to middle school students knew she would be challenged but optimistically stated at the start of the year, "Why not do it all in one shot?" (Billingsley & Tomchin, p. 107). As the year progressed, she found teaching science and social studies difficult and confided that these subjects had been difficult for her as a student. At the end of the year, she stated, "I'm finding areas I am weak in and that makes for a not very good lesson sometimes" (p. 107). Similarly, Gehrke and Murri addressed concerns about supporting students with disabilities in general education settings. Gehrke and McCoy discussed how new teachers spent considerable time outside the school day learning the content standards so they could match curriculum, Individualized Educational Plan [IEP] goals, and instruction with the grade expectations and their students' abilities. One teacher stated, "How do you modify something you don't know? They expect you to figure out how to help kids when you don't really know about the curriculum" (p. 187). As Gehrke and Murri stated, teachers were almost desperate for more knowledge of the curriculum across content areas and grade levels.

After content, teaching reading emerged as one of the main curriculum challenges. Teachers reported difficulties diagnosing and teaching reading (Billingsley & Tomchin, 1992; Bishop et al., 2009; Busch et al., 2001) with questions about assessing students' levels and learning the reading content taught in specific grades (Billingsley & Tomchin). More recently, Bishop et al.

indicated that most of the 25 teachers studied were unprepared to teach reading to upper elementary students and to address the needs of students with complex reading difficulties.

The availability of reading curricula influenced beginning teachers' instruction and even the behavior of students (Bishop et al., 2009). One teacher explained the difficulty of not having a curriculum, stating, "Special education just gets pieces of stuff and we try to figure out how to use them" (p. 34). In contrast, those using structured reading programs (e.g., Reading Mastery, Wilson) had higher levels of engagement and appreciated having a designated curriculum as well as professional development to help them use such programs (Bishop et al.). Some new teachers were proactive in addressing their concerns about the curriculum. For example, one secondary teacher was disillusioned with activities and materials for teaching reading and writing and worked with others to try and develop a balanced literacy approach (Lovingfoss et al., 2001). Others developed curriculum knowledge through observing general education classes, attending professional development sessions, and looking for relevant resources and materials (Otis-Wilborn et al., 2005). Bishop et al. discussed how the most accomplished teachers sought out knowledge and resources to compensate for the lack of preparation, while the less accomplished discounted the need for teaching specific reading areas, such as fluency.

Materials. Teachers who indicated that curriculum was a difficult problem in their 1st year gave significantly lower ratings to the availability of teaching materials (Griffin, Kilgore, Winn, & Otis-Wilborn, 2008). About a third of early career special educators indicated that they lacked needed materials (Billingsley et al., 2004); and insufficient materials was one of the most frequently mentioned concerns across the qualitative studies. The lack of materials is one of the first problems new teachers encountered and one that they need to address quickly (Billingsley & Tomchin, 1992; Mastropieri, 2001).

Teachers described different dimensions of the problem, including outdated materials and computers (Carter & Scruggs, 2001; Lovingfoss et al., 2001; MacDonald & Speece, 2001); inadequate numbers of books; no teacher's manuals (Gehrke & Murri, 2006); few consumables (MacDonald & Speece); and problems organizing materials (Kilgore & Griffin, 1998). Some teachers needed alternative materials in content or reading to address the range of their students' instructional levels; and some were unaware of suitable materials (Billingsley & Tomchin, 1992; Mastropieri, 2001). Lovingfoss and colleagues also explained that some teachers needed additional training to use available augmentative devices.

Teachers without background knowledge in content areas sometimes relied on materials to help guide them through the curriculum. In situations where the teacher lacked both content knowledge and materials, struggles were particularly difficult. As one teacher with three different content preparations stated, "The books never came in and the ESE teachers didn't get our books. What we have—the workbooks—are worthless....I am figuring out curriculum without a clue. Creating something on my own is too hard. I've done thousands and thousands of Xeroxes" (Kilgore et al., 2003, p. 40).

Some teachers were proactive and creative in trying to secure needed resources. For example, teachers developed their own materials, asked university faculty for advice about materials, searched for materials on the Internet, and requested resources from publishers and local retailers, although these actions were sometimes time-consuming (Bishop et al., 2009; Gehrke & McCoy, 2007; Kilgore et al., 2003; Lovingfoss et al., 2001; Otis-Wilborn et al., 2005) and expensive (Kilgore et al.). Bishop et al. described how the most accomplished beginning teachers

drew from multiple resources, elaborated on why the resources were helpful, and knew how to use a wide range of materials by adapting curriculum to students' instructional needs, while less accomplished teachers used what was available.

Student behavior. Special educators identified student behavior as a challenging problem in the 1st year of teaching. Surveys indicate that many teachers reported behavior problems: 60% in the White and Mason (2006) study and 45% in the Griffin et al. (2009) study. Some teachers described difficulty getting behavior under control, trying to teach while dealing with students who refused to work, or dealing with power struggles (Busch et al., 2001; Griffin et al.; Kilgore & Griffin, 1998; Kilgore et al., 2003; MacDonald & Speece, 2001; Mastropieri, 2001). One teacher stated, "How do you not let a few people spoil a lesson? I'm not sure how to do it..." (Kilgore et al., p. 41). New teachers also dealt with severe behaviors by students who, for example, threw chairs, made sexual gestures, attempted to leave school, became verbally or physically aggressive, brought weapons to school, or made suicide threats (Carter & Scruggs, 2001; Kilgore & Griffin; MacDonald & Speece).

Some teachers desired more administrative support to deal with behavior problems (Carter & Scruggs, 2001). Others learned to deal with these problems by avoiding power struggles with students and providing alternative tasks for a brief period before returning to a task the students refused to do (Busch et al., 2001). Bishop et al. (2009) described differences in how more and less accomplished teachers addressed behavioral challenges. More accomplished teachers promoted a supportive learning community, giving students ownership and choice in the learning process. They discussed students' needs in detail, described "triggers" that led to students' behavior problems, and worked to develop individual plans to manage behavior. In contrast, a less effective teacher had students write about behaviors that were inappropriate.

Managing Roles

As districts moved toward greater inclusion of students with disabilities (McLeskey, Henry, & Axelrod, 1999), both new and experienced special educators struggled to negotiate their roles in schools and coordinate complex responsibilities. Survey data indicated that 29% of new SETs did not see their workload as manageable (Billingsley et al., 2004). Several types of overlapping role management problems were identified across the 18 reports, including time and scheduling, caseloads, legal requirements, paperwork and meetings, and role ambiguity.

Time & scheduling. One survey indicated that "time" was new teachers' most pressing concern (Griffin et al., 2009); and another indicated that 28% of teachers indicated the need for help with time management (White & Mason, 2006). Gehrke and Murri (2006) stated that "...novice teachers were overwhelmed by the sense of having multiple roles" (p. 187) requiring them to "schedule, organize, and manage an environment of adults and students with disabilities" across multiple grades and subjects (p. 187). Other time and scheduling issues concerned children changing classrooms many times in a day and inadequate time to teach and address the varied needs of students. One accomplished new teacher described her "self-contained class of 12 students as a 'logistical nightmare' with four math groups, five reading groups, and two science groups" (Bishop et al., 2009, p. 36).

New special educators indicated that the lack of time during the school day for writing IEPs and planning for instruction resulted in substantial work outside of school (Billingsley & Tomchin, 1992). Others lamented taking on demanding extracurricular activities (e.g., cheerleading

sponsor) and felt that teaching took up most of their time in and out of school (Billingsley & Tomchin). In particular, itinerant teachers working in two or more schools struggled with trying to find time to teach and collaborate with general educators (Billingsley & Tomchin; Kilgore & Griffin, 1998; Seitz, 1994). In a study of beginning teachers of students with visual impairments, travel contributed to time demands, with 68% traveling more than 100 miles per week (Seitz).

Teachers were concerned that they did not have time for individual or one-on-one instruction and that some students did not receive the instruction they needed (Billingsley & Tomchin, 1992; Busch et al., 2001; Kilgore & Griffin, 1998; Mastropieri, 2001). For example, one teacher was unable to provide individualized instruction to a sixth grader with severe reading needs and regretted having him placed with second graders to receive specific instruction at his level (Busch et al.).

Caseloads. Teachers described the effects of heavy caseloads on their work (Bishop et al., 2009; Carter & Scruggs, 2001; Gehrke & Murri, 2006, Kilgore et al., 2003; Mastropieri, 2001; Seitz, 1994). One new teacher reported that she had 31 students in her self-contained class and because of limited space worked across two nearby classrooms (Carter & Scruggs). Another teacher with 30 students attempted to meet the needs of these students across 50 different classes (Kilgore et al.). The composition of teachers' caseloads was also an issue for some teachers as they tried to teach students with multiple levels and needs. One teacher stated, "Try to make it work when you have 25 kids in here at the same time and each has a different need" (Bishop et al., p. 37). Another well-prepared teacher stated that nothing prepared her for the range of students' academic and emotional needs (MacDonald & Speece, 2001). As Kilgore et al. stated: Large and complex caseloads prevented teachers from providing a *special* education and "created challenges for effective instruction, curriculum, and behavior management" (p. 43).

Laws, IEPs, paperwork, & meetings. The majority of new teachers indicated that legal requirements and policies such as paperwork, IEPs, referral, placement, and evaluation were the areas in which new teachers most needed assistance (Whitaker, 2003; White & Mason, 2006). Some new special educators did not receive enough guidance with completing paperwork, particularly IEPs (Billingsley & Tomchin, 1992; Busch et al., 2001; Gehrke & McCoy, 2007; Mastropieri, 2001). For example, although one teacher understood how to write goals and objectives, she was less clear on how to address adaptations and assessments (Busch et al., 2001). Other problems related to the volume of work, including the many logistics that new teachers were expected to carry out (e.g., notifying parents, scheduling meetings, inviting appropriate people to meetings, creating meeting agendas, completing forms) (Boyer & Lee, 2001; Busch et al.). For example, one teacher reported completing 31 annual reviews in 2 days (Carter & Scruggs, 2001). Finally, excessive and competing responsibilities make it difficult for special educators to function effectively, with 76% of new teachers reporting that routine duties and paperwork interfered with their teaching (Billingsley et al., 2004).

Role confusion. Special educators expressed confusion about their roles and what is expected of them. Gehrke and Murri (2006) reported that new SETs "entered programs where the role and responsibilities of the SETs were not defined..." (Gehrke & Murri, p. 187); and others reported that new teachers had difficulty making sense of their roles when they began (Otis-Wilborn et al., 2005). Other teachers are unclear about their roles at different types of meetings (Mastropieri, 2001). Gehrke and Murri stated that "...we need to be aware that our beginning teachers appear to require a certain level of program definition and direction when they first begin in the profession" (p. 188). Mastropieri made an important distinction between responsibilities that are

clearly described in school procedures or implicitly assumed and those that are “hidden and to be discovered by teachers or described by their mentors” (p. 72).

As special educators try to sort out how to spend their time, they must deal with not only role ambiguity but also conflicting expectations from teachers, parents, and administrators as they work across a range of settings. Gehrke and McCoy (2007) related that a GET sent students to special educators’ room to complete assigned projects. The special educator stated, “I don’t think anyone understands that I have [student academic] goals and objectives that I have to meet” (p. 496). GETs may also be unsure about their roles with students with disabilities that can lead to role confusion as teachers collaborate. As Otis-Wilborn et al. (2005) found, there is a “need for a structure and process to establish and clarify roles and responsibilities throughout the school for students with disabilities” (p. 148).

Summary & Discussion

In summary, new special educators face formidable challenges as they begin their work in schools. Findings spanning 15 years reveal a great deal of consistency in the problems experienced by new special educators. Findings across the 18 studies were organized around three broad categories, i.e., inclusion, collaboration, and interactions with adults; pedagogical concerns; and managing roles. Although work contexts differ across teachers, many described a climate that was unsupportive of their work, challenging workloads, unfamiliarity with the curriculum, and insufficient teaching resources. Understanding the challenges new special educators encounter in their first years provides important information for administrators, mentors, and teacher educators as they consider ways to better prepare and induct new teachers into the profession.

Perhaps one of the most daunting challenges new special educators face is becoming a part of the school community and negotiating the inclusion of students with disabilities in general education classes. Some special educators felt unwelcome in their interactions with GETs and encountered resistance in their efforts to include students in general education classrooms. Differences in the preparation of special and general educators have contributed to the development of separate cultures in schools (Pugach, 1992). The boundaries between general and special educators sometimes led to the segregation of SETs as well as their students (Kilgore et al., 2003). Perhaps new teachers and their mentors need to reframe their work as agents of change (Feiman-Nemser, 2001a) and work to reduce isolation by building networks and encouraging collaboration.

Special educators’ efforts to implement inclusion were also difficult due to the lack of a school-wide philosophy, strategies, and structures necessary to support the inclusion of students with disabilities (Kilgore et al., 2003). New teachers discussed the lack of effective communication channels, inadequate time for collaboration, and few shared professional development opportunities, which made collaboration difficult. These observations are consistent with previous research on barriers to collaboration and inclusion (Embich, 2001; Kozleski, Mainzer, & Deshler, 2000).

Unfortunately, special educators appeared to have little help from administrators or mentors in trying to implement inclusive practices. Ideally, school leaders would take responsibility for creating inclusive school cultures in which all see their roles in meeting the needs of students with disabilities. Part of the problem is likely due to principals’ inadequate preparation in the

education of students with disabilities, leaving many unprepared to provide thoughtful guidance for the inclusion of students in their schools (Crockett, 2002).

Special educators also struggled with many of the same pedagogical challenges as GETs. New teachers struggled to acquire necessary materials, address challenging student behavior, and learn curriculum. SETs often have curricular responsibilities that exceed those of general educators (Kilgore et al., 2003), spanning multiple content areas and grade levels. A complicating factor is that some special educators reported minimal preparation in content areas, leaving new teachers to spend their time learning content rather than thinking about how to design appropriate teaching strategies and routines (Borko & Livingston, 1989). New SETs need a great deal of assistance from practitioners and researchers in both learning and teaching content. School leaders and mentors also need to take actions to reduce the number of content areas that new teachers are assigned to teach.

Another similarity between our findings and the general education literature is that both groups struggled with addressing students' behavior (Veenman, 1984; White & Mason, 2006). In particular, teachers described student behavior that interfered with teaching and also having to manage power struggles with students. Although many new teachers need assistance in addressing challenging behavior, Johnson and Birkeland (2003) described how schools can support positive behavior by establishing "explicit norms for respect and equity, enforcing school-wide expectations about behavior, and engaging parents in the goals and life of the schools" (p. 584).

Induction programs also need to address the challenges teachers describe in managing role demands, such as uncertainty about their roles, time pressures, scheduling difficulties, and the challenge of meeting bureaucratic requirements. Teachers expect to spend the majority of their time teaching, and many expressed frustration when their instructional pursuits are reduced because of extensive bureaucratic tasks such as meetings and paperwork. The heavy caseloads of some teachers made it nearly impossible for them to attend to the individual needs of students. Moreover, teachers in roughly a third of the studies were unclear about their roles, especially when they worked in collaborative positions. Previous research findings suggest that problems such as role overload, ambiguity, and conflict are associated with job dissatisfaction, turnover, and intent to leave (Billingsley, 2005; Ingersoll, 2001). One way of reducing the problems associated with managing complex roles is to provide "sheltered status" to new teachers, reducing new teachers' loads, assigning fewer administrative duties, and providing support for the improvement of their pedagogy (Johnson & Birkeland, 2003).

Induction and mentoring are often suggested as a way of supporting new teachers during their first years. However, Feiman-Nemser (2001a) warned that the best induction programs cannot compensate for constraining conditions such as problematic school cultures, inadequate resources, and unsupportive administrators. The problems reported by many new SETs are the same ones that contribute to teacher stress (Wisniewski & Gargiulo, 1997); dissatisfaction with teaching; and attrition (Billingsley, 2004). To make special education teaching more attractive, leaders need to improve the conditions in which many special educators work. Johnson and Birkeland (2003) discussed the importance of decent work conditions, such as schools where there are established expectations for student behavior, where teachers have the necessary curricula and resources to teach, and have support in their efforts to improve student learning.

The context of the environment is also critical to special educators' success and growth during the 1st year. As Bishop et al. (2009) stated:

Contextual support such as a predetermined curriculum, instructionally focused administrative support, and opportunities to grow professionally impact a beginner's successful acclimation to the teaching world. In other words, our teachers' ability to deliver effective instruction related to the school environment.

Strong work supports are needed if beginning teachers are to feel they have reached their students (Johnson & Birkeland) and achieved a moral purpose, that of making a difference in their students' lives (Fullan, 2001).

PART II: RESEARCH ON SPECIAL EDUCATION TEACHER INDUCTION

The Status of the Teacher Induction Literature

Over the past two decades, published literature on teacher induction and mentoring has proliferated as the percentage of teachers participating in induction programs has also increased and new state and federal mandates have been enacted to improve the quality of the teacher workforce (Billingsley et al., 2004; Smith & Ingersoll, 2004). Despite an increase in this knowledge base, the extant literature has been described as fragmented, lacking a cohesive conceptual framework (Feiman-Nemser, 2001a), and containing numerous methodological “limitations that are liable to compromise the implications one is able to draw” (Strong, 2005, p. 192). The literature is also dominated by qualitative studies exploring program features and the impact of these programs from perspectives of researchers and participants, but include few large, quantitative studies that offer generalizable findings of induction on actual teacher retention, teaching practices, and student learning (Lopez, Lash, Schaffner, Shields, & Wagner, 2004; Whisnant et al., 2005).

Despite these limitations, researchers in general education provide preliminary evidence that teacher induction has a positive effect on student achievement (Fletcher, Strong & Villar, 2008) and improves retention (Guarino et al., 2006; Smith & Ingersoll, 2004). In particular, Smith and Ingersoll reveal in their analysis of the 1999-2000 Schools and Staffing Survey [SASS] that 1st-year teachers, including special educators, who participated in a comprehensive set of induction activities were half as likely to leave as those who participated in no induction activities. Specifically, the researchers examined teacher attrition as it relates to beginners who received no induction support, three induction supports, six induction supports, or the most comprehensive package with eight supports. Findings revealed that as the number of supports within these packages increased, the probability of teacher attrition decreased. Unfortunately, fewer than 1% of beginning teachers during the 1990-2000 school year were provided with the most comprehensive package, which included a mentor in the same field, common planning time with teachers in the same subject area, time for collaboration, participation in an induction program, participation in seminars for beginning teachers, communication with administrators and supervisors, reduced teaching load, and opportunities to participate in larger networks of teachers.

These and other activities associated with induction programs have garnered support from general education researchers over the past decade and are detailed elsewhere (for reviews, see Arends & Ragazio-DiGilio, 2000; Feiman-Nemser, 2001a; Feiman-Nemser et al., 1999; Gold, 1996; Griffin et al., 2003; Huling-Austin, 1992; Ingersoll & Kralik, 2004; Moskowitz & Stephens, 1996; Smith & Ingersoll, 2004; Wang et al., 2008). Briefly, these programs:

- are situated in schools with a culture of shared responsibility and support
- include clearly articulated goals and purposes
- provide mentoring support and other opportunities for interactions among professionals
- match mentors to new teachers on personality, grade level, and subject area
- provide mentors with preparation and release-time for their roles, suggesting that careful selection and training of mentors results in higher mentor effectiveness

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- include content that addresses beginning teachers' individual instructional and psychological needs including: classroom management; teaching practices; workload and stress; time management; relationships with students, families, colleagues, and administrators; as well as a clear definition of effective teaching
 - recommend that beginning teachers receive teaching assignments less demanding than their more experienced counterparts
 - include formative assessment that differentiates new from experienced teachers by addressing beginners' development and individualizing assistance
 - include clear definitions of the roles and processes of organizations (i.e., SEAs, LEAs, universities) involved in the delivery of induction
 - provide adequate fiscal support.

Although teacher induction can encompass a variety of activities (Ingersoll & Kralik, 2004), research conducted in both general and special education has focused heavily on mentoring (Griffin et al., 2003; Ingersoll & Kralik; Smith & Ingersoll, 2004). Yet, like the general education research base, the research literature in special education is limited. However, there is some emerging evidence that mentoring and induction support influences beginning special educators' intent to remain in teaching (Whitaker, 2000b) and perceived effectiveness. Billingsley et al. (2004) found that teachers with higher levels of induction support also reported greater job manageability and success in getting through to difficult students. Recently, induction has also been linked to beginning teachers' self-ratings of their preparedness to teach, pedagogical content knowledge, and ability to manage classrooms (Boe, Cook & Sunderland, 2008).

Overall, the collective wisdom among scholars has produced support for a number of promising practices associated with teacher mentoring and induction. These practices are generally backed by data collected on teachers' satisfaction with induction support and their intended retention rates after participating in such experiences—not necessarily on teachers' actual retention, their practices, or their students' achievement. Cognizant of these limitations, we turn to a discussion of the research literature that targets beginning special educators in studies of induction and mentoring.

Research in Special Education Mentoring and Induction

We identified 20 research studies published since 1990 that appear in both refereed journals and doctoral dissertations. These studies were found based on a comprehensive review of refereed journal articles and dissertation abstracts using the following descriptors: *beginning special educators*, *first year special educators*, *new teachers*, *special education*, *induction*, *new teacher support*, and *mentor*. This body of literature includes only systematic research studies that contained research questions related to special education induction, mentoring, support, and assistance in the first 5 years of teaching. **Table 1** provides a comprehensive list of all special education studies included in the entire review, with details about the research design. **Table 3** includes a list of the studies examined in this section of the review that pertain to induction and mentoring and met the inclusion criteria mentioned previously. **Table 3** also indicates which studies addressed the themes derived from the research literature (e.g., mentor characteristics, frequency of support). The alphabetical listing of studies in **Table 3** includes 12 peer-reviewed journal articles and 8 doctoral dissertations.

Survey research was the primary data collection tool in the 20 studies, followed by the use of qualitative research methods (see **Table 1**). The number of special educators who served as study participants ranged from two to over a thousand, with fewer teachers participating in qualitative studies and considerably more completing surveys. Mentoring (i.e., satisfaction with mentoring, characteristics of mentors) was examined in a majority of the studies as the sole activity of induction or as part of other induction activities. Teachers' induction experiences were evaluated in a range of ways, including satisfaction with mentoring, perceived effectiveness, perceived helpfulness, perceived self-confidence, perceptions of job manageability, and intentions to stay in teaching. However, we did not find any studies of beginning special educators that examined whether induction influenced new teachers' instructional practices, observed teacher quality, or student achievement.

Based on our review of these 20 studies of induction and mentoring support in which beginning SETs served as study participants, we clustered the findings into the following topical areas: (a) characteristics of special education mentors, (b) providers of support, (c) formal and informal sources of support, (d) frequency of support, (e) proximity of support, (f) content of support, and (g) the role of assessment and evaluation in induction. A discussion of results related to each of these themes follows.

