I, Xiaohe Li, hereby submit this original work as part of the requirements for the degree of Doctor of Education in Special Education.

It is entitled:
Examining Preservice Teachers' Appropriation of Pedagogical Tools for Teaching Students with Moderate to Severe Disabilities in an Embedded Reading Methods Course

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Examining Preservice Teachers' Appropriation of Pedagogical Tools for Teaching Students with Moderate to Severe Disabilities in an Embedded Reading Methods Course

A dissertation submitted to the Graduate School of the University of Cincinnati in partial fulfillment of the requirements for the degree of Doctor of Education in the Department of Special Education of the College of Education by

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ABSTRACT

Special education teacher preparation programs are now expected to prepare special education teachers to work in a variety of settings, teach a variety of contents, and a variety of students with disabilities, including those with severe disabilities. Scholars have argued that for individuals with severe learning needs, the acquisition of literacy skills goes beyond mandated access to general education curriculum—arguing instead that acquiring literacy skills is a quality of life issue. Although some work has been done to identify evidenced-based practices for teaching students with severe needs, including literacy skills, the research to practice gap is well documented. Importantly, there has been little emphasis on examining preservice teacher preparation that prepares teachers to meet the academic and social learning needs of these students. Teacher education programs are under increasing pressure to demonstrate the importance of preservice preparation. Thus, the purpose of this study is to examine the various influences, processes and extent of special education preservice teachers’ appropriation of pedagogical tools for teaching reading to students with moderate to severe disabilities within the context of reading methods and instructional strategies courses paired with a field experience. This study will document which components of this experience influenced preservice special education teachers’ adoption of pedagogical tools for meeting the literacy needs of school-aged students with severe disabilities.

Qualitative data included interviews with preservice teachers, course instructors, and field supervisors, as well as course artifacts data and field notes. Data were analyzed using grounded theory. Qualitative findings revealed that course and field experiences afforded preservice special education teachers access to both conceptual tools and pedagogical tools. During coursework, concepts related to evidence-based literacy instruction for students with
moderate to severe disabilities were covered. In addition, conceptual tools such as the belief that every student can learn and every student deserves a functional communication system were communicated by course instructors. Practical tools such as assessing communication needs and goal setting were introduced. Notably, while all preservice special education teachers had access to tool introduction, findings suggest that individual factors interacted with contextual factors to influence preservice special education teachers’ appropriation of pedagogical tools. Preservice special education teachers varied on individual factors such as reflexivity, career direction, motivation, and prior experience with students with significant needs. Contextual factors included relationships with mentor teachers, classroom schedules, instructional practices, and on-site coaching and feedback from course instructors and field supervisors. The majority of preservice teachers adopted tools at a medium-high range, which suggests that coursework coupled with field experiences equipped the vast majority of preservice special education teachers with knowledge, skills, and dispositions needed to serve students with significant needs in the future.
ACKNOWLEDGMENTS

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CHAPTER 1
INTRODUCTION

Special education teacher preparation programs need to prepare special education teachers to work in a variety of settings, to teach a variety of contents (including reading), and work with a variety of students who have the most challenging of academic and social needs (Blanton, Griffin, Winn, & Pugach, 1997). In this age of national accountability, it is crucial to understand the outcomes of teacher preparation programs. If preparation programs cannot define or measure teacher quality, and demonstrate the effectiveness of teacher preparation programs, the field “will be subject to unsubstantiated criticism from audiences both within and outside the education community” (Carson, Lee, & Schroll, 2004, p.350).

Ryndak and Kennedy (2000) noted that institutions of higher education were struggling with how to effectively and efficiently prepare teachers to meet the needs of students with severe disabilities. Three options seemed available: (a) prepare teachers to have a range of specialized expertise to provide educational services for students with disabilities, including those with severe disabilities, along with general education content and instructional methods (i.e., generalists), (b) prepare teachers specifically to have the expertise required to meet the diverse needs of students with severe disabilities and be able to communicate that knowledge through collaboration with other educators who have content expertise in general education (i.e., specialists), or (c) prepare teachers as both generalists and specialists (Ryndak et al., 1998).

Shifting perspectives on disabilities, effective practices and service delivery models have led changes to how special education is conceptualized and organized, and consequently, how the special education teacher programs are structured (Brownell, Sindelar, Kiely, & Danielson, 2010). The movement from the categorical era of teacher preparation, to non-category era and now the
era of integrated preparation indicates changes both in political contexts and assumption of teacher quality. In this new era, special education teachers need both disability-specific knowledge, content domain knowledge, as well as pedagogical knowledge to teach academic contents. They must be knowledgeable of evidence-based intervention strategies, and they need to collaborate with general education teachers and have their knowledge fit into the general education curriculum. As Brownell et al. (2010) argued,

If special education teachers are not perceived as adding value to the education of students with disabilities in an RTI model, they may be marginalized in schools, and special education would risk losing its identity as a profession. In this sense, special education teacher preparation is at a critical juncture. We can no longer afford to be unclear about who high-quality special education teachers are and how they should be prepared. (p.374)

Given the complex nature of teacher preparation, the study of preservice teacher learning is essential if teacher educators hope to craft teacher preparation programs to adequately prepare high-quality special educators, particularly to meet the needs of children with moderate to severe disabilities. However, examining preservice teacher learning is a complex endeavor (Brownell et al., 2009). As Leko and Brownell (2011) noted, “The relationship between teacher preparation and what preservice teachers learn . . . is not unidirectional; it depends on what preservice teachers contribute to their opportunities to learn” (p.229). Thus, a better understanding of the complex interaction among individual dispositions, content knowledge, and pedagogical knowledge are critical to understanding how learning occurs and progresses in special education teacher preparation programs. Such understandings could be used to improve the quality of teacher education programs that prepare special education teachers to implement evidence-based
practices for students with moderate to severe disabilities to ensure these students have appropriate access to learning opportunities.