Characteristics of mentors. The special education literature yields a mix of findings related to both the personal and professional characteristics of mentors. *Personal characteristics* are generally related to the mentor's ability to provide emotional support and to communicate effectively with the beginning teacher (Giacobbe, 2003; Whitaker, 2000b). In a study of 44 beginning special educators and their mentors, Irinaga-Bistolas, Schalock, Marvin, and Beck (2007) found that the personal characteristics of mentors were perceived as one of the most critical factors associated with successful mentoring relationships. Seventy-six percent of the beginning teachers in this study reported that their mentors were a "good match [both] philosophically and in terms of compatibility...[and were] sensitive to their changing needs over the course of the year" (p. 17). Moreover, ratings of seven personal characteristics of mentors by 156 first-year special educators in Whitaker's (2000b) study further revealed the importance of this variable. Although all seven characteristics were highly rated, the three highest rated characteristics of mentors were "approachable and available," "supportive and patient," and had strong "communication skills." Open communication also played an influential role in establishing an effective relationship between the mentors and mentees in Griffin's (2005) study of three out-of-field beginning special educators and the veteran special educators who served as their mentors.

Professional characteristics of special education mentors appear influential as well. Müller and Burdette (2007) report that special education mentors are typically required to hold the following professional credentials: teacher certification with a minimum number of years teaching in special education, training in how to serve in the mentor role, placement in the same school as the mentee, and an administrator recommendation. White and Mason (2006) provide demographic information and data related to the professional qualifications of special education mentors who participated in their study. Of the 172 mentors from seven states in the U.S. who completed surveys, 59% had master's degrees and 3% had specialist degrees in special education. All 172 mentors were selected by their districts through administrator nominations for excellence in teaching and had an average of 2.7 years of experience as mentors and 12.8 years of teaching experience. The average age of these mentors was 42.5 years, and 96% were female.

One of the most consistent findings across studies of mentors' professional characteristics is that beginning SETs prefer mentors who are also special educators (Boyer, 1999; Whitaker, 2000b, 2003; White, 1995). Beginners also favor special education mentors who teach students with similar disabilities and teach at the same grade level (Boyer). When beginning special educators were paired with special education mentors who taught in the same disability area and possessed knowledge of special education procedures, paperwork, and teaching pedagogy, their ratings of the effectiveness of the mentoring received were significantly higher than those who were not paired in these ways (Whitaker, 2003). Likewise, beginning SETs assigned to mentors with special education backgrounds requested their assistance more often and rated this help as significantly more valuable than their counterparts mentored by teachers outside special education (White). Moreover, a significant positive relationship was found between the degree of perceived similarity in teaching style and beginning teachers' views of the overall effectiveness of the mentoring experience (Whitaker, 2000b).

Altogether different outcomes have emerged when beginning special educators and their mentors are not paired in these ways. For example, White and Mason (2006) found that beginning special educators did not seek help in modifying instruction to meet individual student needs if their mentors did not teach students with the same type of disability. They also did not ask for help with interpreting and using assessment information or preparing lesson plans if their mentors did not teach the same grade level. As one elementary-level beginning special educator lamented, "My mentor this year was a middle school level person and she was not able to help me with the lesson plans or materials" (Tucker, 2000, p. 199). Taken together, these studies emphasize the need for careful selection and matching of special education mentors to their mentees on a number of personal and professional variables.

Other providers of support. In addition to the unmistakable involvement of mentors in the induction of beginning special educators, studies in special education have also identified and examined other individuals who deliver support to beginning special educators beyond that of the mentor. For example, Irinaga-Bistolos et al. (2007) found that of the 83.3% of beginning special educators who received support from mentors, fewer (62.5%) reported that the feedback received from them was adequate. Likewise, even when beginning teachers received an assigned and accessible mentor with special education expertise (Gehrke & McCoy, 2007), beginning teachers relied on other special educators, reading specialists, and school psychologists in their "village" (p. 497) for information as their needs changed over time. Additional studies reveal that novice teachers develop valuable relationships with their professional colleagues (including paraprofessionals), administrators, and parents over the school year (Boyer, 1999; Giacobbe, 2003), while others benefit from support networks with their university professors and fellow preservice program graduates (Martinez & Mulhall, 2007). Ultimately, these individuals provided more substantive support overall than what beginning teachers received from their formal induction programs. A discussion of findings related to particular professionals follows.

The support provided by building-level administrators was studied by Billingsley et al. (2004) and revealed that 86.1% of the 1,153 beginning special educators in their study reported that support was available from school administrators, and 75.3% reported availability of support from consultants or supervisors. However, despite high levels of availability, the assistance these professionals provided was rated relatively less helpful. Other SETs and department chairs were more likely to provide useful suggestions to beginning special educators for enhancing their teaching than were the school-level administrators and district-level consultants or supervisors these teachers encountered.

Yet, in Boe et al.'s (2008) most recent analysis, 80% of beginning special educators reported receiving adequate or strong administrative support in 2003-04. Of the teacher support variables examined in this study, having regular communication with administrators was "substantially and consistently related to teacher reports of being well prepared" in subject matter, pedagogy, and classroom management (p. iv). For the eight 1st-year special educators in Martinez and Mulhall's (2007) study, those who felt most supported had notable administrative support in their schools. These administrators established open-door policies and clearly communicated their willingness to support beginning teachers. Furthermore, teachers who actively developed trusting relationships with their administrators and felt comfortable asking for assistance were more satisfied with the support they received and were viewed positively by their administrators. Those who did not make an effort to establish these relationships avoided seeking assistance until their problems escalated, which negatively impacted administrators' views of their effectiveness. In sum, the principal's role in ensuring that new teachers receive necessary supports is vital. Principals who do this are visible and available to beginning special educators and encourage all faculty and staff to participate in the induction of 1st-year teachers (Walker-Wied, 2005). Perhaps improvements in special educators' perceptions of administrative support result from an improved awareness by administrators of the demands placed on special educators, and they are responding more readily and appropriately to those needs (Boe et al., 2008).

General educators have also been studied as providers of induction support to beginning special educators. GETs mentored beginning special educators with emergency certificates in Babione and Shea's (2005) study. Although these general education mentors reported lacking appropriate professional knowledge and skill to assist novice SETs, the beginning teachers they served valued their knowledge about supplies, schedules, routines, unwritten rules in the school, and effective teaching strategies (e.g., using Socratic questioning with a student with behavior disorders). Conversely, general education mentors experienced difficulties advising their mentees about issues related to inclusion because they themselves were not completely clear about the requirements of inclusive education for students with special needs.

Although "extra classroom assistance" was not explicitly defined by Boe, Cook, and Sunderland (2007), these researchers found that about 50% of special educators in 2003-04 were provided with extra classroom assistance in their 1st year of teaching, a 10% increase since the 1999-00 survey. The more recent percentage was twice as high as the classroom assistance provided to beginning GETs (24% in 2003-04). The authors suggest that the difference may be attributed to the call for adequate resources for special educators made by the Council for Exceptional Children (Kozleski et al., 2000) and to the higher percentage of out-of-field teachers in special education classrooms who may require additional support.

Beyond the benefits of a "village" of support providers, beginning special educators themselves can learn to be resourceful and seek out the assistance they need, from either professional development opportunities or from colleagues close by. Findings from Walker-Wied's (2005) qualitative study of two out-of-field beginning special educators reinforce the benefits of beginning teachers assuming roles as seekers of information and support. Teachers in this study initiated collaboration with other professionals (e.g., the science teacher and physical therapist) and sought out ways to enhance their own learning (e.g., by attending professional development sessions on technology), which contributed to their positive perceptions of their teaching and of their relationships with school colleagues. Overall, studies of those who provide support to beginning special educators suggest that, although assistance from special education

professionals is preferred, other individuals in novice teachers' school communities may serve as important sources of support, offering benefits to beginning teachers that may not be addressed by professionals in the same field.

Formal and informal sources of support. The research in special education suggests that induction support is delivered to beginning special educators through both formal and informal approaches. Formal supports may include formal induction programs, scheduled meetings, arranged observations with mentors, and professional development opportunities. Although the percentage of both GETs and SETs participating in formal induction programs increased from 59% in the 1999-2000 school year to 67% in 2003-04 (Boe et al., 2007), the research in special education suggests both positive and negative outcomes for formal approaches to induction.

Billingsley et al. (2004) found that 61% of the 1,153 beginning special educators in their study participated in formal mentoring programs. Of these, only one third found formal mentoring helpful. In smaller scale studies, however, positive impacts on beginning special educators' intent to stay in their current teaching positions and their perceptions of their professional competence have been found for beginners who participated in formal induction programs designed to meet their unique needs (Gehrke & McCoy, 2007; Griffin, 2005; Irinaga-Bistolos et al., 2007; Martinez & Mulhall, 2007; Nielsen, Barry, & Addison, 2006; Tucker, 2000). These programs include some or most of the following components: a new teacher orientation component, an assigned mentor, both arranged observations and unscheduled visits with formative feedback and emotional support, standards-based evaluation and reflection, monthly seminars, support group meetings, structured journaling, and content related specifically to special education.

Formally scheduled meetings also appeal to beginning special educators. Forty-seven percent of beginners who participated in scheduled meetings with their mentors rated these meetings as helpful or extremely helpful (Whitaker, 2000b). Scheduled meetings appear to play a role in facilitating collaboration and communication between mentors and mentees. As one special education mentor related, "Having regular collaboration times is so important. We're both able to keep each other informed of what's going on. He's not afraid to approach me with questions and we use that time to address those questions. We're also able to bounce ideas off one another when it comes to student programming" (Griffin, 2005, p. 82). Communication between mentors and beginning teachers can be facilitated through the use of lists during scheduled weekly meetings (Boyer, 1999). Lists may address administrative and student issues collected throughout the week as well as previous concerns and approaches to be re-addressed (Boyer, 1999). These lists might also reflect issues that emerged during conversations. Mentors have also used scheduled meetings to provide emotional support to mentees when they were frustrated or discouraged, and 1st-year teachers rated this form of support highly (Giacobbe, 2003).

Scheduled group meetings conducted outside of school that combine both mentors and mentees allow teachers to discuss issues of teaching and learning, e.g., concerns related to children from low-income rural areas (Babione & Shea, 2005). Ensuring that teachers have release time for routinely scheduled meetings and for monthly seminars is critical for facilitating the mentoring support needed by beginning special educators (Gehrke & McCoy, 2007; White & Mason, 2006).

Regrettably, formal classroom observations conducted by mentors do not appear to be a standard way of delivering formal support to beginning special educators. In a study that included 355

beginning general and special educators and their mentors in Virginia, Maddex (1993) found that 47% of the GETs compared to only 16% of the special educators reported being observed by their mentors. Years later, Whitaker's (2000b) study of 156 beginning teachers in South Carolina revealed that 75% of the mentors observed their beginning teachers; however, the remaining 25% never did. Although improvement in the percentage of observations conducted by mentors across these two studies is encouraging, other studies of beginning special educators continue to note a lack of classroom observations, particularly those characterized by problem solving, feedback, and goal setting (Kilgore et al., 2003; MacDonald & Speece, 2001). One explanation for this apparent deficiency may be that special educators do not always serve as mentors to beginning SETs. When other professionals, such as GETs, have served in this role, they report difficulties observing novices who are teaching in classrooms with students unfamiliar to them (Babione & Shea, 2005).

Researchers have also examined the formal inservice and professional development opportunities beginning special educators receive. Out of seven types of assistance examined among 1,153 beginning special educators, 90.2% participated in "inservice or staff development," yet only 23.4% of teachers rated these activities as helpful "to a great extent" (Billingsley et al., 2004, p. 342). Others have noted that inservice workshops do not generally address special educators' needs and are often inconveniently scheduled during after-school hours when beginning teachers are exhausted (Gehrke & Murri, 2006). Moreover, Boe et al. (2008) found that participation in professional development activities by both general and special education beginning teachers was not associated with any of the three dimensions of teaching examined (i.e., subject matter, pedagogy, and classroom management), except for professional development targeted at teaching students with IEPs, which was associated with teachers' reports of being well prepared in both pedagogy and classroom management.

Finally, Billingsley et al. (2004) also found that 49% of beginning special educators participated in regular meetings with other new teachers, yet this type of support was deemed the least helpful type of assistance provided. Likewise, teachers in Gehrke and Murri's (2006) qualitative study of eight special educators viewed monthly meetings held with other 1st-year teachers as "so-so" and "sort of helpful" (p. 185). However, when beginning special educators were given release time to observe peer teachers, rather than simply meeting with them, they viewed this form of support as helpful for "seeing how they handle daily routines" (Tucker, 2000, p. 228).

Evidence in support of formal approaches to induction in special education appears mixed; however, novices are generally more enthusiastic about the informal supports they receive. Unscheduled meetings with mentors and colleagues as well as unannounced classroom visits or handwritten notes to check in on a beginner who is struggling are examples of informal supports. Billingsley et al. (2004) found that close to 90% of beginning special educators viewed the informal assistance they received from teachers in their building and from other colleagues as helpful to a moderate or great extent. Recently, Fall and Billingsley (2008) extended the literature base on the formal and informal induction experiences of beginning special educators by analyzing teachers in the SPeNSE database who taught in high- or low-poverty schools. Results indicated that teacher reports of the types and helpfulness of the support they received did not differ by poverty level. Teachers in both high- and low-poverty schools received informal help from colleagues most frequently (high: 96.4%, low: 92.3%) and formal mentoring least frequently (high: 57.7%, low: 62.8%), but rated informal support highest and formal mentoring programs lower.

Babione and Shea (2005) have referred to the informal supports provided by colleagues as “congenial mentoring” and note how “very appreciative” mentees are of it (p. 7). The mentor drops by the mentee’s classroom at the end of the day to talk informally, they engage in school activities together, and share teaching materials. Because informal supports such as congenial mentoring typically take place in the mentee’s school, involve colleagues who are familiar with the mentee’s students, and are ongoing, the support provided may be more responsive to individual teachers’ needs in a format that is welcoming and friendly.

Yet, results of larger-scale studies suggest that neither formal nor informal supports appear to influence teachers’ intent to stay in special education. The overall helpfulness of all types of induction support and mentoring were not correlated with teachers’ intent to stay in special education until retirement or for as long as possible (Billingsley et al., 2004). In particular, White’s (1995) study of the Kentucky Internship Program (KIP), a state mandated formal induction program, produced similar results. Only 3.7% of the 604 teacher participants believed the KIP was the primary influence for staying in special education. However, when short-term retention (i.e., into the next school year or in 5 years) was of interest, the effectiveness of mentoring was significantly correlated with teachers’ intent to stay, although the effect size was small (Whitaker, 2000b). Authors of the larger studies suggest that placing special educators in formal mentoring programs designed primarily for GETs, with little emphasis on their specific needs, may promote special educators’ dissatisfaction with formal mentoring programs and consequently produce little effect on their decisions to continue teaching in special education.

Frequency of support. The frequency with which supports are provided to beginning special educators appears to influence their perceptions of the effectiveness or helpfulness of various supports. In general, Whitaker (2000b) found that the frequency of supports was highly correlated with beginning teachers’ perceived effectiveness of these supports. First-year special educators in her study experienced unscheduled meetings with their mentors most frequently, and rated these as most effective. Likewise, Billingsley et al. (2004) found that 95.9% of the beginning teachers in their study had “informal help from other colleagues” available to them, and 87.2% experienced “informal help from building teachers.” The teachers in their study rated these forms of assistance as the most helpful.

Whitaker (2000b) also reported that scheduled meetings were the next most frequently provided support, which was rated second in effectiveness. As the frequency ratings decreased, so did teachers’ effectiveness ratings. Observations by mentors were third in frequency, followed by written communication, observations by 1st-year teachers of their mentors, and telephone calls. Phone calls between mentors and mentees were infrequent and deemed least effective by 1st-year teacher participants, primarily because all but 12 of the mentors in this study were in the same school as the beginning teacher. Similarly, the least available source of support (i.e., “regular meetings with other new teachers”) also received the lowest helpfulness rating from beginning teachers (Billingsley et al., 2004). Overall, Whitaker found that mentors had to have contact with beginning special educators at least once a week for 1st-year teachers to rate the effectiveness of mentoring highly.

Studies in special education have also examined the frequency with which various professionals provided support to beginning teachers. In research conducted by Whitaker (2003), 1st-year special educators rated the frequency of support they received using a scale ranging from 1 (no assistance) to 8 (a great deal of assistance). SETs provided the greatest amount of assistance to beginning special educators ($M=6.13$, $SD=2.28$), followed by school administrators ($M=5.12$,

SD=2.21), the assigned mentor (M=5.12, SD=2.66), special education administrators (M=4.82, SD=2.40), and finally GETs (M=4.66, SD=2.21). Billingsley et al. (2004) as well as Fall and Billingsley (2008) lend support to Whitaker's findings that teachers provide the most assistance to beginning special educators, but the frequency or availability of support from other professionals, such as administrators, is also fairly common. These data suggest that a number of professionals provide assistance to beginning special educators. Yet, although assistance is available, greater percentages of new teachers are participating in induction programs (Boe et al., 2007), beginning special educators perceive the frequency of assistance received as inadequate to address all of their professional and emotional needs (Whitaker).

Proximity of support. Induction researchers have also studied the physical proximity of the professionals who provide assistance to beginning special educators and have generated a number of preliminary findings. Some researchers suggest that having the mentor placed in the same school as the mentee plays an important role in establishing positive relationships between them (e.g., Griffin, 2005); however, Whitaker (2000b) reports that 1st-year special educators possess a strong preference for mentors who are special educators over those placed in the same school. Still other studies suggest that beginning teachers access the teacher-next-door for assistance more often than the assigned mentor who may or may not be in close physical proximity (Babione & Shea, 2005; White & Mason, 2006).

Yet the issue of proximity is particularly difficult to address in rural or isolated areas where the close proximity of mentors to beginning special educators is relatively rare. Consequently, Irinaga-Bistolas et al. (2007) examined the influences of mentoring support and commitment to teaching on two sets of mentoring pairs in rural settings in Oregon (i.e., pairs located in the same buildings, and those who were not). Beginning teachers who had mentors in the same school building reported that their informational, instructional, and emotional needs were better met and scored higher on a standardized measure of commitment to teaching than those with mentors in other buildings. These beginning teachers also reported feeling part of their schools and having more supportive relationships with their mentors. Conversely, mentees with mentors in other buildings had higher ratings of the formal professional development they received and of their interactions with other professionals in their buildings than those with mentors in the same building. Interestingly, Boyer (1999) noted that mentors located outside of the school offered an "objective viewpoint that was not tainted by knowledge of the building culture or the dynamics of the staff within the school" (p. 69) and that personal conversations between the mentee and mentor were less likely to be repeated in the mentee's building if the mentor was placed elsewhere. Yet special educators in White and Mason's (2006) study did not seek help with special education paperwork or becoming acclimated to their schools if their mentors were located in another school or building. In sum, it appears that findings are mixed regarding the importance of placing special education mentors in close proximity to beginning teachers. Yet the issue is important given the small number of special educators that may teach in school buildings, particularly in rural areas.

Content of support. Several studies (Gehrke & McCoy, 2007; Giacobbe, 2003; Griffin, 2005; Irinaga-Bistolas et al., 2007; Walker-Wied, 2005; Whitaker, 2000b) have found that the content of mentors' interactions with beginning special educators is most often in the area of emotional support and that mentees rate this type of assistance highly. Emotional support generally entails support through listening, sharing experiences, and providing encouragement (Whitaker), and mentors have been found to facilitate the emotional support offered when they engage beginning teachers in problem-solving discussions (Griffin).

In addition to emotional support, beginning special educators report that information about the school and district as well as details about special education paperwork and procedures (i.e., the IEP, referral, placement, and re-evaluation process) are important content areas in which mentors provide worthwhile assistance (Boyer, 1999; Giacobbe, 2003; Nielsen et al., 2006; Tucker, 2000). Beginning teachers also appreciate receiving feedback from their Instructional Resource Teachers or instructional mentors, focused on their performance during team meetings and when implementing co-teaching models (Nielsen, et al.). They also value the expertise of their mentors in helping them adapt and select functional materials for instruction and develop strategies to motivate students (White & Mason, 2006). In general, Whitaker (2000b) found that the combined mentoring content that best predicted 1st-year SETs' overall effectiveness ratings of the mentoring they received included emotional support, materials and resources, system information pertaining to the school and district, and system information pertaining to special education.

For professional development opportunities offered during the induction year, beginning teachers report that content specifically addressing their special education classroom assignments is most useful. For example, one teacher of students with autism participated in a week-long training in TEACCH (Treatments and Education of Autistic and Related Communication Handicapped Children), and another who taught students with learning disabilities attended an Orton-Gillingham training program arranged by her mentor. These experiences were perceived as more helpful than generic efforts aimed at the professional development of all beginning teachers (Gehrke & Murri, 2006).

Yet even when experiences and programs are designed specifically for special educators, teachers report content areas in need of further development. *Bridges to Success*, a formal induction program with a significant mentoring component, was created for beginning special educators (Irinaga-Bistolas et al., 2007). By the end of the induction year, teachers who participated in this program indicated high levels of confidence in their knowledge of paperwork and procedures associated with special education, including the Individuals with Disabilities Education Act ([IDEA], developing the IEP and Individualized Family Service Plan [IFSP], and conducting IEP meetings. However, fewer felt they possessed adequate competence to address multicultural and diversity issues, support families, and integrate IEP goals into the general education curriculum (Irinaga-Bistolas et al.). These findings are similar to others (Walker-Wied, 2005; Whitaker, 2003) who found that although beginning special educators had access to content about the school and special education systems, materials, curriculum and instruction, discipline, program management, and collaboration, they reported needing more content and assistance in these areas than was provided.

Interestingly, the content of induction support may be compromised when a mismatch occurs between the teacher preparation experience and the school environment in which the new teacher is placed. Beginning teachers may be expected to implement instruction or teach in classroom arrangements that challenge philosophical beliefs formed in their preparation programs (Walker-Wied, 2005). For example, teachers may fully embrace the mandate for inclusive education, yet work in schools where their relationships with general educators are not always positive (Gehrke & McCoy, 2007). In situations like these, beginning teachers may require additional content that is quite varied depending on the nature of the conflicts or differences that arise in schools (Walker-Wied). In short, research suggests a preferred content of mentoring for beginning special educators, yet teachers also report needing more information than is typically provided.

Assessment and evaluation in induction. Very few studies in special education examined the purpose, characteristics, and implementation procedures associated with assessment and evaluation in induction. Although intuitively, assessment should be at the core of any induction program, we know very little about what effective assessment of beginning special educators should accomplish, what instruments or activities should be considered, or how assessment data should be used to further teacher development. Teacher quality, teacher retention, and student achievement are important outcomes related to induction, and effective methods for assessing progress in all of these areas are critical.

Martinez and Mulhall (2007) suggest that a systematic plan, including goals and expectations for the role of assessment and evaluation in mentoring programs, should be developed before programs are implemented. If the aim of assessment is to support and further prepare beginning special educators for their positions, then evaluation focused solely on determining teacher certification is potentially counterproductive (White, 1995). Researchers point to the importance of mentors assuming nonevaluative roles in which they focus on fostering teachers' professional growth (Boyer, 1999; Gehrke & McCoy, 2007; White & Mason, 2006).