Sindelar, Brownell, and Billingsley (2010) suggested that with the increasing emphasis on access to general education, preservice special education teachers (PSTs) need to demonstrate knowledge of content, intervention and assessment so that they can make academic content more accessible to their students. Furthermore, research is needed to understand which preservice preparation pedagogical practices best promote the situated knowledge of PSTs. Many practices have been advocated in teacher education literature (e.g., case studies, video cases, action research, peer coaching), but the effectiveness of these individual practices for deepening teachers' knowledge is unknown.

Historically, there has been little emphasis on teaching literacy skills for most individuals with severe disabilities (Browder, Wakeman, Spooner, Ahlgrim-Delzell, & Algozzine, 2006). Federal legislation as 1997 and 2004 IDEA amendments, and the No Child Left Behind Act of 2001 (NCLB) changed the relevance of academic instruction for students with severe disabilities. As Downing (2010) pointed out, these mandates moved the field of special education from a perspective of caretaking and protection of students with severe disabilities to an expectation that these students will learn and grow. Research evidence suggests that although functional life skills are needed by students with moderate to severe disabilities, these individuals should receive reading instruction as well, because students who do not learn to read have fewer opportunities as adults, which in turn affects long-term economic security, social relationships, and quality of life (Chhabra & McCardle, 2004). Literature demonstrated that students with severe disabilities can learn sight words, phonics, spelling and writing (Browder, Wakeman, Spooner, et al., 2006; Browder & Xin, 1998). However, educators have expressed concerns that they were not
adequately prepared to provide instruction for students with severe disabilities during their preparation programs (Rainforth, 2000). Developing the necessary knowledge and skills to teach students to read is crucial in order for them to make progress within the general education curriculum (Brownell et al., 2009).

**Background of the Problem**

According to Brownell et al. (2010), special education teacher preparation programs are in transition. IDEA has mandated that students with disabilities have access to the general education curriculum. The No Child Left Behind Act of 2001 (NCLB) has mandated that schools are accountable for the performance of these students on assessments aligned with the general education curriculum. Special education teachers not only need knowledge on research-based strategies and interventions, they must also be highly qualified in the core content areas they teach (20 U.S.C. § 6319[a]). Traditional, special education programs have emphasized preparing teachers to provide effective intervention, administer assessments, and collaborate with other professionals. The current emphasis on access to general curriculum raises the question of what PSTs need to know in order to make academic contents accessible to all students with disabilities.

This dissertation study was conducted with a group of PSTs from a special teacher preparation program at a Midwestern University. The focus of the special education program was to produce graduates who enhance and better the lives of individuals with disabilities. At the undergraduate and graduate level, the special education program was focused on educating PSTs to use evidence-based practices and meet licensure requirements for K-12 in the state. Program participants completed courses and field experiences to meet the prerequisites for mild/moderate and moderate/intense disability licensure.

During this study, PSTs were either in the fourth year of their undergraduate program, or
in the case of masters’ students seeking initial special education licensure, the second year of their program. Students were enrolled in an *Instructional Strategies for Students with Moderate to Severe Disabilities* and a reading course *Teaching Reading and Writing to Students with Disabilities II*, which is the second of a two-sequence course. While the first sequence focused on teaching reading and writing to high-functioning students, this sequence was designed to teach PSTs to provide effective instruction for students with significant disabilities. The reading methods course and instructional strategies for students with moderate to severe disabilities was embedded with a field experience, which was at one of the schools of Children’s Services Department of Middleview (pseudonym) County Developmental Disabilities Services (OMDDS). This agency provides educational services for students with moderate to severe needs in collaboration with the 22 local school districts in Middleview County (pseudonym).

**Purpose of the Study**

Grounded and guided by the activity theory framework, the purpose of this study was to examine the experiences of preservice teachers and their appropriation of pedagogical tools for teaching reading instruction to students with severe disabilities. In particular, the formation of these tools was traced back to coursework, coaching, practicum experiences, peer collaboration, and individual characteristics.

**Research Questions**

This study intends to address the following research questions:

What is the influence and interaction among preservice teachers’ characteristics and contextual factors (e.g., reading course, field placement) on the appropriation of pedagogical tools for teaching reading to students with severe disabilities?

**Significance of the Study**
There is a great need for research on special education teacher preparation. According to Sindelar and his colleagues (2006, 2010), studies conducted within the context of special education teacher preparation were limited in number and scattered in focus. Sindelar and his colleagues (2010) argued that the field of teacher education had not developed a research literature base to inform teacher educators about the essential elements of initial preparation or field experiences context that support PSTs’ learning and development.

Examining teacher learning is a complex endeavor. Leko and Brownell (2011) argued that PSTs learning was not examined in great depth, and even efforts were made to do so, factors were examined in isolation (e.g., the impact of PSTs beliefs, or knowledge or specific pedagogical practice). Furthermore, little is known about the influence of special education teacher preparation programs on PSTs’ knowledge acquisition. For example, attending to their participants’ individual differences in ways that would reveal relationships between personal characteristic and learning conditions would be important (Risko et al., 2008). Roskos, Vukelich, and Risko (2001) concurred by pointing out that extant studies provided little evidence as to how personal attributes, personal interests, identities, or goals may interact with course assignments or teaching experiences.

In addition, few researchers questioned the programmatic features that may influence or inhibit prospective teachers’ development, such as the impact of others involved in teacher education (e.g., mentor teachers, field supervision, and course instructor) (Risko et al., 2008). Thus, there is a great need to use a comprehensive framework to gain a better understanding of how PSTs’ individual characteristics and their experiences in various contexts (e.g., coursework, field experiences) interact to influence PSTs learning and practice (Leko & Brownell, 2011). This study uses activity theory as a framework to examine teacher learning and the various
factors that facilitate or hinder PSTs’ learning about working with students with moderate to severe disabilities during preservice preparation. A clearer picture of how individual and contextual factors interact together to either facilitate and/or hinder the appropriation process, or learning of pedagogical and conceptual tools, can provide teacher preparation programs with valuable information on effective ways of preparing special education PSTs to work with students with severe needs.

Definitions of Key Terms

The following represents key terms relevant to this study that are defined using the extant literature.

Severe Disabilities

Persons who are usually referred to as having a severe disabilities includes those who have been classified as having moderate, severe, or profound intellectual disabilities; some have autism spectrum disorders (ASD); and those who have multiple physical or sensory disabilities as well as intellectual disabilities. Persons with severe disabilities have also been described as exhibiting self-stimulatory behavior, or lacking in typical abilities, such as self-care or verbal communication skills (Brimer, 1990). Browder et al. (2006) noted that these students require substantial modification, adaptation, or supports to meaningfully access grade-level content, along with intensive individualized instruction in order to acquire and generalize knowledge. These students are working toward alternate achievement standards for grade level content.

Pedagogical Tools

According to Grossman, Smagorinsky, and Valencia (1999), pedagogical tools consist of two types: conceptual tools and practical tools. Conceptual tools are broad principles, frameworks, and ideas about teaching and learning. Conceptual tools can include broadly
applicable theories such as constructivism or reader-response theory, and theoretical principles and concepts such as instructional scaffolding. Practical tools are specific skills, strategies and resources with immediate utility. These include instructional practices such as administering assessments, setting goals, planning activities. Teachers use pedagogical tools "to guide and implement their classroom practice" (Grossman et al., 1999, p.13).

Evidence-based Practices

Interventions that researchers have shown to be effective are called evidence-based practices. According to Odom et al. (2005), there are four types of research that are commonly conducted within the field of special education that can be useful for the development of evidence-based practices. These are (a) group experimental and quasi-experimental studies, (b) correlation studies, (c) single-subject studies, and (d) qualitative studies.

In the chapter that follows, I describe the available literature on (a) instructional methods known to facilitate learning among individuals with severe learning needs, including evidence-based practices, (b) the role of teacher attributes, and (c) special education teacher preparation program features, course content, and pedagogical practices that contribute to PSTs learning in teaching students with moderate to severe disabilities. There is also a focus on what is known about reading preparation for teaching PSTs to teach students with moderate to severe needs to read.

Table 1. Definition of evidence-based practices (EBP) by National Professional Development Center (NPDC) on Autism Spectrum Disorder (ASD)
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<th>Practice</th>
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<td>Experimental or quasi-experimental group design evidence</td>
<td>At least two peer-reviewed studies that meet acceptable methodological criteria and are conducted by different research groups</td>
</tr>
<tr>
<td>Single-case design evidence</td>
<td>At least five peer-reviewed studies that meet acceptable methodological criteria and are conducted by at least three different research groups.</td>
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<tr>
<td>Complementary evidence</td>
<td>At least one experimental or quasi-experimental design and at least three single case design peer-viewed studies meeting acceptable methodological criteria and conducted by three different research groups</td>
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CHAPTER 2

REVIEW OF THE LITERATURE

A myriad of personal and contextual factors affect preservice teachers’ (PSTs) learning. In order to understand the role preservice special education teacher preparation plays in preparing special education teachers to serve students with severe learning needs, it is important to understand what the extant literature suggests about (a) instructional methods known to facilitate learning among individuals with severe learning needs, including evidence-based practices for reading instruction, (b) the role of teacher attributes, and (c) special education teacher preparation program features, course content, and pedagogical practices that contribute to preservice special education teachers’ learning in teaching students with moderate to severe disabilities.

The first section of the literature review focuses on evidence-based practices for students with severe learning needs. However, because persons with severe disabilities are not a homogenous group in terms of their abilities and characteristics, practices that are effective with one group might not be generalizable to another group, so practices in general and those specific to students with autism spectrum disorder (ASD) will be discussed. The second part of literature review discusses the role of teacher attributes. A discussion of those attributes helps to better understand individual characteristics (e.g., disposition, years of experience, licensure) that differentiate high-quality teachers from others. The third section of this literature review discusses the program features, course methods, and teacher educator pedagogies known to contribute PSTs' learning. Finally, the types of pedagogical tools PSTs are exposed to in teacher education programs and the extent of tool appropriation is discussed.