However, research has revealed that mentors do serve in evaluative roles that require them to make decisions about certification and re-employment. In White and Mason's (2006) study of seven induction programs, mentors served as administrative evaluators. While the mentors thought they had successfully managed this role, beginning special educators identified this aspect of their mentors' role as a source of discomfort that interfered with the mentoring relationship. Teachers in this study found it stressful to reveal their problems and concerns to their mentors for fear of losing their jobs. Alternatively, when mentors assumed nonevaluative roles, mentees reported feeling comfortable to "ask anything or get anything from [the mentor]" (Boyer, 1999, p. 68).

Formal classroom observations conducted by principals are a recognized form of teacher evaluation in the induction year, yet have been criticized by beginning special educators for being too "generic" and not specific enough to address issues related to students with learning problems (Tucker, 2000). However, other beginning special educators viewed the constructive criticism and positive feedback offered by mentors on teaching strategies as helpful (White, 1995). Delivering feedback can be difficult for mentors and painful for beginning teachers; but Boyer (1999) suggests specific ways that mentors can deliver feedback effectively. Mentors in her study assumed professional roles as advisors or guides, rather than placing beginning teachers in subordinate positions during feedback sessions. These mentors avoided directly telling mentees what to do to solve their problems of practice and instead asked questions and made suggestions for changes. Successful mentors were not condescending, but positive and resourceful, or in one beginner's words, "she made me feel like I'm a competent teacher" (p. 71).

In an educational context that demands standards-based teaching (e.g., NCLB), the importance of standards-based evaluation in induction programs is vital. As part of the Council for Exceptional Children's [CEC] Mentoring Induction Project [MIP], White and Mason (2003) developed the *Mentoring Induction Principles and Guidelines* based on the CEC standards for SETs and the Interstate New Teacher Assessment and Support Consortium [INTASC] standards for beginning teachers. Guidelines for assessment and evaluation suggest that beginning teachers conduct self-assessments, and mentors observe the teacher regularly and provide post-observation feedback (White & Mason) during the beginning teacher's entire 1st year. Given the current focus on teacher attrition and teacher quality in special education, additional research related to the

assessment of beginning teachers' professional progress and continuation in teaching is indicated.

Summary and Discussion

In the not too distant past, almost all beginning teachers were expected to perform like, and assume duties expected of, more experienced teachers with little to no direction or support. Fortunately, interest across the nation in teacher induction has improved, and the number of beginning teachers participating in induction programs is increasing. Yet, the research has not kept pace with increases in the demand for induction; consequently, much remains unknown about designing and implementing optimal induction and mentoring programs, particularly those that serve special educators. The results of this research review, therefore, provide tentative recommendations for practice and several implications for further research.

Many of the findings in the general education literature related to mentors' characteristics are similar to those in special education. Beginning special educators, like their general education counterparts, prefer mentors who have similar teaching positions, professional experiences, philosophies or teaching styles, and personalities. Special educators, in particular, favor mentors who teach in the same disability area and possess knowledge of special education procedures, paperwork, and teaching strategies. However, novices also appreciate the assistance they receive from other teachers and colleagues. This suggests that in addition to those who understand the field of special education well, professionals outside of special education may offer valuable assistance to special educators, particularly when beginners are located in schools without other special educators nearby.

Special education researchers have focused attention on the influences of both formal and informal induction supports and in general have found that beginning special educators favor informal supports over formal programs. Teachers report that formal programs do not address their needs the way experienced colleagues do during spontaneous, unscheduled meetings. However, beginning teachers deem formal programs and professional development opportunities helpful when they address specific special education domains, such as IEPs and the teaching of students with disabilities.

Several studies report that beginning special educators frequently access their mentors for emotional support and rate this type of support highly. Yet, one has to wonder if the prominent need for emotional support results from beginners feeling frustrated or inadequate as professionals. Providing emotional support to beginners may not be as valuable as helping them become stronger teachers by increasing their knowledge and skills related to academic content, instructional assessment and strategies, and collaboration with colleagues and families. With improved professional competence, beginning teachers' need for emotional and psychological support may be reduced.

Finally, if the desired outcomes of induction for special educators are to increase teacher quality, teacher retention, and student learning, the results of research in special education reveal little about how to assess improvement in these areas. The research recommends that mentors assess beginning teachers but not serve as administrative evaluators who influence certification and employment decisions. The nature and extent of this assessment is speculative but may be built upon both summative and formative assessments that include both formal and informal measures. Considering ways to assess the entire induction program is indicated as well.

PART III: STATE AND LOCAL INDUCTION PROGRAMS IN SPECIAL EDUCATION

While the synthesis of general and special education induction and mentoring research is critical, it is equally important to seek information about efforts to support new teachers in state and local agencies. Unfortunately, there are few available evaluations or descriptions of existing induction and mentoring programs in special education. In an effort to locate programs, we conducted a comprehensive search. Initially, published information was gathered. An electronic search of EBSCO Host, ERIC, and GALE Group was conducted from 1990 to the present using the terms *special education, induction, mentor, mentoring, and teacher support*, in combination with words used to describe new SETs (i.e., *beginning, beginner, novice, early career, first-year*). This search yielded five articles. To identify programs that were not published, several efforts were employed. First, key personnel at the National Association of State Directors of Special Education [NASDSE] and the National Center for Special Education Personnel and Related Services were contacted. E-mails were sent to recipients of State Improvement Grants and State Personnel Development Grants who listed efforts to retain and increase the quality of their special education workforce. Finally, an electronic search of Google was conducted using the same search terms as listed above. This search yielded information about four additional programs.

The following section begins by reporting on a survey of state-level mentoring programs for beginning special educators and then provides an analysis of nine additional programs targeted specifically for these teachers. One promising program, the Special School District of St. Louis County [SSD], is then highlighted and described in depth. This section concludes with a discussion of programmatic considerations for researchers, LEAs, and SEAs.

NASDSE 50-State Review of Induction Programs

A recent survey conducted by NASDSE sought to identify which of the 50 states offered mentoring programs for new SETs (Müller & Burdette, 2007, p. 2). Thirty-eight states responded to the survey and 16 of these reported some type of special education mentoring program, although many do not differ from what is offered for all teachers. Six states were then randomly selected for follow-up interviews (Arkansas, Florida, Hawaii, Massachusetts, Oklahoma, and Washington). The interviews revealed that the majority (90%-100%) of special educators participated in state-wide mentoring programs for all teachers, only a small fraction of teachers participated in programs targeted specifically for special educators. Program features were described for all six participating states, including type and frequency of services, selection criteria, fiscal support, and outcome data. Mentoring services typically included a minimum number of contact hours or meetings, and some programs required logs documenting times and topics of discussion. Mentors were usually recommended by administrators or special education supervisors, and mentors had completed a minimum number of years teaching special education. Three of the 6 states required training for mentors. Efforts were also made across the 6 states to match veteran special educators with beginning teachers. Most programs provided stipends to mentors varying from \$500-\$1,200 annually. Only Hawaii hired full-time mentors. Funding for the programs came from State Improvement Grants, IDEA discretionary dollars, and other Institutions of Higher Education [IHE], LEA, and state monies. Five of the 6 states reported collecting some type of outcome data, commonly including satisfaction surveys, focus groups,

and pre- and post-assessments. Only Arkansas and Florida reported SET retention data, 78% and 83% respectively.

While NASDSE's survey contributes to the scant information on special education induction and mentoring programs, several limitations of this data should be noted. First, the purpose of the report was to describe mentoring programs specifically designed for beginning special educators; however, states often referenced induction programs for all teachers. For example, Oklahoma, Hawaii, and Arkansas reported their required minimum number of contact hours between mentors and mentees for all teachers. Massachusetts and Washington did not report any contact information. Only Florida's program, Mentor-Link, which is designed for beginning special educators, reported group-based weekly meetings. Given that the majority of induction information from states was from their state-wide programs for all teachers, it is difficult to utilize the data from this report in tailoring new programs to the specific needs of beginning special educators. Second, outcome data related to teacher retention were only reported from two states, and little is known about the methodology used to collect this data. Both Florida and Arkansas only reported percentages, leaving many unanswered questions (e.g., How was retention measured? Is the retention rate based on the beginner returning to the classroom a 2nd year or the teacher's intent to return?). As such, these rates should be interpreted cautiously. Finally, no information was gathered about the quality of beginning special educators. Much still remains unknown about the extent to which states and LEAs are increasing the retention and quality of beginning special educators.

Special Education Induction Programs

The purpose of the following review was two-fold. First, authors sought to identify and describe induction programs specifically designed for beginning special educators. **Table 4** outlines features of the nine induction and mentoring programs specifically targeted to beginning SETs.

These nine programs were located in eight states, although none were implemented state-wide (see **Table 4** for locations). A review of program goals, components and available data revealed large disparities in the extent and quality of information reported from each program. However, results also revealed commonalities across programs including (a) clearly articulated goals, (b) a focus on mentoring, (c) characteristics of mentors, (d) delivery of support, (e) frequency and proximity of support, (f) content of support, (g) individualized support, (h) extended support, and (i) outcome data. A discussion of general results related to each of these topics follows.

Clearly articulated goals. The research literature in general education strongly emphasizes the importance of obtaining goal clarity in designing induction programs (e.g., Arends & Ragazio-Digilio, 2000; Feiman-Nemser, 2001b). All nine induction programs reviewed included goals for program implementation. These programs had one common goal: to increase beginning teacher retention. Beyond this shared goal, programs included a variety of other goals, primarily focused on providing support and promoting job success. For example, one goal of the Beginning Teacher Support and Assessment Program for Special Education [BTSA-SE] was to "enhance collegiality and heighten teacher confidence" (Kennedy & Burnstein, 2004, p. 445).

Focus on mentoring. Since existing research studies focus heavily on the mentoring component of induction, it is not surprising that the primary focus of all nine programs in this review was also on mentoring beginning SETs (Griffin et al., 2003; Ingersoll & Kralik, 2004; Strong, 2005). In an effort to analyze mentoring features and compare these programs with

results from existing research, information was organized into the same categories as in the previous research review: (a) characteristics of mentors, (b) delivery of support, (c) frequency and proximity of support, and (d) content of support. This information is summarized in **Table 5**.

Characteristics of mentors. Programs included descriptions of both personal and professional characteristics of mentors. Three of the nine programs reported selecting mentors based partially on their personal characteristics. The Special School District sought mentors who are well organized, complimentary of others, respectful, responsible, and willing to share ideas. The Mentor-Link program specifically chose mentors who are passionate about teaching students with disabilities. The Bridges to Success program employs the most elaborate selection criteria concerning personal characteristics of mentors. In this program, efforts were made to match mentors and mentees by similar personalities, teaching philosophy, gender, and age. Existing research supports the importance of the personal characteristics of the mentor (e.g., Giacobbe, 2003; Irinaga-Bistolos et al., 2007). Regarding the professional characteristics of mentors, all nine programs reported carefully matching veteran special educators with beginning special educators. At a minimum, beginning teachers were matched with veterans. However, four programs aimed to match teachers by grade level, teaching role, and discipline (Project Launch, Bridges to Success, Kentucky Internship Program, and Project GATE [Getting Assistance to Teach Effectively]). Research suggests this type of careful mentor-mentee matching will result in higher satisfaction with mentors and perceived mentor effectiveness, as reported by mentees (Whitaker, 2000, 2003; White, 1995).

Delivery of support. Support was delivered in numerous ways, including classroom visitations, telephone, e-mail, before- and after-school meetings, online forums, and unscheduled contacts. While the research review reported that unscheduled meetings with mentors and informal assistance with colleagues were rated most helpful by beginning special educators, these were neither encouraged nor reported on in the nine programs (Billingsley et al., 2004; Whitaker, 2000b). Instead, each program focused on scheduled contact both inside and outside of school, and five of the nine programs included time for the mentor to observe the mentee. According to some research, this attention to scheduled contact between mentors and mentees is highly valued and facilitates positive relationships (e.g., Boyer, 1999; Gehrke & McCoy, 2007).

Frequency and proximity of support. The frequency of support provided by the mentor was taken into consideration in each program, in some cases quite extensively. All programs included a minimum of weekly contact, but some programs went way beyond this frequency. For example, mentors in the Teacher Scholars Program spent 6-8 hours with their mentees each week (Carr & Evans, 2006). The Kentucky Internship Program required mentors to spend 20 hours in their mentee's classroom and 50 hours with their mentees outside of the classroom over the school year (McCormick & Brennan, 2001). The design of these programs is supported by research showing the frequency of contact between 1st-year teachers and their mentors affects the perceived effectiveness of the mentoring experiences (Whitaker, 2000b).

Research studies suggest proximity plays an important role in establishing relationships between mentors and mentees (e.g., Griffin, Jones, & Kilgore, 2006). Seven of the nine programs chose mentors based at the same school as the beginning special educators. The two remaining programs had mentors that were district-based, full-time mentors. Although these mentors were not on the school campus, there were other benefits to this type of mentor. Full-time status in the Teacher Scholars Program allowed mentors to spend 6-8 hours a week in the classroom, more time than any other program. The full-time mentors in SSD, instructional facilitators, allowed for

a better match of mentor and mentee because SSD serves 23 partner districts. Programs weighed the importance of proximity to time in the classroom and matching mentor characteristics.

Content of support. Although research studies found that beginning teachers ranked emotional support highly (e.g., Gehrke & McCoy, 2007; Walker-Wied, 2005; Whitaker, 2003), only one induction program explicitly aimed at providing this type of support. The Bridges to Success program specifically trained mentors to foster emotional support (Irinaga-Bistolas et al., 2007). The other eight programs focused on improving the instruction of beginning teachers in various ways. For example, Project Launch mentors and mentees developed an action plan with three instructional goals, and SSD used student data to inform instructional decisions. In addition to improving instruction, other content covered in mentee-mentor sessions included behavior management, legal requirements, school issues, enculturation, working with parents, immediate classroom concerns, portfolio development, classroom environment, and reflection.

Individualized support. One aspect of the nine induction programs is the individualized support provided to beginning special educators. While not explicitly stated by any program, it appeared these programs recognized the complexity and variance of contexts faced by beginning special educators and attempted to address their unique needs. Five of nine programs required the mentor and mentee to develop some type of personal plan and goals for improvement. For example, the beginning teachers in the Bridges to Success program completed a self-assessment at the beginning of the year that the mentor-mentee pair used to develop goals and an implementation plan based on the specific needs of the beginner. The Mentor-Link program exemplifies another way to meet individual teacher needs. Mentor-mentee meeting topics were generated entirely by the group, which consisted of a mentor and several new teachers. Each week, the mentor addressed the specific concerns of beginning teachers within the group. The group was often charged with researching topics from their discussion and reporting their findings during the following week's discussion.

Extended support. Although not reported in the research review, the majority of the nine programs offered mentor support beyond the 1st year. Three of the five programs continued support through a 2nd year (BTSA-SE; Project GATE; and Gaining Expertise through Mentoring and Support [GEMS]). Mentor-Link continued support for as long as the beginning teacher wished to participate. In many cases, teachers participated through 5 years, and over time shifted their role from mentee to mentor within the group. The Special School District of St. Louis County provides mentoring through 2 years and additional support throughout the teacher's professional tenure with the district.

Outcome data. The majority of the nine programs provided evaluation data to support the effectiveness of their programs, although the rigor of data reported varied significantly. Seven of the nine programs reported some type of retention data, some at impressively high rates. The Bridges to Success Program and Mentor-Link provided data on the teachers' intent to stay in the classroom as reported by a year-end survey. Mentor-Link and the Bridges program reported intent to remain at 90% and 84%, respectively.

Other programs collected actual retention data. BTSA-SE reported a 3-year retention rate of 95%. Of the 11 teachers who participated in Project Launch, 82% remained in teaching. Six of seven teachers in the first cohort were in their 5th year teaching. In the second cohort, one of two teachers was in her 3rd year teaching. In the final cohort, one of two teachers returned to teaching for a 2nd year. The GEMS program collected data for 4 school years, increasing their

retention rate each year, starting with 36% retention rate after 1 year, in their pilot year, 2000-2001, and increasing to 85% in 2003-2004. The Teacher Scholars Program reported an astounding 7-year retention rate of 95%, but this rate included both general and special educators. SSD collected data for the longest time period from 1996-2007. The lowest 1-year retention rate was reported at 74% during their 1st year of implementation, and their highest retention rate was 94%. No information on retention was reported from Project GATE or the Kentucky Internship Program.

Five programs also collected other types of evaluation data, typically through surveys of mentors and mentees, and sometimes through interviews or mentor-mentee logs. Information gathered included (a) frequently covered topics addressed during mentoring sessions and annual goals, (b) beginning teacher competence, and (c) personal satisfaction with the mentor-mentee relationship.

Analyses of mentoring logs and actions plans revealed beginning teachers focused on a variety of topics during their mentoring time, which varied considerably across programs. For example, mentor-mentee logs from BTSA-SE indicated the majority of time (82%) was spent on professional growth, including instructional planning, implementation, and reflection. Beginners participating in Project Launch (63.6%) focused their meetings primarily on goals related to responding to individual student differences. Although these data reveal significant differences in discussion topics, this is not entirely surprising. In general, topics covered by mentor-mentee teams reflected the design of the program. For participants in BTSA-SE, professional growth is a major program component and also tied to a formative assessment for beginners. Participants in Project Launch chose their focus of goals from a Teaching Framework that included different categories deemed important for beginning special educators.

Several programs also reported increases in beginning teacher competence, although *competence* was defined in different ways. Results from participants in Mentor-Link during the 2002-2006 school years indicated that 95% of mentees rated significant growth in competence, specifically in the areas of collegiality, self-reflection, decision-making skills, and focusing on positive outcomes for students. Irinaga-Bistolas et al. (2007) reported that nearly all the mentors (92.9%) in the Bridges to Success program indicated their mentees gained considerable competence over the course of the year. SSD reported the majority of 1st-year (85%) and 2nd-year teachers (79%) demonstrated evidence of using data to make instructional decisions.

Four programs reported high levels of satisfaction with the mentor-mentee relationship. The majority (87.5%) of beginning teachers in the Bridges to Success program reported that their mentor was committed to their success, and 75% reported that their mentor helped them reflect on and implement knowledge and skills acquired through professional development activities. Similar responses were reported from participants in BTSA-SE, with 78% of beginning teachers valuing support from their mentors. Project Launch included quotations from beginning teachers speaking favorably of their relationships with mentors. Finally, beginning teachers from SSD rated relationships with their mentors on establishing trust and rapport (94%); offering growth and learning (92%); improving instructional performance (80%); and overall usefulness of mentoring (92%).

It is important to note the method of data collection, analysis, and reporting of findings varied greatly across the seven programs that provided data, and therefore results should be interpreted with caution. Only one program, Bridges to Success, rigorously reported their outcome data, specifically describing the sample, data collection and analysis methods, response rates, and

reliability rates. The remaining six programs primarily reported percentages from survey questions and retention data. This leaves many unanswered questions. For example, Kennedy and Burnstein (2004) reported 190 beginning SETs participated in BTSA-SE during the first 4 years of implementation. Beginning teachers and mentors completed a program survey rating the five components of the program, and these ratings were reported in percentages. However, it is unknown how many surveys were used in the analysis. Did all 190 beginning teachers complete the survey? Since mentors in this program are full-time, did each mentor complete one survey or did they complete one survey for each teacher they mentored? In another example, the Mentor-Link program reported that 95% of the beginning teachers in their program increased their competence in various areas. However, in-depth information about the survey questions, response rate, and analysis methods were not reported.

Spotlight

Below, one of the nine programs is highlighted. This innovative program not only boasts high retention rates, it also includes the most ambitious agenda for supporting beginning SETs. The purpose of this spotlight is to give a snapshot of one promising program designed to support the retention and quality of beginning special educators.

While Missouri requires a mentoring program for all beginning teachers, its Special School District provides an induction program far beyond the minimum state requirements. SSD is a public school system that serves 28,000 students with special needs. Information gathered about SSD was obtained from conference proceedings, district documents, and personal communication with key induction personnel. Since the program's inception in 1996, the SSD induction program has undergone significant changes to strengthen and expand the program. The current program includes two academies and a research and collaborative learning strand to support beginning teachers through their tenure of employment with the district.

Academy I is the most intensive, with 3 years of activities aimed at supporting the development of fundamental skills for all beginning SETs. SSD has a theme for each year of Academy I. The 1st year focuses on classroom supports for instruction, the 2nd year on effective teaching and the 3rd year on thoughtful teaching.

Academy I. During the 1st year, beginning teachers participate in new teacher orientation consisting of 2 full days. The 1st day, beginning teachers meet with their supervisors and discuss professional responsibilities. On day 2, beginners meet with their instructional facilitators (district-wide mentors). Instructional facilitators spend a minimum of 25 hours a year with beginners to support implementation, analysis, and reflection on Academy I Classroom Supports for Instruction Skill Sets (See **Table 7.**). Instructional facilitators typically conduct classroom observations and provide feedback. Other support includes coaching and modeling. According to one instructional facilitator, "Instructional mentors are responsible for planning, implementing, and evaluating professional development based on research-proven effective instructional practices" (K. Zimmerman, personal communication, August 15, 2008). All beginning teachers are expected to submit student data. The instructional facilitators then coach teachers in how to use their student data to inform instruction and monitor student growth. The beginner and instructional facilitator meet face-to-face, by e-mail, and through telephone contact. During these meetings the mentor and mentee keep a Collaborative Log of Coaching Conversations, which serves as a record of the beginning teacher's growth. The mentor and mentee record key points of their conversation including the type of conversations, skill sets related to the topic, and the

time and focus of their next meeting. Beginners in Academy I are also assigned a veteran teacher in the building who provides school-level mentoring. Mentors devote a minimum of 7 hours of support to the mentees in the 1st half of the year, and 3.5 hours during the 2nd half of the year. The assignment of a veteran teacher in the building assists beginners with their immediate questions. Finally, beginning teachers in their 1st year are required to observe at least two veteran teachers.

The primary difference between year 1 and years 2 and 3 in Academy I is the professional development goal. In the 2nd and 3rd years, the goal of the program shifts to focus on (a) the process of crafting quality instruction; (b) assessing, planning, and delivering instruction; and (c) reflecting and evaluating instruction. Instructional facilitators and peer coaches work together to assist beginners in these areas.

Academy II. Designed for teachers in their 4th and 5th years of teaching, Academy II has as its primary goal to improve the special educators' use of data to increase student achievement. The skill sets for Academy II focus on analyzing student data to drive instruction and using research-based strategies to increase student achievement (see **Table 7**). The Research and Collaborative Learning strand provides support for professional learning for teachers in their 6th year and beyond through working collaboratively with their peers, supervisors, and partner districts to analyze student data and implement research strategies to meet student needs (see **Table 7** for this skill set).

Cost of implementation. SSD also reports the cost of implementing the induction program. The total cost budgeted for 2 years, 2007-2009, was \$5,500 per beginning teacher. This includes salaries and benefits for administration, and 11 full-time instructional facilitators, release time, materials, and stipends.

Outcome data. SSD collects extensive outcome data annually for their induction program in order to assess program success and make recommendations for further improvement. Several data sources are used to assess program goals. The following includes an overview of results from the 2006-2007 school years regarding (a) professional growth, (b) mentor-mentee relationships, and (c) retention. For more in-depth information, see **Table 7**.