**Effective Practice for Students with Severe Needs**
Current perspectives support the notion that all individuals can and do learn (Downing 2008; Westling and Fox, 2009). Over the past few years, the nature of what individuals with moderate to severe needs should learn (i.e., the curriculum), and how they should learn (i.e., the method of instruction) has changed. According to Downing and MacFarland (2010), practices proven to have a positive impact on the educational outcomes of students with severe disabilities include: clear access to the core curriculum (Downing, 2008; Fisher & Meyer, 2002; Kennedy & Horn, 2004), positive behavior support (O’Neill, 2004), communication skills development (Beukelman & Mirenda, 2005), systematic instruction (Bradford, Shippen, Alberto, Houchins, & Flores, 2006; Tekin-Iftar, 2008), meaningful, age-appropriate programming (Snell & Brown, 2006; Westling & Fox, 2009), active family involvement (Blue-Banning, Summers, Frankland, & Beegle, 2004; Turnbull, Turnbull, Erwin, & Soodak, 2006), and collaborative teaming (Snell & Janney, 2005).

**Curriculum for Students with Severe Disabilities**

In the 1970s, experts proposed the use of a developmental curriculum model for teaching students with severe disabilities (Browder et al., 2003). The developmental model assumed that educational needs of students with disabilities could be met by assessing their mental age (Bricker & Lacino, 1977). Under this readiness framework, students with severe disabilities were usually assumed not ready to learn academic skills until they mastered fundamental life skills. With the passage of the Education for All Handicapped Children Act of 1975 (PL 94-142), Brown, Nietupski and Hamre-Nietupski (1976) proposed a new approach they called the *criterion of ultimate functioning* to replace the developmental model. The term *functional* was introduced to refer to a curriculum model that promoted community access by focusing on daily functional skills. The four domains of functional skills included: community, vocational,
domestic, and recreational. Unlike a developmental approach that focused on students’ mental ages, the functional curriculum model emphasized teaching chronologically instead of mental age appropriate skills. However, an unintended consequence of the focus on teaching skills needed for home and community was that "some educators began to develop highly specialized learning environments and curriculum that were totally separate from the typical school experience” (Spooner & Browder, 2006, p.6).

Followed by the functional curriculum was the movement toward academic curriculum for students with severe disabilities. However, this shift raised the concern that a new academic focus would compromise the teaching of functional skills (Browder, Ahlgrim-Delzell, et al., 2005). Browder and Spooner (2006) argued that there was a continued and ongoing importance in teaching functional skills to students with disabilities and that it was possible to focus on both academic and functional skills. However, academic skills and functional skills are not mutually exclusive. Functional skills not only prepare students for their life after high school but also provide meaningful context for academic learning. Ford, Blanchett, and Brown (2006) emphasized that daily functioning routines provided an important structure as well as a basis for learning, easing transitions, exercising choices, and increasing independence. Ayres, Lowrey, Douglas, and Sievers (2011) revisited the relationship of functional and academic curriculum and concluded that:

While students with severe cognitive disabilities can make progress in grade level and those standards can be taught using empirically valid teaching procedures, if those standards have not been targeted because they directly meet an established individual need, those skills may not be retained and used in everyday life. Students with severe cognitive disabilities need to learn skills that will increase their job opportunities,
independent living opportunities, social integration and community independence.

(p.17)

Current federal legislation requires that students with disabilities have access to and be assessed by state academic content standards; however, according to Spooner and Browder (2006), “Access means more than being exposed to contents such as reading and mathematics—access means academic progress. Although it doesn’t mean mastering all of the grade-level content, it does mean mastering some alternate achievement standards for each grade level” (p.1). Aligning state standards, assessments, and instruction is crucial to achieve access to general curriculum. English and Steffy (2001) recommended considering “deep curriculum alignment” (p 2), which was characterized by instruction rich in academic content matched to students’ grade level but not limited to only that content. Poor alignment, on the other hand, occurred when teachers defined anything as an access goal (Ford, Davern, & Schnorr, 2001), target skills for alternate assessment that are neither functional nor academic (Browders, Flowers, et al., 2004), or pass anything as progress (Browder, Spooner, et al., 2003).

Evidence-based Practices

The standard-based education movement, the mandated participation of students with disabilities in state testing, inclusion and the recognition that students with disabilities can learn academic content are driving forces aimed at improving student outcomes. Furthermore, research studies demonstrate that interventions are not equal in terms of their effect on student's outcomes and that teachers should prioritize the use of instructional practices that are most likely to bring desired student outcomes (Cook, Tankersley, & Landrum, 2009). However, many teachers of students with disabilities have implemented teaching practices that have little effect on student outcomes (e.g., Cook & Schirmer, 2003; Kauffman, 1996). It is crucial for teachers to use the
instructional support gained from scientific evidence, in order for this population not only gain access to general curriculum, but also make progress within it.

Overall, those interventions that researchers have shown to be effective are called evidence-based practices. For example, while many interventions for autism exist, only some have been shown to be effective through scientific research (Odom, Collet-Klingenberg, Rogers, & Hatton, 2010). The National Professional Development Center (NPDC) on Autism Spectrum Disorders (ASD) has adopted the following definition of evidence-based practices (EBP): practices are EBPs when shown effective with (a) at least two experimental or quasiexperimental group design studies carried out by independent researchers, (b) at least five single case design studies from at least three independent investigators, or (c) a combination of at least one experimental and one quasi-experimental study and three single case design studies from independent investigators (Odom, Collet-Klingenberg, Rogers, & Hatton, 2010). Currently, the NPDC has identified 24 evidence-based practices (see Table 2-1). Odom et al. grouped two sets of practices within a larger descriptor. The first set is behavioral teaching strategies, which are fundamental intervention techniques (e.g., prompting, reinforcement) based on the principal of applied behavior analysis. These strategies can be parts of other interventions. For example, prompting and reinforcement would be a part of discrete trial training. The second set is grouped under a general classification of positive behavior support (PBS). Strategies fell under this category are used to reduce interfering behavior (e.g., aggression, repetitive behavior).

Table 2-1. Identified Evidence-Based Practices with Descriptors

<table>
<thead>
<tr>
<th>Evidence-based practice</th>
<th>Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral strategies</td>
<td></td>
</tr>
<tr>
<td>Prompting</td>
<td>Behaviorally based antecedent teaching strategy</td>
</tr>
<tr>
<td>Reinforcement</td>
<td>Behaviorally based consequence teaching strategy</td>
</tr>
<tr>
<td>Evidence-based practice</td>
<td>Descriptor</td>
</tr>
<tr>
<td>--------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Task Analysis and chaining</td>
<td>Behaviorally based antecedent teaching strategy that breaks down steps and links them for prompting</td>
</tr>
<tr>
<td>Time delay</td>
<td>Behaviorally based antecedent teaching strategy that promotes errorless learning</td>
</tr>
<tr>
<td>Computer-aided instruction</td>
<td>The use of computers for varied instruction</td>
</tr>
<tr>
<td>Discrete trial training (DTT)</td>
<td>One-to-one instructional strategy that teaches skills in a planned, controlled, and systematic manner</td>
</tr>
<tr>
<td>Naturalistic interventions</td>
<td>A variety of strategies that closely resemble typical interactions and occur in natural settings, routines and activities</td>
</tr>
<tr>
<td>Parent-implemented interventions</td>
<td>Strategies that recognize and use parents as the most effective teachers of their children</td>
</tr>
<tr>
<td>Peer-mediated instruction/intervention (PMII)</td>
<td>Strategies designed to increase social engagement by teaching peers to initiate and maintain interactions</td>
</tr>
<tr>
<td>Picture exchange communication system (PECS)™</td>
<td>A system for communicating that uses the physical handing over of pictures or symbols to initiate communicative functions</td>
</tr>
<tr>
<td>Pivotal response training (PRT)</td>
<td>An approach that teaches the learner to seek out and respond to naturally occurring learning opportunities</td>
</tr>
<tr>
<td>Positive behavioral support strategies</td>
<td></td>
</tr>
<tr>
<td>Functional behavior assessment (FBA)</td>
<td>A systematic approach for determining the underlying function or purpose of behavior</td>
</tr>
<tr>
<td>Stimulus control/Environmental modification</td>
<td>The modification or manipulation of environmental aspects known to impact a learner’s behavior</td>
</tr>
<tr>
<td>Response interruption/redirection</td>
<td>The physical prevention or blocking of interfering behavior with redirection to more appropriate behavior</td>
</tr>
<tr>
<td>Functional communication training (FCT)</td>
<td>A systematic practice of replacing inappropriate or ineffective behavior with more appropriate or effective behaviors that serve the same function</td>
</tr>
<tr>
<td>Evidence-based practice</td>
<td>Descriptor</td>
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<tr>
<td>--------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Extinction</td>
<td>Behaviorally based strategy that withdraws or terminates the reinforcer of an interfering behavior to reduce or eliminate the behavior</td>
</tr>
<tr>
<td>Differential reinforcement (DRA/I/O/L)</td>
<td>Behaviorally based strategies that focus reinforcement on alternative, incompatible, other, or lower rates of the interfering behavior in order to replace it with more appropriate behavior</td>
</tr>
<tr>
<td>Self-management</td>
<td>A method in which learners are taught to monitor, record data, report on, and reinforce their own behavior</td>
</tr>
<tr>
<td>Social narratives</td>
<td>Written narratives that describe specific social situations in some detail and are aimed at helping the individual to adjust to the situation or adapt their behavior</td>
</tr>
<tr>
<td>Social skill training group</td>
<td>Small group instruction with a shared goal or outcome of learned social skills in which participants can learn, practice, and receive feedback</td>
</tr>
<tr>
<td>Structured work systems</td>
<td>Visually and physically structured sequences that provide opportunities for learners to practice previously taught skills, concepts, or activities</td>
</tr>
<tr>
<td>Video modeling</td>
<td>Utilizes assistive technology as the core component of instruction and allows for pre-rehearsal of the target behavior or skill via observation</td>
</tr>
<tr>
<td>Visual supports</td>
<td>Tools that enable a learner to independently track events and activities</td>
</tr>
<tr>
<td>VOCA/ Speech Generating Devices (SGD)</td>
<td>Electronic, portable devices used to teach learners communication skills and as a means of communication</td>
</tr>
</tbody>
</table>