The primary goals of the SSD induction program are to retain efficacious teachers and to increase student achievement. The district's expectation of beginning teachers is to engage in professional learning. In particular, Academy I aims for beginning teachers to use student data to inform instruction. As such, beginning teachers are expected to submit pre and post student data. A review of these submitted data indicated the majority of 1st-year (85%) and 2nd-year teachers (79%) demonstrated evidence of using data to make instructional decisions. However, lower percentages (45%) of teachers were successful in identifying a student behavioral goal and improving it by at least 25%. An analysis of the Continuum of Skill Set Development indicated that 46 of the 52 beginning teachers (88%) improved in at least one targeted skill set area and provided supporting student evidence. Students (n=179) of 1st-year teachers were also surveyed using questions directly related to the skill sets in Academy I. Results of the student survey suggested generally positive perceptions of beginning teachers, indicating these teachers were indeed meeting the skill sets. Instructional facilitators met with beginning teachers to analyze and reflect on the survey results and develop personal learning goals to address any areas of concern. Finally, beginning teachers were asked to complete a survey assessing their implementation of effective instructional practices. The results suggest a large majority (88-100%) of beginning

teachers frequently use data and observations to make teaching decisions, monitor student performance, and adjust instruction as needed. These results may not be representative of the entire population. The survey was sent to all 1st-year (n=68) and 2nd-year (n=51) teachers. The response rate was low, with only 17 of the 1st-year teachers, and 26 of the 2nd-year teachers returning the survey. Moreover, because these results are self-reported, there may be a tendency to give high ranks.

Outcome data were also reported on the mentor-mentee relationship. First, a review of the Collaborative Logs of Coaching Conversations indicated that each beginning teacher received an average of 33 hours a year of job-embedded support from their instructional facilitator, 8 hours more than required. The most frequent topics of conversation included universal supports and quality instruction, not surprising considering these topics are the focus of the skill sets for Academy I. Beginning teachers were also asked to complete an online survey rating their perceptions of the relationships with their instructional facilitator. Results suggested positive teacher perceptions regarding the impact of the mentoring component in reference to establishing trust and rapport (94%); opportunity for growth and learning (92%); overall usefulness (92%); and improving instructional goals (80%).

SSD also reports beginning teacher retention rates. **Table 8** indicates the percentage of new teachers who returned for a 2nd year of teaching. The lowest rate of 74% was during the program's 1st year of implementation. Since the 1st year, rates range from 83-95%.

Summary and Discussion

The nine programs described in this section were all designed to increase new teacher retention, and, in some cases, to improve their instructional practices. These programs offered a variety of models for supporting beginning SETs, but there were also similarities across programs. Each of the nine programs included clearly articulated goals and emphasized mentoring as their primary support for beginning teachers. The majority of programs provided individualized assistance for new teachers. These programs often offered services beyond the 1st year of teaching and nearly all collected some type of outcome data.

The design of the nine programs somewhat aligns with what we know from the research on beginning special educators needs and concerns and their induction experiences. All nine programs focused on mentoring as the key strategy to support beginning special educators, which is not surprising given that mentoring was also the main topic examined in available research studies. However, the research review revealed facets of mentoring often not attended to in programs. For example, results from several studies indicate mentors frequently provide emotional support, and mentees rank this type of assistance highly (e.g., Gehrke & McCoy, 2007; Griffin et al., 2006; Walker-Wied, 2005). None of the programs described in this review explicitly aimed to provide this type of support. Moreover, many of the induction programs provided individualized support, an area that did not surface from the research. A focus on individualizing induction seems to support what we know about the diversity of beginning teachers in regard to their preparation, classroom placements, and student populations. Individualizing induction programs is a potential solution to meet beginning SETs' diverse needs and concerns.

Although the majority of the programs collected some type of outcome data, the rigor involved in data collection is often questionable. This is not surprising given that many of the programs

are designed at the local level, and program administrators are collecting data for their own needs and not for research purposes or to disseminate information. Of the data collected, many retention rates were high, suggesting that supports provided by the programs contributed to the retention of participating special educators. Moreover, many studies reported positive mentor-mentee satisfaction, suggesting this relationship assisted beginning teachers in their early years of teaching. However, available data could not be used to determine whether programs influenced teacher quality or student outcomes, arguably an important goal for such programs.

The sustainability of programs is also a cause for concern. Of the nine programs described, six are no longer being implemented. Initially, these programs were funded through grants and when the funding period ended, so did the program. The remaining three programs are funded through state and local monies. This highlights the need for states to monitor induction efforts and provide financial assistance to maintain those programs shown to increase the retention and quality of beginning special educators.

PART IV: RESEARCH ON INDUCTION AND TECHNOLOGY

Mentoring and Technology

With the enhanced use of technology in the classroom, the application of e-learning/online learning for teacher education and ongoing professional development, and the emphasis on technology-based solutions in the greater society, a promising complement to face-to-face mentoring and efforts in teacher induction is found in innovative uses of computer-mediated communications [CMC] and Internet-based tools. For example, technology to support mentoring in professions outside of education is increasingly becoming a practical solution. In medicine, telemedicine has been an accepted practice for over a decade in order to meet the needs of rural clients as well as patients for whom appropriate treatment is accessible due to geography, economics, or other pertinent factors. In pre-K-12 schools, telemedicine technology is often used to bring the doctor to the school. This healthcare delivery system has proven effective in overcoming significant access issues, including socioeconomic condition, transportation availability, and language barriers. For instance, the University of Kansas's award-winning TeleKidcare® enables school children with acute or chronic health conditions or mental or behavioral health concerns to “see” the doctor from the convenience of their school nurse's office. Typical services include diagnosing and treating acute health concerns; consultation and education on managing chronic health conditions; assessing, treating, and managing ADHD; and assessing childhood and adolescent depression and providing treatment or therapy.

Computer-mediated mentoring, or e-mentoring for our purposes, is the use of technology-based communication forms such as e-mail, discussion boards, chat rooms, blogs, and growing Internet-based solutions that are changing the way mentors and mentees can interact, especially during the induction process. Single and Müller (2001) define *e-mentoring* as a relationship between a more experienced individual (mentor) and a less skilled or experienced individual (mentee), primarily using CMC, that is intended to develop and improve the skills, knowledge, confidence, and cultural understanding of the mentee to help him or her succeed, while also assisting in the development of the mentor.

Attractive attributes of e-mentoring are related to its ability to offer differentiated experiences depending on the needs of the mentee—addressing immediate needs or concerns of new teachers (e.g., classroom management) while supporting and keeping them in the classroom during the experience. In addition, the mentor/facilitator is not limited by geographical requirements, but instead can be selected based on his/her expertise and the specific needs of the mentee. Instead of looking for the “best fit” within a building or district, e-mentors can be selected from a greater pool of experts with the skills needed by the new teacher. That is, a mentor in a different town, region, or state with the same teaching assignment has more to offer a mentee than a mentor in the same building who teaches a different subject (Jaffe, Moir, Swanson, & Wheeler, 2006).

The online environment also offers access to an underlying theory of learning which integrates key components that make professional development effective. For example, e-mentoring is not limited to a specific time period, unlike other traditional intensive programs. Instead, the duration is dependent on the mentee's needs. Similarly, the instructional, cultural and related unique needs of the mentee (e.g., content, standards) serve as a cornerstone to the process (Hebert, Clift, & Wennerdahl, 2008). Again, the mentor is selected based on these needs rather than “place” considerations.

For teacher induction, the majority of e-mentoring examples reside in the sciences and mathematics (Herrington, Herrington, Kervin, & Ferry, 2006). At this time, there are limited research-based studies featuring special education induction efforts where e-mentoring is a critical component of the investigation. Instead, presentations and publications offering program overviews are beginning to share the e-mentoring story with respect to special education; however, the research in this area is restricted to general education (Israel, Pattison, Moshirnia, & Newton, 2008). That said, there are components from a growing literature base that has application to special education. For instance, the technologies featured in these programs offer lessons for future application. Current applications include blogs, discussion forums, interactive video, point-to-point video, digital video, learning modules (e.g., Moodle-based), virtual rooms (e.g., via Maratech), private chat rooms, and basic e-mail; all have implications for special education mentoring/induction efforts.

Jaffe et al. (2006) outline one of the larger and longest running e-mentoring programs in the country, which is representative of the general education efforts thus far (e.g., in math and sciences). Their description of an online mentoring and professional development program for new science teachers offers an argument for such programs, a logic model for e-Mentoring for Student Success (eMSS), and an introduction to their multi-year effort in collaboration with the National Science Teachers Association [NSTA] and the New Teacher Center at the University of California, Santa Cruz [NTC]. While not research based, the chapter presents an argument for e-mentoring, a rationale for teacher learning during the induction process, an overview of the infrastructure and technology, and formative and summative findings that seek to refine and extend the model for further implementation and research.

Introduction – Current Research on E-mentoring

In this section, we share information relevant to e-mentoring in two distinct components. The first offers a traditional review of the research that has been conducted on e-mentoring during initial teacher induction. The studies considered and listed in **Table 6** include induction experiences, thus remaining consistent with earlier research considered relevant to teacher mentoring and the overall induction process. The second part of this section offers knowledge gained from current e-mentoring programs that support novice teachers. This information was gained through a series of interviews, e-mails, and interactions to better understand practice that may not be reflected in current research. It should be noted that while SETs are currently being served in an e-mentoring environment, both the literature and the current practice review focuses on GETs. Why? First, while the research in preservice teacher education programs reflect e-mentoring applications (e.g., supervisor to preservice teacher education student), teacher induction efforts concentrate on general education. Likewise, established e-mentoring programs that have received initial funding for their efforts come primarily out of the math and sciences and do not primarily focus on special education at this time. Thus, pilot e-mentoring projects and sustainable efforts are often tied to external resources.

Table 6, an overview of the e-mentoring studies included in this review, shows that the majority of studies feature e-mentoring in the form of text-based communications (e.g., e-mail, discussion forums) between the mentor and mentee as well as between mentee and mentee. While some studies do feature more interactive technology-based solutions, current research appears to focus on traditional Internet-based applications (Hebert et al., 2008).

The findings in **Table 6** from e-mentoring studies are organized into five components—publication, type of e-mentoring technology, purpose for the technology, sample size, and in most cases, note on whether both mentee and mentor provided data, measures used to collect data, and synthesis of relevant findings. Because this area is relatively new, we rely on the general education literature to consider the roles of technology and its applications to the mentoring experience. We expected that many lessons learned would be applicable to the special education mentee-mentor interaction, particularly considering the need to often go beyond the traditional geographic area to find appropriate mentors for the novice SET.

Technology-based Solutions to Support E-mentoring

While one does not often think of technology solutions as traditional, the majority of e-mentoring studies feature text-based communication in the form of e-mail and/or discussion board or forum entries (French, 2004; Gareis & Nussbaum-Beach, 2008) as the primary format for mentor-mentee interaction. Often mimicking face-to-face communication, common text-based formats appear to have some characteristics in common with teacher mentoring (Eisenman & Thornton, 1999). That is, the novice teachers' ability to ask questions from one or more voices of experience, address issues pertinent to their struggles, seek others who are experiencing similar problems, and simply vent do not appear to require sophisticated technology-based solutions (Davis and Resta, 2002).

For the most part, the mentoring relationship with the novice teacher does not appear impeded by the technology used. Through e-mentoring, beginning teachers appear to engage mentors in the typical mentoring process—asking questions specific to issues, seeking advice from the seasoned professional, and generally looking for a shoulder to lean on (Jaffe et al., 2006). The use of e-mail and discussion boards reported these and similar types of interactions; the only differences were the time of day shared, the manner in which the information was provided, and the ability to archive responses (e.g., answers) into a series of formats (e.g., Frequently Asked Questions).

In using text-based formats, mentor-mentee interaction appears accessible to varied users. This is an assumption though, because a selection criterion for the technology medium appears to be a secondary concern for the majority of studies (McDiarmid, 2007). Instead, the tool selection appears to be focused on how the mentee and mentor can communicate. That is, the need to interact at a distance or in a flexible format appears to be the initial reason for the e-mentoring, and the technology-based solution is then identified as a way to facilitate and support this interaction (Chen & Price, 2006). Interestingly, more recent e-mentoring studies (Gareis & Nussbaum-Beech, 2008; Gutke & Albion, 2008) appear to adopt technologies that provide varied features to enhance the exploration of the mentoring process at a distance. For example, Gareis and Nussbaum-Beech use asynchronous discussion boards within a Web-based product called Tapped In,¹ which advertises itself as the online workplace of an international community of education professionals. Thus, while still primarily a text-based discussion forum, the study features a tool that was built for educators to interact online to further student achievement. However, the technology solution is again secondary to the need for mentoring at a distance. That is, while recent e-mentoring research reflects more sophisticated Internet-based tools, the use of the tool, the manner in which the mentor and mentee are engaged, the research questions, and similar components appear to stress familiar, more traditional themes represented in earlier e-mentoring research (e.g., mentor-mentee engagement, facilitation of text-based interaction).

¹ tappedin.org

By not requiring synchronous communication, users have flexibility in when they post questions, answers, or general comments. Archiving of e-mails and discussion board entries offers flexible and ongoing access on the part of the mentor or mentee. Similarly, the accessible nature of e-mail and discussion forum postings allows for easy use at home, school, the community environment, and possibly cell phone (although this was not stated as a platform used) on the part of the user. Of course, the fact that e-mail and discussion forum postings required an individual sign-in allows users to track correspondences by the mentor or mentee as well as the researcher involved in collecting the respective data.

The text-based technology appears to mimic face-to-face mentoring (e.g., there are questions and answers); however, it is interesting to note that the current research does not compare itself to traditional face-to-face mentoring. As the majority of studies investigate issues similar to teacher mentoring research (mentor-mentee communication, interaction, support), the thrust of the research appears to ignore whether the qualities of e-mentoring, when compared to traditional face-to-face, alters the process in a positive or negative way. Instead, the current research appears to center on the need for the mentoring at a distance and the impact of this format on the mentor-mentee interaction. This may explain why neither the technology-based tools nor the traditional face-to-face mentoring comparison is a primary focus in the research study.

Livengood's (2007) research is representative of an effort that employs interactive Web-based solutions, yet e-mail and text-based discussion forums appeared to continue to be the tools of choice. The study engaged 51 mentors who assisted novice teachers through online teacher induction programs and utilized technological venues within the program to deliver components. Across the multiple sites, this study found that electronic mail, bulletin boards, chats, Web sites, video conferences, video streaming, telephone calls, videotapes, and/or audiotapes were used to support the mentor and mentee. For the mentoring component, e-mail and discussion bulletin boards were the most popular. E-mail, telephone, bulletin boards, face-to-face meetings, video conferencing, and chats were available for supporting novice teachers, in addition to other means of communication between mentors and novice teachers seeking emotional support. Findings reported that e-mail was employed for novice teachers to share reflections with their mentors 76% of the time. Reflections were posted via bulletin boards 59% of the time. Only 24% of program participants reported novice teachers using chat sessions to reflect and interact with mentors. Thus, the majority of the interactions took place in an e-mail or a discussion form format.

Nature of the mentoring. While Internet-based tools do not appear to be the primary variable for e-mentoring studies, the need for the distance solution is central to the e-mentoring process. Whether it was limited access to appropriate in-building mentors, mentees feeling vulnerable when asking for in-building support, expertise identified at alternate sites, scheduling conflicts necessitating alternative formats, or similar situations, central to all studies is the mentor-mentee interaction and overall process. With this in mind, researchers for the most part were particularly interested in the impact of the mentoring relationship.

Gareis and Nussbaum-Beach (2008), for example, is representative of the studies in **Table 6**, i.e., they examined the impact of an online group-mentoring program featuring 13 novice teachers who were recent graduates from a teacher education program. The online group-mentoring program, which was referred to as Electronic Networking to Develop Accomplished Professional Teachers [ENDAPT], featured a customized group-mentoring environment constructed in the virtual learning community Tapped In. Inside the virtual "room," core discussions took place in a

common area (among all mentors and novice teachers) in an asynchronous manner. The discussions were facilitated by a researcher who also served as the virtual community organizer. While the facilitator was the center of the organization of the community, the mentor and mentee interacted beyond the structure established by the facilitator. Threaded discussion between the veteran and novice teachers began in September and continued through June of the following year, with the facilitator prompting discussion board interaction across the project.

The study set out to learn who was communicating with whom (direction), why they were communicating (function), and what they were communicating about (content). Researchers examined the ENDAPT postings that were submitted as part of discussion threads of all 24 participants (mentees and mentors). Reviewing the overall postings, Gareis and Nussbaum-Beech (2008) found that of the 526 posts in the online mentoring forum, 71% were made by mentors and 29% were written by novices. While this indicates a significant amount of the interaction was directed by the mentor, the numbers show that the electronic format did foster mentor-mentee engagement, that is, the technology-based forum was used by both the mentor and the mentee to support early career challenges. For example, on average, each mentor posted 34 times and each novice teacher made approximately 12 posts. Elementary-level novice teachers posted more frequently than secondary novices (58% compared to 42% of the total number of novice posts). Mentors tended to be somewhat more verbose than novices, with an average word count of 201 words per post, compared to an average of 134 words per post for novices. Regardless, online interaction did occur to further support the early career teacher; and this mentoring involved participation by both the mentor and mentee.

Likewise, Abbott (2003) found that novice teachers reported that their telementors helped them by providing profession-related developmental assistance, ranging from practical teaching suggestions the novice teachers could immediately apply in their classrooms to general suggestions that helped them assimilate into the social and professional cultures of teaching. The majority of these novice teachers also felt that their telementors provided them with valuable personal and emotional support, characterized by qualities that included caring, attentiveness, and positivity. Thus, the format for exchange was unique; however, the type of information sought and the answers provided were also within the realm of traditional face-to-face support.

Bice (2005) found that novice teachers developed an advanced awareness of student culture and learning characteristics and adapted their practice to foster a climate of student respect. Furthermore, novice teachers who were identified as having a strong awareness of their own and their students' cultures advanced their understanding of multicultural teaching competencies further when engaged with an e-mentor.

Continued learning, or building on and extending preservice teacher preparation content, is also noted as a key component of mentor-mentee interaction. Reflective of traditional face-to-face interaction, the e-mentoring exchanges involved content and practice similar to preservice preparation. Mentee questions or concerns often centered around issues first introduced and taught as part of their undergraduate or graduate curriculum, and the interaction solidified much of the information. Livengood (2007), for example, was particularly interested in ongoing learning (professional development) of novice teachers participating in teacher induction programs. Employing an array of mentors, Livengood wanted to learn whether the novice teachers enhanced their ability to address learning styles of students representing diverse populations as well as the novice teachers' subsequent ability to use varied learning strategies to teach a diverse student population.

In considering the nature of the mentor-mentee relationship, research indicates then that the technology does not appear to impede this interaction. Instead, studies find that the issues relevant for general mentoring are applicable to e-mentoring. Conclusions are limited in that more research is needed; however, current efforts illustrate that face-to-face and/or e-mentoring communications have similarities.

Peer and mentor support. Smith and Ingersoll (2004) found evidence that teachers who are provided with support via mentoring and induction activities in their early years of teaching are less likely to leave the profession. Whether face-to-face or online mentoring strategies are used, there is clear evidence to suggest that these programs all provide much-needed support to teaching neophytes. The establishment of online communities allows the development of a community of peer support that is lacking for many beginning teachers (Herrington et al., 2006). In these studies, support appears to have taken place for both the mentee and the mentor, especially in online forums where groups of mentees and respective mentors posted thoughts accessible to the larger community of learners. Of course, these online formats also allowed private one-on-one conversations; however, studies appear to indicate the greater benefit was within environments where novice teachers could access a mentor as well as peers (Taylor, 2007). Access to peers who were experiencing similar issues, challenges, and classrooms helped them understand that the novice teachers are not alone in their classroom concerns.

From the mentors' perspective, they were able to address the mentees' feelings of isolation in the form of direct feedback, narratives that offered stories of their own experiences, and regular support to ensure that the mentee was not alone. Narratives offered exceptional support in that the story-based format opened the mentor and mentee to future topics for engagement while also answering the original question (Hawkes & Romiszowski, 2001). While not stated directly, the narrative appears to have illustrated the mentors' human side and reinforced to the mentee that no one is perfect or has all the answers (Johnson, Maring, Doty, & Fickle, 2006). The stories often illustrated the mentor's previous challenges, the nature of these problems, potential solutions, and, most importantly, the process the mentor followed to address the needs of the classroom.

The online medium fostered this varied communication (e.g., peer-to-peer, mentee-to-mentor, mentor-to-mentor) by providing an accessible "place" where users could interact. Mentees in a number of studies (Kasprisin, Single, Single, & Müller, 2003; Klecka, Cheng, & Clift, 2004) shared that the online environment offered chances to connect with similar-minded individuals not readily available in their building. They also found the online environment less threatening and more conducive for sharing thoughts of inadequacies and doubts. With candid comments, mentors were better able to respond to specific concerns and personalize their replies to honest postings by mentees. A number of case studies emphasized that mentors often shared narrative stories that addressed classroom-based challenges, indirectly offered answers for the mentees' concerns, deepened the relationship by introducing potential challenges, and reinforced to the mentee that his or her concerns are typical based on past experience.

For example, Klecka et al. (2004) found within a facilitated discussion forum that new and experienced teachers articulated that they participated in e-mentoring to engage in dialogue with both novice and experienced colleagues based on their shared experiences. This was illustrated through identified topics in which practice was the major focus. Mentees who were struggling with a specific issue in the classroom were able to present a situation and their thoughts regarding it and how it affected their classroom or teaching practice. In turn, mentee and mentor

teacher respondents provided input on how to frame a situation or work through a particular issue in their teaching. Mentees especially appreciated that they could participate by reading others' messages, thus being able to access ideas and strategies (Livengood, 2007). The conversations in which they were peripheral participants provided them with the opportunity to view teaching and learning from a fresh perspective and raised questions that they had not previously considered.

Although e-mentoring features a different format for support, research findings suggest that the mentor and the mentee can be engaged regardless of the distance and lack of face-to-face interaction. Interestingly, the ability to gather in discussion forums or similar online applications appears to offer unforeseen benefits in that mentees can engage with an assigned mentor, additional mentors offering support, and even peers who may have similar questions and concerns. Thus, the mentor and peer support potentially enhances traditional mentoring and requires additional study to understand implications.

Reflective learning. Reflection on the part of the preservice and novice teacher is often a critical attribute in a preparation as well as an induction support program. Engaging in personal reflection—combined with sharing ideas, concerns, or observations with a peer or related professional—is conducive to the ongoing learning process and often puts things in perspective for the individual. Johnson et al. (2006) found that reflection via the e-mentoring format provided novice teachers the opportunity to develop a deeper understanding of student diversity. French (2004) reported that reflective exchange was initiated almost entirely by the mentee and grounded in the problems they faced in their teaching. Mentors were then found to elaborate on the reflection by offering personal perspectives, stories, and responses to the initial issue introduced by the mentee. While most reflections focused fundamentally on problem solving, this was by no means the only kind of reflection in which teachers engaged. Reflective exchanges often began with a search for solutions to a problem and ended with suggestions about how to solve it; but between the discussion's beginning and end, the teachers reflected on a whole range of different aspects of the problem. It should be noted that the central themes included in the e-mail discourse were representative of traditional face-to-face mentoring activities and included classroom management techniques, the behavior of students as a group, and teaching materials. For example, Hayward, DiMarco, Kranz, and Evans (2001) noted that (a) online participation allowed students to reflect on their growth and development and (b) mentees reported that learning was facilitated by the ability to reflect out loud, with peers and veteran teachers offering comments to these thoughts in the form of follow-up questions.