Odom et al. (2010) also grouped the 24 evidence-based practices by domain matrix (see Table 2-2). This domain matrix helped clarify which EBP practices have evidence of efficacy for teaching skills in a specific education domain (e.g., academic, behavior, and social skills). For example, the practice of computer-aided instruction has been shown to be efficacious for
These practices, although intended primarily for students with ASD, can benefit a broad range of students, including those with attention, organization, and processing issues (Hume, 2010). Hume (2010) further discussed how these evidence-based practices would be used for literacy instruction for students with autism. She categorized them into six broad categories: (1) organized classroom environment, (2) visual support, (3) structured Instruction, (4) curricular modification, (5) embedded Support, and (6) maintenance and generalization planning. According to Hume, environments for students with autism need to be carefully arranged to reduce unnecessary stimuli, auditory and visual distraction. The teaching environment should "communicate expectations, and only the most salient and relevant information should be highlighted" (Hume, 2010, p. 48).
<table>
<thead>
<tr>
<th>Evidence-based practice</th>
<th>Academic</th>
<th>Behavior</th>
<th>Communication</th>
<th>Play</th>
<th>Social</th>
<th>Transition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral strategies</td>
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<tr>
<td>Prompting</td>
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<tr>
<td>Reinforcement</td>
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<td>X</td>
</tr>
<tr>
<td>Task Analysis and chaining</td>
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<td></td>
<td>X</td>
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<tr>
<td>Time delay</td>
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<td>X</td>
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<tr>
<td>Computer-aided instruction</td>
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<tr>
<td>Discrete trial training (DTT)</td>
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<tr>
<td>Naturalistic interventions</td>
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<tr>
<td>Parent-implemented interventions</td>
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<tr>
<td>Peer-mediated instruction/ intervention (PMII)</td>
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<tr>
<td>Picture exchange communication system (PECS™)</td>
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<tr>
<td>Pivotal response training (PRT)</td>
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<tr>
<td>Positive behavioral support strategies</td>
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<tr>
<td>Functional behavior assessment (FBA)</td>
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<tr>
<td>Stimulus control/Environmental modification</td>
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<tr>
<td>Response interruption/ redirection</td>
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<td>X</td>
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<tr>
<td>Functional communication training (FCT)</td>
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<td>X</td>
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<tr>
<td>Extinction</td>
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<td>X</td>
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<tr>
<td>Differential reinforcement</td>
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<td>X</td>
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<tr>
<td>Differential reinforcement (DRA/I/O/L)</td>
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<td>X</td>
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<tr>
<td>Self-management</td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td>Social narratives</td>
<td>X</td>
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<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Social skill training group</td>
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<td>X</td>
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<tr>
<td>Structured work systems</td>
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<td>X</td>
</tr>
<tr>
<td>Video modeling</td>
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<td>X</td>
</tr>
<tr>
<td>Evidence-based practice</td>
<td>Academic</td>
<td>Behavior</td>
<td>Communication</td>
<td>Play</td>
<td>Social</td>
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<tr>
<td>Visual supports</td>
<td>X</td>
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<tr>
<td>VOCA/ Speech Generating Devices (SGD)</td>
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</tbody>
</table>

*Note.* X indicates that the studies making up the evidence base for specific practice.

Using visual supports to communicate information is beneficial because supplementing verbal instruction with visuals can add predictability for the task and increase student engagements. For students who has limited receptive language skills, the use of picture in visual schedule can help them better understand the demands of the task. Humes (2010) discussed the use of visual schedule and work system for literacy instruction. According to her, "a visual schedule communicates the sequence of upcoming activities or events through the use of objects, photographs, icons, words, or a combination of support” (p. 52) and work systems provided students with an organized strategy for approaching several tasks and activities.

Systematic and structured instruction is another strategy proven to work well with students with autism or moderate/severe disabilities (Hume, 2010). Strategies in this category include task analysis, prompting, positive reinforcement, and chaining (Alberto & Troutman, 2006). These strategies are within the ABA framework and are proven to be effective when teaching skills related to literacy. Other instructional strategies can be embedded in literacy instruction to benefit students with ASD including allowing students opportunities to make choices (Watanabe & Sturmey, 2003), priming them with an upcoming event or activity (Koegel, Koegel, Frey, & Hopkins, 2003), and video modeling for specific behavior (Bellini & Akullian, 2007).

Along with instruction is an equally important piece-the curriculum. The content of what is being taught can impact the engagement of student. Teachers need to select materials that are highly motivating, and offering students with a variety of choices of materials, and modify curriculum materials if necessary (Kern, Delaney, Clarke, Dunlap, & Childs, 2001). Generalizing new skills to new context is a concern for student with ASD and other severe disabilities alike. In order to help students to maintain and generalize behaviors to new settings, teachers need to offer sufficient examples and promote students' independence
through the removing of adult supervision (Hall, 2008).

**Research to Practice Gap**

The research to practice gap in school settings is well documented in the literature (Vaughn, Klingner, & Hughes, 2000). Jones (2009) conducted a case study to examine this phenomenon in special education. The author concluded that facilitating factors for teachers to apply research in their classrooms including student progress as a result of certain practices, feelings of discomfort as a result of uncertainty, professional support, on-going support and continuing education, and access to research through the use of technology. Barriers identified by PSTs included lack of knowledge and background in research-based practice, accessibility of such information, and the trustworthiness of research. The author recommended that special education preservice programs should focus on explaining research and its importance and help novice teachers understand and apply the results in settings where expert modeling and feedback are provided. PSTs’ reflection needs to be incorporated in to programs so that they can think critically on how to apply these practices based on student needs and data.

**Instructional Approaches and Strategies**

**A broader definition of literacy.** More than 30 studies demonstrated students with significant disabilities can learn reading skills such as picture identification, sight words, comprehension and fluency (Browder, Wakeman, Spooner, Ahlgrim-Delzell, & Algozzine, 2006). The first step to build literacy for students with severe disabilities is to reconceptualize the concept of literacy. According to Downing (2006), the act of reading could be either narrowly defined as decoding or comprehension or broadly defined to include listening and communication for students with and without disabilities. For students with moderate to severe disabilities, literacy may be conceptualized as “ways of learning about and sharing information with others” (Downing, 2006, p.39). Downing argued that reading was a
functional life skill and that reading and writing provided lifelong opportunities for enjoyment and allowed individuals to learn about the world and share experiences with others.

**Instructional frameworks.** Instructional frameworks are conceptual tools that afford holistic understandings about how to think about instructional planning. Instructional reading frameworks for students with moderate to severe disabilities recommended in the literature include (a) before, during, and after framework, (b) the balanced literacy framework, and (c) the alignment framework. Erickson and Koppenhaver (2007) recommended following a before, during, and after format for literacy instruction during a guided reading block. They argue that this structure provides cognitive clarity for students with severe disabilities. Before reading, the teacher might say, “Read this so that you can…” as a way to state a clear purpose for students for reading. Next, special education teachers should build or activate background knowledge related to this purpose. During reading, special education teachers may chose to teach students to establish a purpose of each part of a reading assignment, monitor their own reading and comprehension, summarize key ideas, and ask themselves questions. After reading, teachers might ask students to assess if their purpose for reading was met, summarize key ideas and points, make connections and comparisons, and draw conclusions.

Balanced literacy instruction is grounded in a rich model of literacy learning that embodies both the elegance and complexity of reading and language art processes (Morrow, 2005). This model recognizes both the form (phonics, mechanics, etc.) and the function (comprehension, meaning, etc) of the literacy processes. Reading instruction aligned with this framework follows a whole-part-whole process. According to Morrow and Carnahan (2010), a balanced literacy program for students with autism and other significant learning needs should include daily reading, writing, listening, speaking, spelling, and viewing activities, which occurs within a block of uninterrupted time that is embedded across the school day.

Finally, an alignment framework refers to the alignment of goals, curriculum, and
instruction with assessment results. According to Westling and Fox (2008), "assessment provides important information about the student and his functional abilities that lead to the formation and reformation of educational plan" (p.107). This may be particularly true for literacy instruction due to the challenges of students with moderate to severe in their communication needs.

**Communication as perquisite to literacy.** Establishment of effective communication skills is one of the desired outcomes of education for students with moderate to severe needs (Strain & Schwartz, 2001). As Light and Kent-Walsh (2003) stated, communication is essential to attaining quality of life, allowing humans to connect with each other, touching others’ lives and have others touch ours. Downing (2005) concurred with this viewpoint by stating that communication skills is a lifelong skill that students continue to need long after the leave school and assume lives in their communities as contributing community members. Communication is essential to improve the quality of life, allow individuals to make choices, communicate desires, obtain information and establish relationships with others (Downing, 2005). A strong relationship exists between literacy learning and communication skills development (Beukelman & Mirenda, 2005). Communication allows students to access to information and demonstrate what was learned. Thus, an effective mode of communication is critical to the learning process (Downing, 2005).

In order to teach communication skills, teachers need first to assess skills in order to clarify a student's current communication skills, and help all educational team members recognize those skills. Assessing communication skills for individuals with severe disabilities is difficult because their impairment may interfere with their ability to engage in clear, reliable and intentional communication behavior (McLean, Brady, McLean, & Behrens, 1999). According to Downing (2005),

When communication behavior is vague and idiosyncratic due to severe and multiple
disabilities, the recipient of the communicative exchange must be particularly sensitive and responsive, not only in order to communicate but also to assess the communication skills of the individual with disabilities. p. 27

After assessing a student's communication abilities, the next step is to establish a functional communication system for the student. Augmentative Communication Systems (AACs) for students with severe disabilities create greater access to reading materials in addition to supporting students’ communication and reading efforts. AACs can be used for such a purpose based on individuals’ physical, sensory and cognitive capabilities, experience, preference, and expectations of the social environment (Beukelman & Mirenda, 2005). These systems may be unaided (nothing added to individual, such as the use of facial expression) or aided (something added to the individual, such as speech generating devise) (Downing, 2005).

For students with significant disabilities, both forms of communication can be used, depending on the situation. Unaided communication techniques such as gesture, body languages, and vocalizations help students to get their message across. However, messages sent by students with severe disabilities using unaided communication techniques are not always intelligible to the audience. In such cases, aided communication techniques such as using real object symbols, photographs and picture, Picture Communication Symbols (PCS; Bondy & Frost, 1994), or speech generating devises (SGDs) offer alternative ways of conveying messages which are socially acceptable and intelligible to both familiar and unfamiliar listeners (Mirenda, 2005).