Summary and Discussion

In summary, current research in the area of e-mentoring concentrates on many features of traditional face-to-face mentoring. The questions asked and the data collected appear to be less concerned with the technology and more focused on the attributes essential to effective mentoring. While varied technology is employed, it seems that in most studies the technology selection is an afterthought. The researchers are primarily inquiring into what happens with this medium and whether critical supports can still be provided while the mentee and mentor are not in regular face-to-face contact. Interestingly, even when the technology solution offered interactive features (e.g., video and audio), users relied on traditional text-based resources for a significant majority of their e-mentoring interactions.

PART V: INDUCTION PROGRAMS INCORPORATING TECHNOLOGY

E-Mentoring in Practice

E-mentoring is becoming more popular as a means of supporting novice teachers. As new programs emerge and attempt to incorporate the best practices of both traditional face-to-face mentoring and of e-pedagogy, it is worthwhile to examine the procedural knowledge gained from current e-mentoring programs that support novice teachers. The intent of this review is not to cover the entire breadth of e-mentoring programs, but rather to review a sampling of existing programs. In fact, it would be difficult to conduct a comprehensive review of e-mentoring programs as (a) current programs may not have the necessary data to publish or present their findings and (b) not all e-mentoring programs place high priority on journal publications. Thus, program identification was a more informal process than literature identification described for other topics in this paper. Programs were identified through literature review as well as conference proceedings, presentation materials, and word-of-mouth. Once programs were identified, we contacted their project coordinators and asked whether we could interview them about their programs. Program coordinators who agreed to be interviewed shared information about technical, mentor-mentee, and financial sustainability considerations. The program coordinators were also asked to provide dissertations or unpublished scholarly manuscripts associated with the e-mentoring program. Studies meeting the inclusion criteria were then included in the literature review.

Ten e-mentoring programs that illustrate a range of program structures were included in this review. Only one program specifically focused on special education mentoring and induction. Several programs did not distinguish grade level or content area. These non-categorical programs included all novice teachers including special educators. Although each program described contains unique features, certain program commonalities emerged across the programs. **Table 7**, a summary of the e-mentoring programs, includes information about technology integration, online structures, mentor-mentee interactions, and data collection. **Table 7** provides additional information about the e-mentoring programs, such as mentor professional development, the roles of facilitators within the e-mentoring programs, and financial sustainability mechanisms.

These e-mentoring programs demonstrated a wide range of structures and formats. Programmatic variances included differences in (a) stakeholders who sponsored or supported the e-mentoring program (e.g., IHEs, Departments of Education, school districts, large collaboratives); (b) software platforms and online interactions within these platforms (e.g., large group discussions, one-on-one private discussions); (c) mentor recruitment (online advertising, district recruitment, university recruitment); (d) mentor professional development (e.g., face-to-face versus online, set curriculum); and (e) funding efforts (e.g., Department of Education grants, foundation funds, state funds, district funds). With respect to program variations, programs used different methods to create and sustain e-mentoring programs. All faced similar issues such as recruiting and preparing quality mentors, building and sustaining online infrastructures and supports that encourage meaningful interactions, and sustaining programs when initial funding sources ended.

Programmatic Considerations

A major challenge for e-mentoring programs is to incorporate existing knowledge about effective mentoring and induction practices into online environments. Although there is a great deal of literature related to effective mentoring practices, little has been written about what effective mentoring “looks like” within an online setting. For example, traditional mentoring programs typically involve ongoing meetings, classroom observations, and other supports that take place “real time” in a face-to-face manner. Different types of mentor-mentee interactions within an online environment obviously must replace these interactions. As little is written about effective mentoring in this context, many e-mentoring programs have been created, evaluated, and then redesigned based on trial and error. Interviews with e-mentoring program coordinators and directors highlighted three main programmatic considerations: technology integration, mentor-mentee relationships, and program sustainability.

Technology Integration

Technology considerations in e-mentoring programs covered four main areas: (a) which software operating platform should be used, (b) whether communication should occur through asynchronous versus synchronous media, (c) whether to include online resources and curricula within the site, and (d) the role of facilitators within the programs.

Software operating platform. The first decision that programs made was related to the type of online operating platform they would use. In this context, the *software operating platform* is simply defined as the “place” in which the e-mentoring program is located. The two most common operating platforms were either course management systems [CMS] or communities of practice Web sites.

Course management systems. Seven of the 10 e-mentoring programs utilized CMS such as BlackBoard or Moodle as their operating platforms. This large number is not surprising as these programs are primarily housed in IHEs, and CMSs are the most utilized educational technologies in higher education (West, Waddoups, & Graham, 2007). Five programs relied on commercial CMS. Of these programs, INTC-online; Teacher Induction Program [Project TIN]; and VIP utilized Moodle;² eMSS utilized Sakai;³ and Welcoming Interns and Novices with Guidance and Support [WINGS] utilized FarCry.⁴ Interviewees from these programs stated that the decision to use these commercial CMSs was based on the range of communication options these provided, such as asynchronous threaded discussions and synchronous chats as well as other functions such as file sharing and the ability to link to outside Web sites. For example, the project coordinator for Project TIN stated that they chose Moodle as their software operating system for several reasons. First, the University of Minnesota supported Moodle, which meant that the technical support for creating and maintaining the e-mentoring system within Moodle was readily available. Second, when compared with other CMSs, the project coordinator believed Moodle had a better aesthetic layout than the other CMSs supported by the university. Finally, Moodle is open-source software, i.e., free. By using open-source software, Project TIN was able to maintain the Web site after their initial grant funding ended.

² <http://www.moodle.org>

³ <http://www.sakaiproject.org>

⁴ <http://www.farcrycms.org>

Two programs relied on internally developed CMSs. UWeb utilized a CMS developed for the University of Washington in order to help the novice teachers' transition from preservice to inservice mentoring. Because the preservice teachers were familiar with the University of Washington CMS, the UWeb developers hoped the transition into its use after graduation would be smooth for the new teachers. The internally developed platform allowed former students to remain members of the e-mentoring communities and still have access to the resources and faculty mentorship after graduation. In this way, their platform was not tied to individual courses.

Performance Based Academic Coaching Team [Project PACT] developed its own system in order to have maximum customization and versatility. For example, they included three facilitated resources (discussion forums, chat rooms, and a private message board that they called "Help Request"). In addition, they also wanted a way to organize self-paced resources for both the novice teachers and their mentors. Although the commercial platforms allow these tasks, by developing their own platform, the PACT project developers were able to customize these areas to fit their needs.

Communities of practice. *Communities of practice* are defined as "emergent, self-reproducing, and evolving entities that are distinct from, and frequently extend beyond, formal organizational structures, with their own organizing structures, norms of behavior, communication channels, and histories" (Farooq, Shank, Fusco, & Schlager, in press, p. 4). Two programs, ENDAPT and the University of Colorado-Denver's TLINC, decided to use a community-of-practice platform. Interestingly, both programs chose Tapped In, which provided an online structure similar to a virtual school with different rooms designated for various e-mentoring activities. By simulating a virtual school climate, the e-mentoring programs hoped to initiate meaningful mentoring opportunities within a familiar school environment.

The University of Colorado-Denver utilized Tapped In for several reasons. First, because it is open-source software, once their program development funding ends, the e-mentoring platform will continue to be available for the participants. Second, the Tapped In platform is open to all educators and therefore not tied to course enrollment. Third, as Tapped In is specifically designed for educators and is open to all educators, it has many resources and opportunities for CU-Denver TLINC participants to utilize outside of the specific supports offered through their program, including its large resource library and public forums. Although CU-Denver incorporated private group rooms that were solely dedicated to its mentors and mentees, its participants could also take advantage of Tapped In's general discussions, scheduled chat sessions, and resources open to the entire community of practice. Additionally, as both private and public areas post resources, they may choose to add those resources to the Tapped In library. Consequently, CU-Denver TLINC participants have access to an ever-growing and changing virtual library organized around topics of interest to educators.

Asynchronous Versus Synchronous Communications

Typical interactions within mentoring and induction programs consist of close interaction and effective communication between mentors and mentees. Likewise, communication within the e-mentoring programs is not only critical but also the main aspect of the programs. Although many available programs incorporated online resources and self-paced professional development content, the communication platform for mentor-mentee communication was the main draw of these programs.

It is important to note, however, how communication in an online environment differs from face-to-face communications. Within the highlighted e-mentoring programs, communication was generally text-based. These text-based communications occurred either through asynchronous discussion forums or through synchronous chats. The asynchronous discussion forums served either as large group areas to discuss various general topics or as private forums for mentors and mentees to interact confidentially. The chat sessions generally served the same functions. As expected, all the e-mentoring programs included asynchronous discussion forums. Additionally, five programs utilized synchronous chats as well. Video and audio communications are an emerging communication interface that these programs were beginning to explore; however, these communication channels were far less common. In fact, only 3 of the 10 programs utilized any non-text-based communications, 2 of which were still in the exploratory stage of video or audio technology adoption. These programs, however, also relied on text-based communications in addition to the audio or video communications.

Asynchronous text-based communications. All the e-mentoring programs incorporated text-based communications that were either synchronous or asynchronous. Within these programs, the most common form of communication occurred through asynchronous discussion board forums. In fact, all 10 programs included this form of communication with the mentees. A distinguishing feature between these programs was whether their discussion forums were large, public discussions related to general discussion topics or small, private discussions between the mentors and mentees for private discussions of teaching issues. Four of the programs (eMSS, ENDAPT, Project TIN, and WINGS) included private discussions in which mentors and mentees engaged in discussions in a secure part of the Web site that others (except for the Web site facilitators) could not enter. The project coordinators of these e-mentoring programs believed that allowing for confidential communications between mentors and their mentees would encourage the mentees to be more open and forthright about their questions and concerns. The e-mentoring within WINGS, for example, consisted solely of private communications between the mentors and the mentees. The communications within these private discussion forums was determined by the mentors and the mentees and were, therefore, individualized for the mentee's needs. In addition to closed discussion board forums, eMSS, ENDAPT, and Project TIN also included large-group discussions in which the mentors and mentees discussed more general concerns and questions.

Besides the distinction between public discussions and small, private discussions, the other distinguishing feature was whether discussions were planned around predetermined topics or whether they provided "on demand" help with topics initiated by the mentees. Most programs offered both types of discussions. The secure discussion boards used by small groups all offered "on demand" help to the mentees. Because of the nature of the private, small discussion forums, these spaces were often used to discuss the immediate questions and concerns that the mentees had as they progressed through their first years of teaching. The topics discussed within these discussion board forums were determined by the mentees as situations and questions arose. Within the programs that offered the large-group discussion forums, six of the programs provided this type of on-demand structure as well (INTC-Online, eMSS, TIN, PACT, and Building Resources: Induction and Development for Georgia Educators [BRIDGE]). These programs, however, also provided predetermined discussions around critical areas of instruction and pedagogy. The program coordinators and facilitators scheduled these discussions around instructional modules, state standards, case-based scenarios, and/or other topics of interest to novice teachers.

Synchronous text-based communications. The synchronous text-based element within the e-mentoring programs typically involved a chat option where mentees and mentors could communicate by typing back and forth in real time. Five of the programs included this form of communication (INTC-Online, eMSS, PACT, BRIDGE, and TLINC). The synchronous group chats used within these programs were typically scheduled in advance for meeting virtually to discuss critical issues. For example, a major component of the PACT program was “Discussion Central” in which chat sessions around specific pedagogical or content issues would be covered. These chats were restricted to 15 to 20 participants so the mentees had to reserve a spot to participate. These chat sessions were differentiated by grade level and content area in order to meet the specific demands of the participants.

Video and/or audio communications. Three programs utilized video or audio communications as part of their e-mentoring programs. Two of these programs (INTC-Online and Project TIN) were exploring the use of Adobe Connect, a type of video conferencing software. These programs were in an inquiry phase of this technology adoption, and developers were considering its use for mentor training and support as well as for mentor and mentee communication. One program, Emporia State University’s Virtual Mentoring Program, utilizes Horizon Wimba audio conferencing software to conduct large-group discussions and guest lectures. This software thus enables facilitators to have audio conversations with their mentees. Although they cannot see each other, everyone in the group can hear the others speak and join the conversation.

Additional communications. In order to monitor the communications between the mentors and mentees, a majority of the programs encouraged their participants to engage in communications solely through the structured e-mentoring Web site. Consequently, other communications such as E-mail, VoIP (such as Skype), were not major components of most programs. Two exceptions to this were the PACT Web site and the ENDAPT programs. Through its private Help Request message board, Project PACT includes a non-text-based communication option for novice teachers who have personal questions. In this private message board, the mentees can request a mentor to either e-mail them or call them via telephone. The developers of this site closely monitor the communications offered through “Help Request” and collect data on its use in order to track and supervise the private interactions that occur outside of the Web-based system.

For the one-on-one mentoring within ENDAPT, mentors and mentees have access to private discussion boards, private chat rooms, and e-mail. When given these communication options, the participants in this program typically chose to communicate through e-mail. Because typical e-mail communications are difficult to track and monitor, however, ENDAPT participants made use of small e-mail distribution lists in order to share the e-mail communications with the facilitators and program coordinators. Using these small distribution lists also allows the ENDAPT program to archive the communications.

Online resources and curricula. The majority of e-mentoring programs included online resources for their mentees. These resources related to pedagogy, curricular content, classroom management, state licensure, and other information that novice teachers would find useful. Two programs (UWeb and Emporia State Virtual Mentoring Program) tied their resources to course content. As students enrolled in coursework, while simultaneously teaching, they had access to university-based course materials and resources. Finally, the programs that used the Tapped In community of practice (ENDAPT and CU-Denver TLINC) included general content available to

all Tapped In participants such as a virtual resource library with a wide range of resources. In addition to resources for novice teachers, three programs also included mentor-development resources (ENDAPT, PACT, and WINGS) intended to supplement the mentor preparation that the mentor teachers received. Additionally, the PACT program created a mentoring module to assist the district mentors who work in the schools with the novice teachers.

Mentor-Mentee Relationships

Interactions within the e-mentoring programs varied considerably based on the types of mentor-mentee relationships within the programs. The highlighted programs ranged from one-on-one mentor-mentee relationships to large-group supports offered to numerous mentees by one or two facilitators/mentors. Within this range, the critical difference was whether the mentors and mentees were purposefully matched into ongoing and established dyads or small groups or whether the e-mentoring occurred with several changing mentors, depending on content, context, specific concerns, and/or scheduling issues. A related, and equally critical, aspect of the mentor-mentee relationships was the type of preparation mentors received to work with mentees within an online setting. As expected, just as the mentor-mentee relationships varied considerably between the programs, the types of preparation and the training the mentors received also differed between programs. Preparation included variations such as (a) ongoing versus single-time professional development, (b) face-to-face versus online training and (c) the use of prescribed mentor training curricula.

Mentor-mentee pairing. One distinction between the e-mentoring programs involved the decision to include either dyadic/small group mentoring relationships or large-group interactions between many mentors and mentees.

Dyadic/small group mentor-mentee supports. Six programs matched mentors and mentees (BRIDGE, eMSS, ENDAPT, PACT, TIN, WINGS). Typical matching criteria included grade level, content area, and geographic location (urban, rural, suburban). In addition to these criteria, a couple of programs utilized mentee questionnaires that asked more in-depth questions as well as provided the mentees an opportunity to indicate the types of mentoring they preferred. The eMSS program, for example, matched mentors with mentees based on content, grade level, geographic region, and teaching context (rural, urban, and suburban). Additionally, the mentees indicated the skills and areas in which they most needed mentorship. The Web site facilitators then used all these criteria to match mentees with the most appropriate mentors. Two programs, ENDAPT and WINGS, allowed the mentees to choose their own mentors from a database of mentor profiles on the e-mentoring Web sites that included information such as the mentor's teaching experience, content areas, geographic location, and other distinguishing characteristics. Once mentees chose the profile of an available mentor, they requested the mentor through the ENDAPT or WINGS Web sites. Then, the Web site facilitator contacted the mentor to begin the mentorship relationship.

Large-group mentor-mentee supports. Several different strategies were used in large-group mentoring with novice teachers. PACT, for example, utilizes the mentors' time by assigning them to four-hour time shifts in which they are responsible for answering discussion board and chat room questions. Typically, four to five mentors work each day by responding to questions and are available between 8 a.m. and 12 a.m. The purpose of the extended time is because many of the novice teachers are also parents, so their work-related reflective time often occurs late in the evening and into the night. Consequently, a great deal of Web site activity

occurs after the traditional workday. INTC-Online uses a different large-group mentor-mentee support. Like PACT, they also do not have designated mentors for each mentee in the program. Instead, they have a pool of mentors with diverse areas of expertise. The facilitators assign mentors to respond to the mentee depending on the mentee's immediate request or the specific topic being discussed.

Mentor preparation. All the programs that used dyadic or small-group mentoring and most of the programs that utilized large-group mentoring spent a great deal of time both on recruiting and preparing effective mentors for their roles as mentors within an online environment. The program coordinators from these programs stated that the tasks of recruitment and preparation of e-mentors were crucial for the success of the e-mentoring programs. Two programs (UWeb and VIP) were directly tied to university supports, and the mentoring offered by these programs was provided by university staff. Consequently, the recruitment and preparation of these staff mentors was different from the recruitment and preparation of K-12 teacher mentors.

Mentor recruitment. With the exception of two programs that utilized university-based mentors (UWeb and VIP), the first step to mentor preparation consisted of recruiting quality e-mentors. As was apparent in their recruitment strategies, these programs put a lot of emphasis on finding qualified and effective mentors to work with the novice teachers. Three programs recruited mentors with specific qualifications related to membership in a particular organization: INTC-Online recruited national board-certified teachers, ENDAPT recruited teachers belonging to the Virginia Teacher Leadership Network as well as national board-certified teachers, and BRIDGE recruited certified Critical Friends Facilitators. This specific recruitment strategy was used to enlist effective teachers with proven leadership ability.

The other programs used various other recruitment strategies to obtain highly qualified mentors. One means of mentor recruitment was through collaboration with school districts. For example, WINGS worked closely with the school districts in recruiting e-mentors. Once e-mentors were nominated, the WINGS staff screened their applications to determine whether the candidates were suitable mentors. In addition to this form of recruitment, Project TIN also recruited e-mentors through regional professional organizations. These programs placed high value on recruiting skilled mentors. By doing so, they had confidence that with the proper professional development related to working in an online environment, the mentors would be able to provide effective supports to the novice teachers.

Mentor preparation. There were several formats for preparing mentors to provide support within an online environment. Mentors were offered two types of professional development: (a) face-to-face versus online professional development and (b) initial versus ongoing professional development. Five programs included some form of face-to-face professional development (INTC-Online, TIN, ENDAPT, PACT, BRIDGE). These programs used face-to-face professional development as a means of introducing topics such as navigating the online platforms, strategies for interacting with mentees in an online environment, and e-etiquette. These programs provided this professional development in a face-to-face format in order to avoid creating anxiety for mentors who were unfamiliar with the technology. The BRIDGE professional development program also incorporated the e-mentoring training into their regular Critical Friends Group Facilitation training, which occurred in a face-to-face format. Although these programs provided initial face-to-face preparation, they also provided ongoing support online.

One program, eMSS, provided all its mentor professional development online. Their reason for offering this preparation solely online was that their experience suggesting that mentors prepared online could better translate that preparation in an online context. Their online preparation consisted of an initial 3-week intensive summer training that introduced mentoring skills in an online environment followed by ongoing professional development throughout the year.

The WINGS and ENDAPT programs provided online resources and modules for mentors. These resources provided information related to general mentoring strategies as well as mentoring within an online environment. In addition to these initial resources, mentors within the ENDAPT and WINGS programs were provided with as-needed support from the Web site facilitators. The ENDAPT program, for example, provided ongoing, individualized professional development to the mentors based on their specific needs. The facilitators working with the mentors could suggest specific modules for the mentors to complete as well as provide any additional information on an as-basis. As trends in mentor concerns and issues would arise, additional modules would be developed to address those needs.

Lastly, the CU-Denver TLINC program provided a private group room within the e-mentoring program that served both as a place for professional development as well as a place for idea sharing, problem solving, and resource sharing. By creating an online learning community for the mentors, program coordinators found that the veteran teachers serving as mentors would become more skillful and competent with providing online supports to their mentees.

Facilitator roles. Although the e-mentoring programs emphasized preparing and supporting mentors within their programs, an additional level of support was provided using facilitators. In fact, all the e-mentoring programs utilized Web site facilitators within their programs. One of the major issues that emerged from all the interviews was the need for effective facilitation of the Web site in order to support the mentor-mentee communications. Facilitators had many roles in the e-mentoring programs and involved both technical supports and program supports. In order to prepare the facilitators for these diverse roles, the program coordinators of several programs recognized that the facilitators required professional development as well in order to address the unique skill set of providing support to mentors and mentees in an online format.

Technical facilitator supports. The technical supports involved providing assistance in the maintenance of the e-mentoring programs as well as providing training and support regarding various Web site components. With the exception of the programs that utilized the Tapped In community of practice, the e-mentoring programs had local technical facilitators who were either tied directly to the e-mentoring programs or offered technical support to the university-wide CMS. The programs that utilized Tapped In, however, had remote technical facilitators associated with the greater Tapped In community. For example, CU-Denver TLINC utilized the Tapped In facilitators in several ways. First, during program development, the Tapped In facilitators provided support in building the private group rooms. Second, at the onset of the project, they provided training in e-mentoring facilitation to the program coordinators. Third, the Tapped In facilitators provided ongoing support as technical issues or questions arose.

Program facilitator supports. Although the technical supports offered by facilitators were crucial, their major tasks involved program facilitation. These tasks included monitoring the interactions on the e-mentoring Web site, answering questions brought forward by the mentors and mentees, and encouraging participation. These tasks often involved relationship building with the mentors and mentees, providing mentor professional development, and assigning

specific roles and interactions within the discussion boards. All the interviewees stated that the role of the facilitator(s) was critical to the success of the e-mentoring program. They explained that simply providing a forum for communication between mentors and mentees was not enough for meaningful interactions. For example, the roles of the facilitators in Project BRIDGE were numerous, e.g., deciding on content and discussion protocols based on the mentees' needs and questions. The facilitators also moved the discussions along based on Critical Friends group facilitation in a manner that encouraged all the teachers to participate and support the teachers in feeling they had a voice and social presence in the discussions. Finally, the facilitators' role also included diffusing problems whenever any major issues occurred.

Financial Sustainability

A major issue facing all the e-mentoring programs was financial sustainability. Obviously, once a major funding source ends, the capacity of the e-mentoring programs to support novice teachers may be compromised. Consequently, all the programs ultimately had to seek alternate funding sources outside the original funding sources. If they could not find alternate funding sources, they were required to reduce the amount of support their programs offered.

Alternate funding sources. Most programs aggressively pursued alternate funding sources in order to sustain their e-mentoring program. These alternate funding sources included foundation funds, state Departments of Education, school districts, IHEs, as well as other partners and stakeholders. Several programs transitioned from a free e-mentoring service to a payment-for-services model (INTC-Online, eMSS, PACT). Within these programs, school districts, IHEs, or other agencies would pay for their teachers to receive e-mentoring services. However, in addition to the participant fee model, these programs also sought additional funds to either support the agencies and school districts in obtaining these funds or supplement the funding provided by the school districts. For example, Project PACT is currently working with state legislators in Texas to obtain a line item as a state-endorsed induction program in order to obtain funds for the school districts to participate in the e-mentoring program.

Other programs transitioned from their original grant funding to other sources of funding by working closely with state agencies, foundations, and IHEs. For example, the BRIDGE program initially was funded through a Transition to Teaching grant from the U.S. Department of Education. The funding associated with that grant ended after the 2007-08 academic year. The program coordinators for the BRIDGE program were working with the state licensing agency as well as other organizations in Georgia on a financial sustainability plan. As funding through such programs typically is provided on a yearly basis or other set time frame, the program coordinators stated that the financial sustainability of their e-mentoring programs is always a high priority and must be consistently addressed.

One program, CU-Denver TLINC, linked mentor financial incentives to the district's merit-based compensation system. Since the Denver Public Schools (DPS) utilized a compensation system that rewarded teachers for leadership roles within the school districts, the e-mentoring system worked with district personnel to tie the mentor and facilitator professional development to the school district merit compensation system. In this way, the financial incentives for mentors and facilitators were not provided by the e-mentoring program. By building existing district financial incentive systems into their e-mentoring program, CU-Denver TLINC was able to decrease program expense.

Program reduction. Several programs had to dramatically reduce the amount of support they could provide because of funding issues. ENDAPT, for example, was required to stop the large-group e-mentoring activities for the 2008-2009 school year. However, the one-on-one and support materials on the ENDAPT Web site continued to be available after the grant funding ended. Project TIN initially was funded through a U.S. Department of Education grant that supported the induction of beginning STEM teachers. When this funding ended, Project TIN had to reduce the number of mentees they could support within the project as well as reduce the stipend amount that the mentors received. Initially, the mentors received \$1,000 annually; after the reduction, the mentors received \$300 annually.

Summary and Discussion

In summary, all 10 e-mentoring programs reviewed above faced three major categories related to implementation: (a) technical considerations, (b) mentor and mentee considerations, and (c) financial sustainability considerations. These programs illustrated a range of methods in addressing the three areas. As was apparent in the literature, the e-mentoring programs, however, typically relied on text-based communications for the majority of their communication and interactions. Once technology and mentor-mentee considerations were addressed, the major issue faced by all the programs was financial sustainability.

PART VI: SUMMARY AND RECOMMENDATIONS FOR PRACTICE AND RESEARCH

This review synthesized what is known about teacher induction research in special education. Although induction has been defined in different ways by researchers and practitioners and has evolved over time, we defined induction as the period after preservice teaching, extending into the first years in the classroom. Findings from the five parts of this paper synthesize the knowledge base related to: (a) new teachers' experiences in their first years, (b) research on induction programs, (c) descriptions of induction programs in LEAs and SEAs, (d) research on induction programs that incorporate technology, and (e) how technology has been used in general education induction programs.

In Part I, studies about new special educators' experiences were reviewed, most with an emphasis on understanding the problems novices experienced in their first years in the classroom. Findings were organized around three major concerns—(a) inclusion, collaboration, and interactions with adults; (b) pedagogical concerns; and (c) managing roles. Understanding these challenges provides important information for administrators, mentors, and teacher educators as they consider how to better prepare and induct new teachers into the profession.

The research on induction and mentoring in special education was reviewed in Part II, including research studies on the support provided to new SETs (e.g., induction, mentoring, support, and formal and informal assistance). Although a lack of large-scale studies limits the generalizability of the findings, the results suggest implications related to the characteristics of mentors and roles of other support providers; formal and informal programs; the frequency, proximity, and content of support; and the goals and functions of assessment and evaluation in induction and mentoring. Further research is indicated in all of these areas, with particular attention focused on the content and outcomes of induction and mentoring.

In Part III, nine special education induction programs were reviewed. Elements of the programs included (a) clearly articulated goals, (b) a focus on mentoring, (b) individualized support, (d) extended support, and (e) outcome data. These results were compared to the available research on special education induction. Additionally, one promising program was described in detail.

Parts IV and V of the paper addressed the use of technology and e-mentoring to support new teachers. Although technology has been used to support beginning GETs, there are few applications of technology in the induction of SETs. Parts IV and V provide analyses of the research on e-mentoring (e.g., descriptions of e-mentoring, purposes of the technology, and findings from the perspectives of both the mentees and mentors). The highlighted e-mentoring programs, which differed in many ways from each other, also displayed many commonalities. For example, all the programs consider the types of communications that would occur within their e-mentoring platform and provide resources and supports based on the types of communications used.

RECOMMENDATIONS

The stated purposes of teacher induction often include improving teachers' effectiveness and retention, with the ultimate goal of increasing student achievement. General education induction has received substantial attention by policymakers and researchers, yet the literature base has been described as fragmented and conceptually weak, with methodological problems that make it difficult to draw clear implications. Unfortunately, the special education literature base is even less developed. Although some findings suggest that induction improves special education retention, the findings must be interpreted cautiously given the limitations of the methods and analyses. Moreover, while special education research suggests induction improves teacher effectiveness, the data are limited to teachers' self-reports in most cases.

Policymakers and leaders in schools must make decisions about SET induction, even though the research base provides limited information about the components of induction necessary to improve retention or teacher quality. The following recommendations provide the implications from this research base for improving teacher induction in special education.

Recommendations for Special Education Induction Programs

1. Improve the work context for new special education teachers.

a. Encourage a school culture that includes special education teachers.

Some new special educators report that they do not feel included in their schools, complain of physical isolation, and describe inadequate opportunities to interact with their general education counterparts. Leaders and mentors need to create a school culture in which the work of all is valued and where special and general educators have ongoing opportunities to interact and work together.

b. Set the stage for collaboration and inclusive practices in schools.

A clear theme from the literature is that new special educators need assistance in their efforts to include students with disabilities in schools. Although mentors may be of assistance in supporting teachers as they collaborate with others, leadership at the school level is needed to create inclusive school cultures in which all see their roles in meeting the needs of students with disabilities. Given that school leaders often have little if any preparation in special education (Crockett, 2002), addressing the professional development needs of principals is a necessary first step in working toward inclusive communities.

c. Provide "protected status" to new teachers.

New teachers usually assume the same teaching responsibilities as their more experienced colleagues. However, researchers in both general and special education recommend that new teachers have reduced responsibilities. Reducing caseloads and administrative duties provides new teachers with greater opportunities to focus on learning about their students' needs, collaborating with general educators, and improving instruction. Limiting the number of grade levels or content areas assigned is another way to reduce the demands on new teachers.

2. Systematically design induction programs.

a. Understand and address beginning special educators' concerns.

Although both general and special education teachers will benefit from shared induction experiences, special educators have unique needs that require support tailored to their specific concerns. Leaders and mentors should consider the typical concerns of new special educators, yet realize that their needs will differ depending on the nature and context of their specific assignments. Leaders and mentors who listen to teachers, observe them, and use discussions and informal surveys to learn about their needs will have opportunities to understand new teachers' perspectives and tailor plans that address each teacher's needs.

b. Consider comprehensive induction packages.

The majority of research and programs in special education induction focus on mentoring as a key strategy for supporting beginning teachers. While mentoring is important, teachers receiving comprehensive induction “packages” are more likely to stay (Smith & Ingersoll, 2004). Comprehensive packages include participation in an induction program, a mentor in the same field, common planning time with teachers in the same subject area, time for collaboration, participation in seminars for beginning teachers, communication with administrators and supervisors, reduced teaching load, and opportunities to participate in larger networks of teachers.

c. Determine goals, processes, and evaluation of induction programs.

Induction goals often include teacher retention and quality, but may also include other goals, such as addressing student diversity and increasing collaboration among teachers. Specifying the roles of all agencies and individuals in the process, monitoring progress toward goals, and making sure all components of the induction program are specified are needed steps in the process. While it is worthwhile to know whether or not beginners are satisfied with their induction experiences, it is essential to know the overall induction goals were achieved (e.g., retention, teacher effectiveness).

d. Structure mentor programs.

- Provide mentors with systematic preparation for their roles and help them develop the capacity to support teachers in a range of areas (e.g., effective teaching, inclusion and collaboration, instruction, behavior, time management).
- Encourage mentors to assume a nonevaluative role.
- Match mentors and mentees on personal and professional characteristics (e.g., personality, exceptionality areas, grade levels or subjects taught).
- Encourage mentors to assume a nonevaluative role.
- Ensure close proximity or reasonable accessibility between mentors and mentees.
- Give opportunities for mentors and mentees to meet at least weekly.
- Provide release time for classroom observations (mentee to observe mentor and vice versa).
- Create measurable professional goals for beginning teachers and assess progress on a regular basis.

e. Provide professional development opportunities.

Although scheduled workshops are necessary for some professional development, those that are an integral part of the induction program are especially valuable. As Johnson and Kardos (2002) state,

What new teachers want in their induction is experienced colleagues who will take their daily dilemmas seriously, watch them teach and provide feedback, help them develop instructional strategies, model skilled teaching, and share insights about students' work and lives. What new teachers need is sustained school-based professional development—guided by expert colleagues, responsive to their teaching, and continual through the early years in the classroom. Principals and teacher leaders have the largest roles to play in fostering such experiences. (p. 13)

f. Obtain state and local support.

Sustainable induction programs must have fiscal and political support from the federal, state, and local levels. While valuable programs begin with federal grant monies, these programs typically end with the federal funds. Programs such as the one implemented in the Special School District devote a great deal of local money to induction and consequently remain intact.

3. Improve the technology-based solutions for e-mentoring.

a. Identify low-cost, universally accessible, technology-based solutions.

While e-mentoring projects report access to a variety of interactive tools, the data suggest that mentees and mentors primarily rely on text-based media in order to communicate. For example, the majority of research studies identified e-mail as a primary tool for interaction supported by text-based discussion and/or bulletin board forums. While recent research suggests increased availability to video and audio solutions, users do not appear to be integrating these interactive tools nearly as much as text-based tools. Thus, efforts need to be made to better understand why these multimedia tools are not being used and how leaders can better facilitate their access and subsequent use.

b. Provide training on the technology-based tools.

Training of technology-based applications is a critical component identified by current e-mentoring programs and is consistent with findings on technology integration amongst practicing teachers. That is, if teachers, both mentee and mentors, are not aware of the functionality of the technology-based tool and/or comfortable in its application, the technology (while accessible) will not be used to its potential. Thus, e-mentoring programs need to invest in effective professional development to ensure meaningful use of increasingly interactive tools that potentially could alter e-mentoring efforts.

c. Identify key personnel and develop technology infrastructure.

While technology-based solutions are becoming cheaper, more accessible, and offer communication options relevant to distant interaction, the knowledge to identify, implement, and maintain should not depend on the novice or veteran teacher. Instead, districts, universities, and state agency partners need to invest in personnel who will offer technical assistance to facilitate

technology selection and use. Likewise, an investment in infrastructure is needed to ensure meaningful access.

4. Recognize unique challenges and solutions of e-mentoring.

a. Provide training on supporting mentees at a distance.

Recognize that e-mentoring, while sharing similar attributes with face-to-face mentoring, is also different and presents challenges and solutions unique to the medium. Therefore, it is important to provide the e-mentors with the structures for supporting novice teachers online. Mentors need to be trained on how to support mentees at a distance, understand the nuisances of communication in a synchronous and asynchronous environment, and be trained on what we know about e-learning.

b. Consider lessons from other e-learning frameworks.

While e-mentoring is in its infancy, there is a growing amount of research in teacher education and professional development specific to e-learning. Facilitators of e-mentoring programs need to be aware of what we have learned from online communication, interaction, and similar issues that would be relevant to the mentor and mentee. These lessons learned might impact how we further develop the e-mentoring medium as well as how we recommend mentees and mentors interact.

Recommendations for Future Research

1. New special educators' conceptualizations of their roles.

Although a number of studies have investigated teachers' experiences, no studies that primarily investigated teachers' conceptualization of effective teaching, their roles, and what guides their practice over their first years in the classroom were found. A better understanding of how teachers think about their roles and how they solve problems will likely have implications for how they are mentored and supported.

2. Hiring and assignment practices.

Although a few studies indicated that new teachers left because they were not certified or prepared for their teaching assignments, no research studies were found that considered how new teachers are hired and assigned. Hiring practices may be centralized at the district level, decentralized at the school level, or be a combination of the two. Decentralized processes have advantages including evaluating the extent to which the applicant's abilities, experiences, and dispositions match the position and culture of the school and allowing the applicant to develop a more accurate picture of the job (Liu, 2003).

3. Mentors and other support providers.

A number of studies within this review suggest that beginning special educators prefer mentors who are also special educators, but in a few cases other professionals in the new teachers' school served as valuable sources of support. A clearer understanding of which professionals under what circumstances might better assist beginning special educators is indicated. Could content-area experts (e.g., general educators) effectively support beginning special educators with

content-related practice problems? Are occupational and physical therapists more appropriate mentors when beginning special educators encounter difficulties with students with physical and healthcare issues? Studies focused on the skills of support providers, coupled with the needs of beginning special educators, may reveal insights for selecting and configuring supports provided by professionals.

4. Frequency, proximity, and content of support.

The variables of frequency, proximity, and content of support yield three paradoxical findings in the special education induction literature that suggest further study. First, although frequent provision of supports was highly correlated with beginning special educators' perceptions of the effectiveness and helpfulness of induction, teachers consistently reported that the total amount of support provided was inadequate for addressing their professional and emotional needs. Exploring this contradiction may help to better explain the perceived inadequacy of support. Second, both benefits and drawbacks were found for having special education mentors in close physical proximity to their mentees. Intuitively, one would expect mentees to prefer mentors located in the same school building, but this appears not to be the case in all situations. Future studies may focus on identifying when and under what conditions proximity is critical. Finally, beginning special educators request and appreciate emotional support more than content related to their profession. Understanding the source of this intense need for emotional support and determining how it may interact with the development of beginning teachers' knowledge and teaching skill may reveal ways to more efficiently improve the quality of teaching.

5. Formal and informal support.

The literature in special education includes a fair amount of evidence about both formal induction programs and informal teacher supports. Research support for formal programs appears mixed; however, novice special educators are generally more enthusiastic about the informal supports they receive. These findings suggest that formal programs, as currently designed and implemented, may not adequately address important needs. However, induction without structure may be insufficient to address induction's important goals. Further studies that examine the potential interface between informal and formal approaches are recommended.

6. Differentiation of support.

Little is known about differentiating support for teachers entering from different pathways. While some new teachers enter from in-depth preparation programs with extended opportunities to work in schools, others enter through brief alternative programs or only take a test prior to teaching. Studies are needed to determine how these teachers' experiences differed and the extent to which programs are differentiated to meet the varying needs of these teachers.

7. Assessment and evaluation.

Assessment and evaluation in induction is one of the most important, yet understudied, areas in the special education literature. These deficits are evident for both evaluating programs and appraising beginning special educators' professional progress. Distinctions have been made in the literature between the evaluation of beginning teachers involving decisions related to certification and further employment and assessment that entails setting professional goals and determining how well they are meeting those goals. Generally, the prevailing opinion is that those who provide support to beginning special educators should not participate in their

evaluation. Unfortunately, very little is known about effective professional assessment practices of novices. In an educational context that demands standards-based teaching (i.e., NCLB), further research efforts should consider standards-based assessment.

8. E-mentoring and technology.

a. Understanding the impact of the technology-based tool on the e-mentoring process.

Although studies have begun to examine the impact of technology supports, no studies appear to focus primarily on the technology tool, e.g., investigating whether there are differences in the mentee and mentor interaction if they are able to hear and see their partner from a distance. Likewise, video-based streaming via the Internet allows mentor and mentees to “visit” the others’ classroom in real time or via archived video footage. Questions need to be examined in this arena.

b. Determining the efficacy of e-mentoring as a support to face-to-face mentoring as well as a possible replacement.

A few studies reviewed feature e-mentoring in combination with traditional face-to-face mentorship; the impact of this combined approach in comparison to traditional face-to-face interaction needs to be further clarified. Similarly, what is the impact of e-mentoring without the face-to-face support within a novice teacher’s building? Is the preferred induction model to include one or the other? Is a combined approach the most effective for induction support? These are questions that need to be further explored and understood.

c. Peer-to-peer support in the mentoring process.

Reflections on the part of the novice teacher indicate that during the early years of their careers, novice teachers often experience feelings of isolation from others and are unaware that the challenges they face are similar to the realities. A few studies indicate that access to peers within the e-mentoring environment addresses feelings of isolation while also reassuring the novice teacher that they are not unique in the circumstances they are experiencing. A clearer understanding of the influence of peer interaction via e-mentoring is warranted to determine its impact.

d. Willingness to share thoughts, concerns, fears and feelings.

Evidence in e-learning among preservice and inservice teachers as well as research in the area of online communication suggests that individuals communicate differently within an online environment. That is, one’s willingness to participate, what one shares, one’s candor, and similar components are found to be enhanced when communicating online. A clearer understanding on how e-mentoring impacts the questions asked, the issues discussed, the amount of communication that takes place, and similar issues need to be examined further through research. If the faceless aspect of e-mentoring enhances the communication and information sharing, then the use of the medium and the types of technology tools employed will be better understood.

e. Role of the facilitator in the e-mentoring process.

Findings from current e-mentoring projects reinforce the need for an effective facilitator to ensure that the mentor and mentee have knowledge of the technology and are comfortable with the medium in order to interact. The fact that many current projects use a facilitator necessitates the need for research to understand the importance of this individual, how best to use the facilitator, and understand when the facilitator is needed and when the individual needs to “step down” and allow the mentee and the mentor to interact. These are essential issues that need to be examined.

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Table 1. Overview of Research on Beginning Special Educators' Induction Experiences and Programs.

Author (year)	Purpose	Respondents	Methods	Induction Experiences	Induction Program
Babione & Shea (2005)	To explore the assistance general educators provided to beginning special educators in rural settings	7 experienced (1 special and 6 general educators) and 5 beginning special educators	Year-long qualitative study using observations and interviews	X	X
Billingsley, Carlson, & Klein (2004)	To identify variables related to intent to leave among special educators, addressing perceptions of working conditions, support received, and effects of supports	1,153 SETs in K-12 who had 5 years or less experience (national sample)	Survey research: Data collected from teacher database (SPeNSE) and included computer-assisted telephone interviews	X	X
Billingsley & Tomchin (1992)	To identify the problems and concerns of beginning teachers of learning disabled students and the support they received	4 first-year teachers of students with learning disabilities in Virginia (2 elementary, 2 middle school)	Year-long qualitative study of new teachers using in-depth interviews	X	
Bishop, Brownell, Klinger, Leko, & Gelman (2009)	To determine how more accomplished teachers were different from their less accomplished colleagues in personal attributes, preparation experiences, and school environment with a focus on reading instruction	25 special educators with 1-3 years of experience (from 7 districts in Colorado and Florida)	Observations to capture reading practices, interviews, survey, field notes, student achievement data	X	X
Boe, Cook, & Sunderland (2007, July)	To determine the prevalence of programs and practices for improving teacher quality and retention, including induction and mentoring programs for beginning GETs and SETs	10,952 beginning general and special educators (first 5 years) in the 1999-00 survey; 10,056 in the 2003-04 survey	Survey research: Data collected from the Schools and Staffing Surveys (SASS) in 1999-00 and 2003-04	X	X

Table 1. Overview of Research on Beginning Special Educators' Induction Experiences and Programs. (continued)

Author (year)	Purpose	Respondents	Methods	Induction Experiences	Induction Program
Boe, Cook, & Sunderland (2008)	To determine the extent to which five teacher qualifications (including induction & mentoring) are associated with three types of turnover of GETs and SETs	Same as above; in addition, a subset of 2,253 1st-year teachers in 1999-00 and 1,629 in 2003-04	Survey research: Data collected from the Schools and Staffing Surveys (SASS) in 1999-00 and 2003-04		X
*Boyer (1999)	To explore new special educators' perceptions of a year-long mentorship	9 beginning SETs	Qualitative study: interviews		X
Boyer & Lee (2001)	To describe the experiences of a new teacher, including key components of the mentoring program	A 1 st -year elementary SET of students with autism	Case study of a single teacher, using journals	X	X
Busch, Pederson, Espin, & Weissenburger (2001)	To report on the perceptions of a 1 st -year teacher	A 1 st -year elementary SET of students with learning disabilities	Interview	X	
Carter & Scruggs (2001)	To describe the experiences of a 1 st -year teacher	A 1 st -year elementary teacher of students with mild mental retardation	Self-report of a new teacher	X	
Conderman & Stephens (2000)	To gain teachers' perspectives regarding induction and support, professional challenges, coping strategies, and advice	13 teachers in 1 st - or 2 nd -year of teaching	Two-page survey	X	X
Fall & Billingsley (2008)	To compare credentials, preservice preparation, self-efficacy, and induction in high- and low-poverty schools	935 SETs in K-12 who had 5 years or less experience (national sample)	Survey research: Data collected from teacher database (SPeNSE) and included computer-assisted telephone interviews		X
Gehrke & McCoy (2007)	To explore factors contributing to the professional growth and job satisfaction of beginning special educators	10 teachers who had 3 years or less special education teaching experience	Qualitative and quantitative research: mailed questionnaires and individual interviews	X	X

Table 1. Overview of Research on Beginning Special Educators' Induction Experiences and Programs. (continued)

Author (year)	Purpose	Respondents	Methods	Induction Experiences	Induction Program
Gehrke & Murri (2006)	To examine how specific work-related variables (e.g., support, collegiality, job design) influence intent to stay among special educators	8 first- and second-year special education graduates in the southwest (5 elementary and 3 secondary teachers)	Qualitative and quantitative study: open-ended interviews and 10-item Likert scale	X	X
*Giacobbe (2003)	To investigate the perceptions of conditionally licensed special educators regarding mentoring	822 first-year, conditionally licensed special educators in Virginia	Web-based survey		X
*Griffin (2005)	To describe the perceptions of both beginning SETs and mentors in an induction program	3 beginning SETs and 3 mentors	Qualitative study: interviews and observations		X
Griffin, Kilgore, Winn, Otis-Wilborn, Hou, & Garvan (2009)	To more fully describe novice special educators' experiences, exploring problems and accomplishments, and school and classroom contextual factors influencing their professional development	596 first-year SETs in Florida & Wisconsin	Survey research: mailed questionnaire	X	
Irinaga-Bistolas, Schalock, Marvin, & Beck (2007)	To determine the effectiveness of mentoring program on rural special educator's job satisfaction and intent to stay	44 mentees: 24 new, 11 mentees with general education teaching experience, and 9 experienced, but new to agency	Survey research: questionnaire		X
Kilgore & Griffin (1998)	To investigate special educators' problems of practice and the influence of school contexts on teachers' abilities to solve problems	4 first- and second-year teachers	Qualitative study: interviews	X	
Kilgore, Griffin, Otis-Wilborn, & Winn (2003)	To investigate the problems of practice of beginning special educators and the contexts in which they work	36 beginning SETs in their 1 st year of teaching	Qualitative study: interviews and classroom observations of beginning teachers	X	

Table 1. Overview of Research on Beginning Special Educators' Induction Experiences and Programs. (continued)

Author (year)	Purpose	Respondents	Methods	Induction Experiences	Induction Program
Lovingfoss, Molloy, Harris, & Graham (2001)	To present a graduate's 1st-year teaching experiences	A teacher of adolescents in a school/community-based program	Describe and reflect on induction experience	X	
MacDonald & Speece (2001)	To describe challenges faced by a new teacher	A teacher of students with emotional disorders	Describe and reflect on induction experience	X	
*Maddex (1993)	To investigate the mentoring activities and perceived benefits and concerns related to mentoring by mentors and beginning teachers	198 mentors and 157 mentees; of those 18 were special education mentors and 19 were special education mentees	Survey research: mailed questionnaire		X
*Martinez & Mulhall (2007)	To evaluate a model of extended mentoring support for beginning teachers	8 first-year special educators and their mentors	Qualitative study: interviews, observations, questionnaires, communication records		X
Mastropieri (2001)	To highlight 1st-year experiences at a public high school	A professor reflects back on her first experience as a beginning teacher over two decades ago	Reflections on past experience		
Nielsen, Barry, & Addison (2006)	To monitor effectiveness of and teacher satisfaction with the Great Beginnings induction program.	468 beginning teachers from one district; 20% were special educators	Two brief surveys with open-ended questions collected over 3 school years		X
Otis-Wilborn, Winn, Griffin, & Kilgore (2005)	To consider barriers beginning SETs faced in working to increase their (a) access to the general education curriculum and (b) participation in general education activities	36 beginning special educators	Qualitative study: interviews	X	
Salazar, Gudwin, & Nevin (2008)	To identify components of induction contributing to teacher retention	3 new SETs in an urban district	Qualitative study: interviews		X
Seitz (1994)	Identify the needs of beginning teachers of the visually impaired	103 teachers of the visually impaired in Illinois	Mailed questionnaire	X	

Table 1. Overview of Research on Beginning Special Educators' Induction Experiences and Programs. (continued)

Author (year)	Purpose	Respondents	Methods	Induction Experiences	Induction Program
*Tucker (2000)	To examine the activities within an induction program for beginning SETs	3 beginning special educators; 3 mentors; 3 principals	Qualitative study: interviews with beginning teachers, mentors, and principals; teachers' journals		X
*Walker-Wied (2005)	To examine the role of a school culture in the induction and socialization of beginning teachers	2 beginning special educators in an urban elementary school	Qualitative study: interviews, observations, document review	X	X
Whitaker (2000b)	To determine (a) the impact of mentoring programs on 1st-year teachers' plans to remain and (b) teachers' perceptions of an effective mentoring program	156 first-year special educators in South Carolina	Survey research: mailed questionnaire		X
Whitaker (2003)	To examine the perceptions of special educators to determine needs and assistance received	156 first-year special educators in South Carolina	Survey research: mailed questionnaire	X	X
*White (1995)	To examine the influence of the Kentucky Teacher Internship Program on the attrition rates of first year special educators	604 beginning special educators	Survey research: mailed questionnaire	X	X
White & Mason (2006)	To measure how SETs and mentors are impacted by mentoring implemented with guidelines developed by national educational leaders	147 teachers in their 1st year of teaching or 1st year teaching in that district and 172 mentors	Survey research: mailed questionnaire	X	X

Table 2. New Special Educators' Concerns.

	Inclusion, Collaboration & Interaction with Adults					Pedagogical Concerns				Managing Roles			
	Inclusion	Collaboration	Parents	Aides	Administrators	Curriculum & Teaching	Assessment	Materials	Student behavior	Paperwork, IEPs, & Meetings	Caseloads	Time/Scheduling	Role confusion
Single case studies													
Boyer & Lee (2001)	X	X	X			X	X	X	X	X		X	
Busch, Pederson, Espin, & Weissenburger (2001)	X		X	X		X			X	X		X	
Carter & Scruggs (2001)	X	X		X	X	X		X	X	X	X	X	
Lovingfoss, Harris, & Graham (2001)			X			X		X	X				
MacDonald & Speece (2001)		X				X	X	X	X			X	
Mastropieri (2001)	X	X		X		X		X	X	X	X	X	X
Other qualitative studies													
Billingsley & Tomchin (1992)	X	X		X		X	X	X	X	X		X	
Conderman & Stephens (2000)	X	X	X	X				X		X		X	X
Gehrke & McCoy (2007)	X	X			X	X	X			X			
Gehrke & Murri (2006)	X	X		X	X	X		X	X		X	X	X
Kilgore & Griffin (1998)	X	X		X	X	X		X	X	X		X	
Kilgore, Griffin, Otis-Willborn, & Winn (2003)	X	X			X	X		X	X		X	X	
Otis-Wilbourn, Winn, Griffin, & Kilgore (2005)	X	X			X	X		X	X		X	X	X
Survey studies													
Griffin et al. (2009)		X				X	X		X			X	
Seitz (1994)		X				X	X	X		X	X	X	X
Whitaker (2003)						X		X	X	X			
White & Mason (2006)		X	X	X		X	X	X	X	X		X	X

*Studies varied in purpose (see Table 1) and some addressed only select areas.

Table 3. Studies of Special Education Induction by Themes within the Literature.

Themes	Mentor Characteristics	Formal & Informal Support	Support Providers	Frequency of Support	Proximity of Support	Content of Support	Assessment & Evaluation
Studies							
Babione & Shea (2005)		X	X		X		
Billingsley, Carlson, & Klein (2004)		X	X	X		X	
Boe, Cook, & Sunderland (2007, July)		X	X				
Boe, Cook, & Sunderland (2008)		X	X				
*Boyer (1999)	X		X		X		X
Fall & Billingsley (2008)		X	X	X			
Gehrke & McCoy (2007)		X	X			X	
Gehrke & Murri (2006)		X	X			X	
*Giacobbe (2003)	X	X	X	X		X	
*Griffin (2005)	X		X		X		
Irinaga-Bistolas, Schalock, Marvin, & Beck (2007)	X	X	X	X	X	X	
*Maddex (1993)		X	X				
*Martinez & Mulhall (2007)		X	X				X
Nielsen, Barry, & Addison (2006)		X	X			X	
*Tucker (2000)	X		X			X	
*Walker-Wied (2005)		X	X			X	
Whitaker (2000b)	X	X	X	X		X	
Whitaker (2003)	X	X	X	X			
*White (1995)	X	X	X				X
White & Mason (2006)	X	X	X		X	X	

Note: * = doctoral dissertatio

Table 4. Induction and Mentoring Programs for Special Educators.

Program Name/ Location/Source	Beginning Teachers	Description	Retention Data	Other Outcome Measures
Beginning Teacher Support and Assessment Program for Special Education (BTSA-SE) California Kennedy & Burnstein (2004)	190 in 4 years	A 2-year, mentor-based program including five program components: (1) individualized support (2) California Formative Assessment and Support System for Teachers (3) professional release days (4) professional development workshop series (5) professional conferences and materials	Retention after 3 rd year of teaching: 95%	Content of mentor- mentee discussion Satisfaction rating of each component
Project Launch North Dakota Holdman, Harris, & McDonnell (2003)	11 in rural schools	A collaborative program with state IHEs and local districts to provide support to beginning special educators in rural locations and primarily relied on 4-day workshops and mentor support	Overall retention: 82%; Remaining: 5 th -year of teaching, 6 of 7 3 rd -year of teaching, 1 of 2 2 nd -year of teaching; 2 of 2	Self-reported goal topic and attainment
Bridges to Success Oregon Irinaga-Bistolas, Schalock, Marvin, & Beck (2007)	44 total, 24 new, 11 previous general educators, 9 experienced special educators new to area	Three components of induction program: (1) orientation which includes the special education supervisor and school supervisor providing emotional support and school system information; (2) mentoring which includes coaching in professional development goals and implementation; (3) professional development workshops attended by mentor and mentee.	Intent to stay: 84% intended to stay in current position 12% positions terminated 1 to not return at all	Gains in beginning teacher competence, confidence, commitment to profession, satisfaction with mentoring relationship

Table 4. Induction and Mentoring Programs for Special Educators. (continued)

Program Name/ Location/Source	Beginning Teachers	Description	Retention Data	Other Outcome Measures
Teachers Scholars Program Louisiana Carr & Evans (2006)	11 across 7 years	A collaborative program with IHE to earn a specialized master's degree and mentoring while on the job. Intense in-classroom support provided 6-8 hours a week	95% remain in teaching, but rate includes general educators in program	Completion of Louisiana Teacher Assessment Program
Mentor-Link Florida Project Forum Kathy Krudwig, regional coordinator	not reported	School's request to participate in this group-based mentoring model. Each school creates a pod with an expert teacher and 3-8 mentees, all within one school. The pod meets 2 hours weekly and develops their own individualized agenda. The pod researches issues, brings different perspectives, makes action plans, and locates research-based answers to support the increase in skills and knowledge. Most pods last a minimum of 3-5 years	90% intent to return	Growth in collegiality, self-reflection, decision making, and positive outcomes for students
Special School District Missouri New Teacher Center Conference Proceedings Kristin Zimmerman, instructional facilitator	2799 across 11 years	A 6-year induction program providing specific skill sets in two academies and a final research and collaboration phase. Year 1 theme is <i>Classroom Supports for Instruction</i> , year 2, <i>Effective Teaching</i> , and year 3, <i>Thoughtful Teaching</i> . The primary form of support is through two mentors, school-based and district-based	11 years of data indicating retention rates ranging from 74%- 94%	Individual progress on skill sets as measured by beginning teacher, student, and mentor surveys as well as student data. Personal satisfaction with mentoring relationship

Table 4. Induction and Mentoring Programs for Special Educators. (continued)

Program Name/ Location/Source	Beginning Teachers	Description	Retention Data	Other Outcome Measures
Kentucky Internship Program McCormick & Brennan (2001) White (1995)		A collaborative program with the school and IHE adapted for early childhood special educators. This program relies on a committee to support the beginner. The committee consists of the principal, resource teacher and teacher educator. Committee's role is to guide and assess beginning teacher throughout year.	12.4% attrition rate over a four year period (no longer in state or special education)	Self- reported (a) mentor, administrator, teacher educator influence; (b) internship experience; (c) teacher stressors
Gaining Expertise through Mentoring and Support (GEMS) Alabama http://www.alsig.org/gems.cfm Abbie Felder, Alabama Department of Education	467 across 5 years	A 2-year, mentor-based program focusing on individualizing support and promoting instructional excellence.	2000-2001: 36%, 2001-2002: 64%; 2002-2003: 66%; 2003-2004: 85%	None reported
Getting Assistance to Teach Effectively (Project GATE) Florida Web site & Magda Salazar, project coordinator	89	A 2-year, mentor-based program that relies on face-to face mentor-mentee interaction, classroom observations by both mentor and mentee, and ongoing Web-based communication to assist with daily needs and ongoing instructional goals.	None reported	None reported

Table 5. Mentoring Beginning Special Education Teachers.

Program	Characteristics of Mentors	Delivery of Support	Frequency and Proximity of Support	Content of Support
BTSA-SE	District-based, full-time mentors Experienced special educators	Classroom visitation After school Phone E-mail	Weekly contact	Induction requirements Legal issues Instruction Student behavior School issues BTSA-SE procedures Parent communication
Project Launch	Experienced special educator in district Matched by grade level, teaching role, and discipline	4 full days throughout year, in-person meetings Meetings set by mentor or mentee	25-30 hours 4 full days	Action plan including 2-3 instructional goals
Bridges to Success	Experienced SETs Similar teaching assignment Close proximity Matched with mentee on personality, teaching philosophy, gender, and age.	Not known	Weekly contact Release days	Mentee goals and implementation plan Immediate classroom concerns Enculturation
Teachers Scholars Program	Full-time mentors (1 to 4 ratio) Minimum 8 years teaching experience Master's degree Supervision of student teachers Completion of state mentoring program and teacher evaluation program	In classroom	6-8 hours weekly	Instructional feedback Modeling instruction Information about school culture and policies Immediate classroom concerns
Mentor-Link	Passionate, experienced special educators	Group meeting after school Online community	2 hours weekly	Group-generated agenda Research-based strategies
Project GATE	3 year's experience teaching special education Training in roles, responsibilities, and procedures of mentor	Classroom visits or observation Planning meetings Face-to face, e-mail, Discussion, forum, phone	3 mentor classroom visits 2 mentee observing mentor 10 hours of collaboration outside classroom 3-4 planning meetings	Individual goals and plan
GEMS	Experienced special educator	Not known	36 hours a year, once weekly 3 release days	Instructional strategies Behavior management

Table 6. Research on E-mentoring.

Authors/Title	Type of e-mentoring technology/purpose	N	Measures	Results
Abbott (2003)	E-mail exchanges between novice teachers and the mentors	10 novice teachers	<p>Qualitative study:</p> <p>Data included interviews with the novice teachers; their archived e-mail exchanges with their mentors and facilitators; information submitted by the protégés as they selected their mentors, plus professional profiles written by the mentors they selected; and interviews with the Welcoming Interns and Novices with Guidance and Support (WINGS) program facilitators.</p>	<p>Key findings: (a) the participating novice teachers sought induction support online largely because they felt vulnerable when asking for assistance or support in their own school environments, perceiving such requests as possibly exposing them to negative judgment from on-campus colleagues, assigned mentors, or supervisors; (b) these protégé teachers generally felt that their telementors helped them by providing profession-related developmental assistance, ranging from practical teaching suggestions the new teachers could immediately apply in their classrooms to general suggestions that helped them assimilate into the social and professional cultures of teaching. The majority of these novice teachers also felt that their telementors provided them with valuable personal and emotional support, characterized by qualities that included caring, attentiveness, and positivity; (c) facilitation provided by members was important in preventing telementoring teams' correspondence from faltering and in resolving technological problems that disrupted telecommunications connections, which occurred more frequently than expected.</p>

Table 6. Research on E-mentoring. (continued)

Authors/Title	Type of e-mentoring technology/purpose	N	Measures	Results
Allen (2005)	Use of Web support as a way to break through teacher isolation	No research	No research	No research
Anthony & Kritsonis (2006)	E-mentoring in general and how it should be used with urban districts to reduce teacher turnover. No technology specifically discussed.	No research	No research	No research
Bice (2005)	E-mentoring	Five female beginning teachers who participated in e-Mentoring for Student Success (eMSS) program	Qualitative study Data collection was accomplished using two methods: compiling discourse and interview.	Through online discussion, teachers developed or advanced their awareness of student culture and learning characteristics and adapted their practice to foster a climate of student respect. Teachers who had a strong awareness of their own and their students' cultures advanced their understanding of multicultural teaching competencies further than those who did not.
Brintnall (2002)	E-mail	Four 1 st - and 2 nd -year secondary level teachers (2 males and 2 females, recent graduates of the same university)	Qualitative study where the researcher sent e-mail prompts to the participants and the responses for 18-week research period were archived as the primary source of data. Initial and exit interview, group interview, classroom observation, and beliefs survey were collected as additional data sources.	All the participants related feeling less isolated as a result of participating in the study. Also participants shared the realization that each of the participants was struggling with the same issues and problems.
Clift, Hebert, Cheng, Moore, & Clouse (in press).	Review report on the impact of Internet-based communication that seeks to support new teachers.	No research	No research	No research

Table 6. Research on E-mentoring. (continued)

Authors/Title	Type of e-mentoring technology/purpose	N	Measures	Results
Davis & Resta (2002)	E-mail	9 novice teachers (2 nd - and 3 rd -year teachers) who were graduates of the Teacher Fellows Program	Qualitative study where the research sent e-mail prompts to the participants and the responses for 12-week research period were archived as the primary source of data. Post surveys and follow-up interviews were used as additional data sources.	Results suggested that electronic collaboration is effective means of providing additional mentoring and support to beginning teachers in their first few years of teaching.
Donna (2007)	Online modules in Moodle for Small learning Communities Synchronous Chats Blog E-mail (but this was a secondary use)	58 mentees (38 science and 13 math with 7 facilitator-mentees)	Quantitative needs assessment and survey questions provided Data included survey (Likert response as well as short responses)	Barriers in engagement: (a) lack of time to interact, especially in the real-time Chats with small learning community (SLC) group members; (b) participants did not see value in communities of practice support via the Internet; (c) found that redesign of program around topics of concern (Dilemmas) had a positive effect on use; (d) independent modules were revised to allow users to select topics with positive outcomes.
Eisenman & Thornton (1999)	Need for e-mentoring	27 first-year teachers who were recent graduates of a teacher's college	Qualitative. Results from survey, focus group sessions, and interviews were gathered.	Existing mentoring programs may not provide the types of support necessary to the continued professional development of the novice teacher. Electronic mentoring programs can provide the necessary bridge between the new teachers' professional preparation and their experiences in the field.

Table 6. Research on E-mentoring. (continued)

Authors/Title	Type of e-mentoring technology/purpose	N	Measures	Results
French (2004)	The participants used e-mail to interact over a period of time, and the data collected was specific to this e-mail interaction. Time ranged from 5 months to 2 years.	6 mentor-mentee pairs were interviewed on this participation in a novice teacher education program in which they received online mentoring support.	Qualitative study: researchers retrieved and organized e-mails sent to and from mentor-mentees in chronological order and then split specific to theme. These were organized into stories and captured 8 categories of information.	<p>Central themes included classroom management techniques, the behavior of students as a group, and teaching materials. Great deal of information sharing was via storytelling by the mentors to the mentees, looking at these as narratives and then grouping as relating narratives, venting narratives, illustrative narratives, and reflective narratives.</p> <p>Findings: much of what was discussed via e-mail is similar to face-to-face mentoring.</p> <p>Advantages: more time to offer response</p> <p>Disadvantages: they are not in the same context and not experiencing the same day-to-day interaction.</p> <p>The online storytelling assumes the mentee and/or mentor will be able to fill in the blanks concerning some of the storytelling discourse.</p> <p>Teachers are telling stories online for a reason. This is not simply face-to-face banter but strategic instruction intended to establish and maintain an interpersonal relationship with common ground from which to share experiences (relating), illustrate a point or example made by the sender (illustrating), express frustration to another person who empathizes with their situation (venting), and present information for discussion and consideration (reflecting)</p>

Table 6. Research on E-mentoring. (continued)

Authors/Title	Type of e-mentoring technology/purpose	N	Measures	Results
Gareis & Nussbaum-Beach (2008)	Asynchronous discussion boards within www.tappedin.org that were facilitated by the researchers.	13 novice teachers interacted with the online forum. 11 teachers served as online mentors.	Qualitative content analysis where the researcher examined the posts and interactions that took place online and coded these responses and interactions. Paired things into 6 different groups.	High frequency of posts from mentors and low from mentees (3 to 1). Novice posts were to get answers to questions or specific problems. Of the posts, 71% written by mentors and the remaining 29% offered by mentees. Elementary novice teachers posted substantially more than secondary novice teachers. The majority of posts were broadcast posts meant for the entire group and not a specific individual. The majority of the novice posts were direct questions looking for answers. 63% of mentor posts were modeling or telling stories about what they did.
Gutke & Albion (2008)	To explore possible benefits of e-mentoring and online communities for induction. No technology specifically discussed.	9 teachers, including novice, mentors, and veteran teachers across three primary schools	This was a qualitative study and it appears that they were inquiring of novice, mentors, and veteran teachers about their perceptions of e-mentoring for induction support.	Study reported on the feelings participants had on mentoring and induction support in general (feedback included) that mentoring took place, offered reflection, and was beneficial.
Hawkes & Romiszowski (2001)	The computer-mediated discourse produced by the teachers was compared with the discourse produced by teachers in face-to-face meetings.	28 practicing teachers in 10 Chicago suburban schools	The recording of the face-to-face meetings ran concurrently with the collection of group computer-mediated communication for 2-year research period.	The results showed that while the computer-mediated teacher dialogue was less interactive, it was significantly more reflective ($t=4.14$, $p=.001$) than face-to-face discourse.
Hayward, DiMarco, Kranz, & Evans (2001)	E-mail	55 PT undergraduate students (33 mentors and 22 mentees)	Qualitative: single-site case study (data included e-mails, journals, pre/post program interviews)	Four themes: (a) practice concerns: increased competence in practice-related issues by sharing concerns, (b) value of co-op: support system for the transition from the classroom to the clinic, (c) reflection: participation allowed the students to reflect on their growth and development, and (d) learning: students' perception was that learning was facilitated by this experience.

Table 6. Research on E-mentoring. (continued)

Authors/Title	Type of e-mentoring technology/purpose	N	Measures	Results
Hebert, Clift, & Wennerdahl (2008)	This article reviews online mentoring support or professional development for new teachers. It then describes the challenges and the successes the Illinois New Teacher Collaborative (INTC), staff have experienced over two and a half years while attempting to develop a Web site that serves as a source of support for new teachers, mentors, administrators, and IHEs	No research	No research	No research
Herrington, Herrington, Kervin, & Ferry (2006)	Web site that hosts a discussion board and blogs for teacher and novice teacher interaction. The site features an Internet Café where novice teachers interact with veterans. The site is structured whereby users enter in areas that are offering challenges. These provide links to useful resources for the teacher. Discussion Forums (FAQs), groups connections (mentor, larger group). Newsletters regularly updated,	No research	No research	No research

Table 6. Research on E-mentoring. (continued)

Authors/Title	Type of e-mentoring technology/purpose	N	Measures	Results
Hixenbaugh, Dewart, Drees, & Williams (2004)	E-mail	207 first-year university students. Control n=81 and e-mentoring n=126	Questionnaires given at three times during the year Design: 2(groups) x 3(repeated measures) ANOVA	Although no significant difference in feelings of social integration at the beginning of the year, there was a significant elevation in feelings of social integration at the end of the year for both the control and the experimental group. This elevation was greater for the e-mentoring group.
Israel, Pattison, Moshirnia, & Newton (2008)	This paper reports the conceptual framework, cyber-infrastructure, and measures of effectiveness of a state-wide e-mentoring program in development at a Midwestern university.	No research	No research	No research
Jacobsen, Friesen, & Clifford (2004, October)	IO (Intelligence Online) is an online professional learning environment with asynchronous discussion communication, a publishing feature, list creator, content about inquiry and suggestions to involve students meaningfully, and student record functions.	15 student teachers in practicum, 1 faculty member, and the elementary school staff	Case study design	The IO system supported mentors and student teachers' sustained professional dialogue throughout the semester. The online design tools enabled the student teachers to create inquiry-based, technology-enhanced projects for children.
Jaffe, Moir, Swanson, & Wheeler (2006)	This is a chapter discussing the eMSSS program in detail. In Dede's Online Professional Development for Teachers book.	This is an overview of their program	No research	The chapter offers a good framework for what they have done, lessons learned, feedback they have received, and how they have adjusted their program due to the lessons learned.

Table 6. Research on E-mentoring. (continued)

Authors/Title	Type of e-mentoring technology/purpose	N	Measures	Results
Johnson, Maring, Doty, & Fickle (2006)	Video conferencing Purpose: Using video conferencing to expand field experiences of preservice teachers with e-mentoring from teachers in the field. The preservice teachers are paired with classroom teachers and their students.	2 preservice teachers, 1 first-grade student, 1 classroom teacher, and 2 cybermentors	Case study methodology: Interviews.	Cybermentors: preservice teachers developed significant insights about reading instruction. Classroom teacher: The e-interactions raised the students' reading fluency. Faculty reflection: cyber-tutorials/mentoring provided preservice teachers with the opportunity to develop a deeper understanding of student diversity.
Kasprisin, Single, Single, & Müller (2003)	E-mail Purpose: isolate the impact of training tutorials on participation of e-mail e-mentoring	400 undergraduate students. Half were randomly chosen to participate in e-training	Control group experimental design examining the effects of training on e-mentoring: questionnaires. Correlation matrix of involvement, satisfaction, and perceived value	Involvement, satisfaction, and perceived value from participation were related. Students involved in e-training sent e-mail messages to their mentors more frequently than those for whom it was not mandatory. Both groups rated satisfaction very high (no sign. difference).
Klecka, Cheng, & Clift (2004)	Electronic conferences were used between mentee and mentor teachers.	375 teachers with 0-38 years of experience in the K-12 classroom; 3-year project	Data sources: open-ended surveys, separate focus group interviews with novice teachers & e-mentors, personal communications via e-mail, field notes taken at face-to-face meetings, Web site statistics, and personal journal entries	Teachers' participation in e-conferences was influenced by the conditions that were shaped not only by the project itself but also the participants' perceptions about the e-conferences and the teachers with whom they were interacting.
Klecka, Clift, & Cheng (2005)	Reviews Novice Teacher Support E-mentoring Project (communities with Web-based, electronic conferencing); analyzes advocacy for this medium for bringing educators together across time and distance with what is known about urban schools, access to Internet connections, and teachers' workloads.	No research	No research	No research

Table 6. Research on E-mentoring. (continued)

Authors/Title	Type of e-mentoring technology/purpose	N	Measures	Results
Knapczyk, Hew, Frey, & Wall-Marencik (2005)	Asynchronous conferencing/discussion boards	26 practicum students and 33 mentors	Qualitative: Questionnaire, open-ended questions added to the questionnaire, online observations of interactions, document analysis of practicum students' final reflection logs.	Practicum teachers consistently reported that the mentoring component enhanced their professional development. 92% of the mentees and mentors agreed that the discussion boards facilitated communication. Online observations showed flexible and individualized approaches among the mentors.
Livengood (2007)	Online teacher induction programs across the nation	51 mentors involved in 36 online teacher induction programs responded to the online survey.	Descriptive study. Survey results were statistically and qualitatively analyzed.	This descriptive study provided a synthesis of the form, structure, activity, and relationship components of effective online teacher induction programs.
Livengood & Merchant (2004)	This paper proposes a telementoring program which provides a venue allowing convenient, consistent, and frequent communication between a mentor and a beginning teacher. The integrated triad model of a university-based teacher induction program was used as the blueprint of the proposed e-mentoring program.	No research	No research	No research
McDiarmid (2007)	A Web-based mentoring support system using threaded discussion and e-mail formats	41 preservice physical education teachers	Mixed method research with control (n=21) and experimental (n=20) groups. For 14-week academic semester, interview records, e-mails, discussion threads, and survey results were collected.	The results showed that the online mentoring did not impact levels of self-efficacy for the student teachers. However, reduced feeling of isolation, and the value of peer-mentoring, and the anonymous discussion board were reported by the control group.

Table 6. Research on E-mentoring. (continued)

Authors/Title	Type of e-mentoring technology/purpose	N	Measures	Results
Paulus & Scherff (2008)	Blackboard's™ discussion forum	15 English education preservice teachers	Qualitative case study. The discussion forum transcripts were analyzed to explore emergent themes related to the research questions.	The findings suggest that Computer Mediated Communication (CMC) tools such as Blackboard's™ discussion forum may provide interns and novice teachers with psychological and emotional support.
Price & Chen (2003)	This article explores the challenges, benefits, and problems of telementoring. The authors then offer a plan for setting up an effective mentorship triad among preservice teachers, cooperating teachers, and university professors , utilizing the World Wide Web as the medium to implement the telementoring context.	No research	No research	No research
Taylor (2007)	Asynchronous modules/discussion boards E-mail Face-to-face	7 online facilitators of an e-mentoring program participated in advanced training & constituted the sample	Surveys Case studies based on interviews Coding of discussion board interaction including messages and ongoing threads. Effectiveness of training and subsequent mentoring.	Improvements in dialogue quality were noted in case studies and coding of discussions. Preliminary evidence (surveys) that early career teachers are benefiting from the discussion.

Table 7. E-Mentoring Projects.

Project Name/ Web site	State/University/ Contact Info	Software Operating Platform(s) and Software	Components	Target Audience	Mentor- mentee elements	Measures
<p>Illinois New Teacher Collaborative-Online (INTC-Online).</p> <p>http://intc.ed.uiuc.edu/</p>	<p>Collaborative of teacher unions, principals association, Illinois Board of Education, and multiple IHEs in Illinois.</p> <p>Contact: Dr. Renee Clift, TLINC-Online Project Director rtclift@uiuc.edu</p>	<p>Moodle</p> <p>Adobe Connect (beginning Fall, 2008)</p>	<p>Large group discussion forums: 911, hot topics</p> <p>Synchronous chat (Moodle) video conferencing (Adobe Connect)</p> <p>Content-specific online resources</p>	<p>Novice teachers, K-12 teachers, administrators, mentors, higher education personnel in Illinois</p>	<p>Recruit board-certified teachers</p> <p>Large group discussions open to novice teachers in state</p> <p>(No dyadic mentor-mentee pairs)</p>	<p>Activity level: number of posts, number of visitors, etc.</p>
<p>eMSS (e-mentoring for student success)</p> <p>Science e-mentoring site: http://emss.nsta.org/</p> <p>Math e-mentoring site: http://www.newteachercenter.org/eMSS/Math/</p>	<p>Collaboration between University of California Santa Cruz's New Teacher Center (NTC), Montana State University's Science/Math Resource Center, NSTA, NCTM.</p> <p>Contact: Dr. Lynn Kepp, eMSS Co-Project Director lkepp@ucsc.edu</p>	<p>Sakai CMS</p>	<p>Private mentor-mentee discussions (1 mentor working with 3-4 mentees)</p> <p>6-8 week curricula around content</p> <p>Large group discussions</p> <p>Links to curricular Web resources</p>	<p>Middle and high school math and science teachers (e.g., IHEs, school districts, state departments of education)</p>	<p>Recruit nationwide via eMSS Web site.</p> <p>Mentor-mentee Match: Content area grade-level mentee requests</p>	<p>External evaluator reports: Mentor and Mentee self-efficacy individual testimonials, content knowledge</p>

Table 7. E-Mentoring Projects. (continued)

Project Name/ Web site	State/University/ Contact Info	Software Operating Platform(s) and Software	Components	Target Audience	Mentor- mentee elements	Measures
WINGS (Welcoming Interns & Novices with Guidance & Support) https://uteach.utexas.edu/go/wings/Home	University of Texas- Austin Contact: Dr. Judy Dean, Program Coordinator Judy.dean@mail.utexas.edu	Platform: FarCry Course Management System	Components: Private mentor- mentee discussion forums Mentor development resources Online content and pedagogical resources	Novice teachers who graduated from the University of Texas	Mentor recruiting: School districts, e- mail invitations Mentor-mentee match: novice teachers select mentors from a database of prospective e- mentors	Measures: Amount of interactions within the discussion boards.
Project TIN (Teacher Induction Program)	University of Minnesota Joel Donna TIN Coordinator Jdonna76@gmail.com 612-770-6907	Moodle CMS Adobe Connect for video conferencing and file sharing	Large-group case- based discussion forums Small group discussions Mentor-mentee private discussions Video conferencing	Novice STEM teachers in Minnesota	Mentor recruiting: Letters to superintendents and principals, personal contacts, and regional math, science and technology education groups Mentor-mentee match: content and setting (urban, suburban, rural)	Frequencies of interaction, discourse analysis, summative papers, reflective journals

Table 7. E-Mentoring Projects. (continued)

Project Name/ Web site	State/University/ Contact Info	Software Operating Platform(s) and Software	Components	Target Audience	Mentor- mentee elements	Measures
<p>ENDAPT: Electronic Networking to Develop Accomplished Professional Teachers</p> <p>http://endapt.wm.edu/modules/telementoring/info.php?template=home_page.html</p>	<p>University of William and Mary and the Center for Teacher Quality</p> <p>Dr. Christopher Gareis crgare@wm.edu</p> <p>Dr. Judi Harris Judi.harris@wm.edu</p>	<p>Tapped In (Online community of practice platform) www.tappedin.org</p>	<p>Large group discussion groups around curricular issues</p> <p>Private one-on-one e-mentoring components include private: e-mail, discussions, chat</p>	<p>Novice teachers from Virginia</p>	<p>Mentor recruiting: Virginia Teacher Leaders Network</p> <p>Mentor-mentee match:</p> <p>Large group discussions involve all mentors and mentees</p> <p>One-on-one mentoring involve novice teachers selecting mentors from a database of e-mentors</p>	<p>Large group interactions: Discourse analysis of conversations in discussion boards</p> <p>One-on-one mentoring: evaluation questionnaires, communication monitoring and analyses</p>
<p>Performance-based Academic Coaching Team (PACT) http://tap.tarleton.edu/pact/</p>	<p>Texas A&M</p> <p>Contact: Dr. Irma Harper Senior Coordinator imarshall@tamu.edu</p>	<p>Platform: Self-Developed</p>	<p>Large group discussions</p> <p>Small group chat sessions around critical issues</p> <p>“Help Request” request for private e-mail or phone mentoring</p> <p>Online resources</p> <p>Mentor development resources/modules</p>	<p>Novice teachers in Texas</p>	<p>Mentor recruiting: retired teachers and administrators</p> <p>Mentor-mentee match: based on pedagogy and/or content support requested by the mentee within either the discussion group or the “Help Request”</p>	<p>Satisfaction surveys, Web site traffic patterns</p>

Table 7. E-Mentoring Projects. (continued)

Project Name/ Web site	State/University/ Contact Info	Software Operating Platform(s) and Software	Components	Target Audience	Mentor- mentee elements	Measures
<p>UWeb Teacher Support Network using Teachers Learning in Networked Communities (TLINC) http://depts.washington.edu/wactl/tlinc/index.html</p> <p>**Restructuring year: E-mentoring program is shifting focus to transitioning preservice teachers to inservice.</p>	<p>University of Washington</p> <p>Washington Center for Teaching and Learning</p> <p>Contact: Kurt Sahl Grad assistant (206) 527-8375 sahlk@u.washington.edu</p>	<p>Platform: Internally developed at the University of Washington</p>	<p>Large group discussions</p> <p>Resources developed in school of education courses</p>	<p>Preservice K-12 teachers and novice teachers who graduated from the University of Washington School of Education</p>	<p>Fall 2008 semester: project will only be open to preservice teachers. Once they transition into the field, their mentors will be assigned. As they are restructuring, they have not yet focused on mentor recruitment.</p>	<p>None at the present time due to restructuring.</p>
<p>Building Resources: Induction and Development for Georgia Educators (BRIDGE) http://www.teachersbridge.org/</p>	<p>University of Georgia</p> <p>Contact: Julie Moore, Co-Program Director julamoor@uga.edu</p>	<p>Platform: Internally developed</p> <p>Professional Resources around Georgia Framework for Teaching standards</p> <p>Communities (open discussion boards and chat rooms)</p>	<p>Professional resources around the Georgia Framework for Teaching standards</p> <p>Discussion forums</p> <p>Chat room</p> <p>Future plans to explore the use of VoIP and video conferencing.</p>	<p>Preservice and novice teachers in Georgia</p>	<p>Mentor recruiting: Certified Critical Friends [CFGs] facilitators are asked to participate</p> <p>Mentor-mentee Match: Based on content and grade level. Facilitators lead mentees in conversation protocols based on CFG facilitation.</p>	<p>In the process of examining data sources.</p>

Table 7. E-Mentoring Projects. (continued)

Project Name/ Web site	State/University/ Contact Info	Software Operating Platform(s) and Software	Components	Target Audience	Mentor- mentee elements	Measures
<p>Emporia State University Virtual Mentoring Program Internal Web site accessible only to mentees/mentors</p> <p>**Restructuring year: E-mentoring program is shifting focus to more district-based e-mentoring.</p>	<p>IHE: Emporia State University</p> <p>Contact: Dr. Kelly O'Neal koneal@emporia.edu</p>	<p>Blackboard (Bb) CMS</p> <p>Horizon Wimba (VoIP)</p>	<p>Large group discussion (Bb)</p> <p>Weekly VoIP meetings/guest lectures (Wimba)</p> <p>Links to curricular Web resources</p> <p>Collaboration with school district mentor resources for content, discussions, etc.</p>	<p>Novice special educators on emergency certificates enrolled at Emporia State University</p>	<p>Mentor recruiting: Former program graduates who have taught successfully for several years</p> <p>Mentor-mentee match: No mentor-mentee match online. Large-group supports provided by university facilitators</p> <p>District personnel provide individual mentoring in a face-to-face format</p>	<p>None at the present time due to restructuring</p>
<p>TLINC-Denver Website: Private space within TappedIn</p> <p>www.tappedin.org</p>	<p>University of Colorado-Denver</p> <p>Contact: Diane Hageman Diane.hageman@ucdenver.edu</p> <p>Cindy Gutierrez Cindy.gutierrez@ucdenver.edu</p>	<p>TappedIn (community of practice software) (www.tappedin.org)</p>	<p>Components depend on interactions and included:</p> <p>Private and open large-group discussions</p> <p>Private and open synchronous chat</p> <p>Online resources (TappedIn library and private resources)</p>	<p>Preservice teachers enrolled at the University of Colorado at Denver and novice and veteran teachers in the Denver Public School system</p>	<p>Mentor recruiting: Recruited from Denver Public schools.</p> <p>Mentor-mentee match: E-mentoring involves large-group supports provided by teacher facilitator in the school district</p>	

Table 8. Induction Skill Sets

Professional Development Skill Sets Academy I, II and Research and Collaborative Learning	
Theme Areas	Induction Skill Sets
A. SSD Expectations and Procedures	<ol style="list-style-type: none"> 1. Completes all forms for employment. 2. Adheres to Universal Precautions in the workplace.
Theme Areas	Academy 1 Skill Sets
A. Student Behavior	<ol style="list-style-type: none"> 1. Uses effective techniques to maintain positive behaviors by recognizing and reinforcing appropriate behavior (positive ratio 4:1) (PBE Standard 2, Criterion 2D, Descriptor 12, Indicator c). 2. Uses effective techniques to maintain positive behavior by making effective use of preventative strategies including sensory supports (PBE Standard 2, Criterion 2D, Descriptor 12, Indicator j). 3. Establishes, teaches, and maintains rules, routines, attention signal, and schedules (universals) (PBE Standard 2, Criterion 2D, Descriptor 13, Indicator a). 4. Uses effective techniques to find and eliminate the causes of undesirable behavior (PBE Standard 2, Criterion 2D, Descriptor 12, Indicator c).* 5. Identifies the essential components of a functional assessment and resources to support the teacher in the team process (PBE Standard 2, Criterion 2D, Descriptor 13, Indicator b).
B. Quality Instruction	<ol style="list-style-type: none"> 1. Assesses student learning, uses assessment results to plan, selects learning experiences, delivers instruction and reflects on evidence of student learning (PBE Standard 1, Criterion 1B, Descriptor 3, Indicators a, c, and d, Criterion 1F Descriptors 14 and 15, Indicators a, b, and c). 2. Provides direct instruction in skills and strategies to ensure that students have access to and benefit from the general education curriculum using the components of lesson design in the advance organizer, body and post organizer (PBE Standard 3, Criterion 3A, Descriptor 2, Indicators a, b, c, and d). 3. Demonstrates techniques to promote maximum student involvement/learning (PBE Standard 3, Criterion 3D, Descriptor 8, Indicator b). 4. Integrates basic technology in the learning environment (PBE Standard 1, Criterion 1D, Descriptor 10).* 5. Identifies cultural and diversity factors that contribute to student learning (PBE Standard 1, Criterion 1B, Descriptor 6, Indicator a).

Table 8. Induction Skill Sets (continued)

Professional Development Skill Sets Academy I, II and Research and Collaborative Learning	
Theme Areas	Induction Skill Sets
C. Student Performance/ Literacy/Mathematics	<p>1. Identifies multiple strategies and routines that address student needs in the component areas of literacy and/or mathematics. (PBE Standard 3, Criterion 3A, Descriptor 1, Indicator a).*</p> <p>2. Delivers instruction in strategies and routines, demonstrating the Academy I Quality Instruction skill set (PBE Standard 1, Criterion B, Descriptor 5 Indicator a).*</p>
D. SSD Expectations and Procedures	<p>1. Demonstrates knowledge of the IEP process and the legal issues relative to considering assistive technology and planning for transition (PBE Standard 1, Criterion 1G, Descriptor 23; Standard 4, Criterion 4G).</p> <p>2. Demonstrates basic technology skills to comply with district procedures such as e-mail and Encore (PBE Standard 4, Criteria 4F and 4G).</p>
E. Professional Growth	<p>1. Reflects on teaching and learning through job-embedded staff development, self-reflection and collecting teacher and student data (PBE Standard 4, Criteria 4C and 4D).</p>

** Revised June, 2006*

All standards are based on SSD Teacher Evaluation, 2004. Special School District of St. Louis County 6/19/2006

Table 9. Academy Skill Sets

Professional Development Skill Sets Academy I, II and Research and Collaborative Learning	
Theme Areas	Academy II Skill Sets
A. Student Behavior	<ol style="list-style-type: none"> 1. Plans and conducts functional behavioral assessments to guide instruction/intervention (PBE Standard 1, Criterion 1G, Descriptor 24). 2. Assesses and analyzes data to guide social/emotional behavior instruction and interventions (PBE Standard 2, Criterion 2D). 3. Plans social/emotional behavior instruction/intervention based on data, selecting scientifically validated strategies and technology to support students with diverse learning needs (PBE Standard 2, Criterion 2A and D). 4. Implements social/emotional behavior intervention/instruction plan (PBE Standard 2, Criterion 2D; PBE Standard 3, Criterion 3A, Descriptor 2, Criterion 3D, Descriptor 8, Criterion 3F, Descriptor 12).
B. Quality Instruction	<ol style="list-style-type: none"> 1. Assesses and analyzes data to drive instruction (PBE Standard 1, Criterion 1F, Indicators 14, 15, and 17). 2. Plans instruction based on data; selecting strategies and technology to meet ethnic, cultural and all learning needs (PBE Standard 1, Criterion 1B, Indicator 6, Criterion 1D, Indicator 10; Standard 3, Criterion 3A, Indicator 1a, 2, 3a, b and c; Criterion 3F, Indicator 12). 3. Teaches lessons using data, strategies, and technology (PBE Standard 1, Criterion 1A, 1D, Indicator 10; 1E, and 1F; Standard 4, Criterion 4E, Indicator 15).
C. Student Performance/Literacy/Mathematics	<ol style="list-style-type: none"> 1. Assess learning and teaching by collecting analyzing and interpreting data to drive instruction in the area of literacy (phonemic awareness, decoding, vocabulary, comprehension, fluency and written language) (PBE Standard 2, Criterion 2A, Indicators 1h, Criterion 2c; Criterion 3f, 12a and b, and 13). 2. Plans instruction based on data and selects research-based strategies and technology to meet diverse identified literacy learning needs. (PBE Standard 1, Criterion 1F, Indicator 16, Criterion 1G, Indicator 19; Standard 4, Criterion 4D, Indicator 11). 3. Teaches appropriate research-based literacy strategies (using data, strategies and technology). (PBE Standard 1, Criterion 1A, 1D, Indicator 10; 1E, and 1F; Standard 4, Criterion 4E, Indicator 15)
D. SSD Expectations and Procedures	<ol style="list-style-type: none"> 1. Demonstrates continual progress in Academy I skill sets.
E. Professional Growth	<ol style="list-style-type: none"> 1. Examines current teaching practices to support district goals. (PBE Standard 4, Criterion 4C, Indicator 5 a, c, and d; Criterion 4D, Indicator 9, a and b).

All Academy II skill sets revised June, 2006 *All standards are based on SSD Teacher Evaluation, 2004.*

Table 10. Research and Collaborative Learning: Academy Skill Sets

Professional Development Skill Sets Academy I, II and Research and Collaborative Learning	
Theme Areas	Research and Collaborative Learning Skill Sets
A. Student Behavior (Standard 1: G 2: A, B, C, D, E)	<ol style="list-style-type: none"> 1. Collaboratively analyzes student performance and teacher behavior to determine improvement needs. 2. Studies effective practices and implements research based strategies to improve student social and emotional needs. 3. Evaluates and changes own practices based on student data.
B. Quality Instruction (Standard 1: A, B, C, D, E, 3: A, C, D)	<ol style="list-style-type: none"> 1. Independently pursues additional knowledge and skills to enhance instructional practices. 2. Demonstrates expertise in effective practices and collaboratively shares instructional practices and data with colleagues to improve own instruction. 3. Develops innovative strategies and instruction to meet the needs of students. 4. Evaluates and changes own practices based on student data. 5. Proficiently integrates technology into the learning environment. 6. Continues to plan instruction to reflect cultural and ethnic diversity.
C. Student Performance/ Literacy (Standard 1: F 2: A 3: A, F)	<ol style="list-style-type: none"> 1. Collaboratively analyzes student performance. 2. Studies best practices and implements research based strategies to improve student achievement. 3. Evaluates and changes own practices based on student data.
D. Professional Growth (Standard 4: B, C, D, E)	<ol style="list-style-type: none"> 1. Engages in collaborative planning and reflection throughout all instructional areas including assessment, intervention and evaluation. 2. Participates in reflective practices aimed at implementing effective practices in the educational setting. 3. Provides leadership in collaborative projects with partner district to improve student performance. 4. Shares collaborative work with colleagues to solicit reflective feedback and professional growth. 5. Offers support to new staff in the acquisition of needed skills through a variety of collaborative efforts including mentoring, coaching and modeling. 6. Demonstrates competency in Academy I and II skill sets.

Table 11. Retention Rate for New SSD Teacher-Level Staff.

Year	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08
Number of New Hires	134	166	316	300	300	326	253	251	223	275	255	349
Number of New Hire Resignations	35	25	19	30	21	22	21	20	38	26	32	18
Retention Rate	74%	85%	94%	90%	93%	93%	92%	92%	83%	91%	88%	95%