**Building literacy for students at the presymbolic and early symbolic stage.**

Teaching students with severe learning needs requires highly qualified teachers who can interpret literacy standards and make these standards meaningful and relevant. However, in a national survey to special education directors, Heller, Fredrick, Dykes, Best, and Cohen (1999) found that not one respondent felt that teachers are well prepared to teacher literacy
skills to students who are nonverbal. Zascavage and Keefe (2004) came to the same conclusion noting that personnel preparation needs to instruct future PSTs in the most effective ways to address the literacy needs of those students who have traditionally being overlooked. Students with severe disabilities may have sensory, physical, and severe cognitive disabilities (Arthur, 2003). These students may be beginning communicators who have not acquired symbolic means of understanding or are just begin to recognize and acquire basic symbols. They may have limited life experiences, including exposure to print, different environments, and activities (Lewis & Tolla, 2003).

For students who are at this stage of reading development, it is vital to help them establish a functional communication system (e.g., ACCs) so that they can participate in activities and real life experiences which serve as a basic foundation for future reading and writing skills (Mirenda & Erickson, 2000). Downing (2006) recommended several instructional strategies to teach students with severe disabilities who are just learning to use symbols, including encouraging students with severe disabilities to participate in a wide range of life experiences, recognizing the strong link between communication and literacy, providing alternative means of communication, holding high expectations, making literacy accessible, providing natural and meaningful opportunities for students to practice, and systematic instruction.

**From sight words to emerging literacy.** When students with moderate to severe disabilities begin to show the abilities to learn symbols, the most common instructional approach is to teach sight words used in daily living activities (Browder, Courtade-Little, Wakeman, & Rickelman, 2006). Teaching sight words is important because it increases student independence in their home, job and community. There are numerous studies that demonstrated that students with moderate to severe disabilities could learn sight words (Browder & Xin, 1998). However, sight word instruction sometimes was the only reading
instruction that students with significant cognitive disabilities received. A comprehensive review by Browder and her colleagues (2006) found that out of 128 studies, 80 focused on teaching sight-word vocabularies. Browder et al. (2006) recommended that although teaching sight words was important, teachers should “embed sight word instruction within a broader approach to literacy” (p.66). An example of success with teaching students with moderate to severe disabilities may be found in a study conducted by Ryndak, Morrison and Sommerstein (1999) who described the case of a student with significant disabilities who learned to read and write through participation in general education.

Special Education Teacher Attributes

Dispositions

According to the National Council for the Accreditation of Teacher Education (NCATE), dispositions are the values and commitments and professional ethics that influence behaviors toward students, families, colleagues, and communities. As LePage, Nielsen, and Fearn (2008) argued in their study, dispositions are important because they affect a teacher's attitude and response toward a child, and because they affect a teacher's own learning. Dispositions can be taught and influenced by teacher preparation programs. LePage, Nielsen, and Fearn examined the dispositional knowledge of special education candidates bring with them when they entered a teacher preparation program. Data collection methods included vision statements, surveys and interviews. Results showed that teacher candidates came to the programs with a variety of perceptions and attitudes. Even in the early stage of preparation, special education candidates already demonstrated an understating of the importance of persisting with children and developing relationships. Many of the teacher candidates commented that they believed that all children could learn, and they already felt responsible for finding ways to make inclusion work. The authors concluded that teacher candidates’ assumption of children’s strengths, weakness, self-esteem, and potential at such an early stage
of preparation suggested that teacher preparation programs should offer prospective teachers opportunities to struggle with philosophical questions that help them probe deeper into the complexity of certain dispositions.

**The Development of Teacher Education in the Field of Severe Disabilities**

Including students with moderate to severe disabilities in general education classrooms calls for universities around the country to expand their research and teacher education programs to include a focus on this area. Ford, Blanchett, and Brown (2006) discussed the elements that should be included in the development of teacher education for students with severe disabilities. According to the authors, teacher education programs need to (a) facilitate candidates’ dispositions to embrace the inclusive vision and to understand that advocacy for inclusion is central to their role as future special education teachers, (b) operate from a clear picture of the present and desired roles of the teachers so that PSTs can transit smoothly to jobs with less confusion and stress, (c) help PSTs realize that meaningful outcomes are crucial for students with significant disabilities in the era of standards-based reforms and that they are held accountable for outcomes at different levels (e.g., state level, district level, personal level), (d) help PSTs gain a deeper and more holistic picture of areas such as curriculum content, pedagogy for this population, peer connections, and support (NBPTS, 2001), and (e) teach PSTs knowledge and skills such as adapting curriculum to fit individual needs, preparing students with significant disabilities with both academic and functional skills, conducting authentic instruction and assessments, and utilizing community resources.

**Critical Features of Exemplary Special Education Teacher Preparation Program**

Teacher preparation programs are under increasing pressure to demonstrate effects (Darling-Hammond, 2006). However, according to Brownell, Ross, Colón, and McCallum (2005), “Special education teacher education is not an established area of inquiry and we
found no solid syntheses of available programs and their features” (p.12). In such an effort, Brownell et al. (2005) conducted a literature search of research on special education teacher education published from 1990-2001. They concluded that commonly identified program features in the literature included: (a) crafting extensive field experiences, (b) creating links between theory and practice, (c) collaboration, (d) use a variety of strategies to ensure quality of teaching, (d) active pedagogy that employs modeling and promotes reflection, and (e) focus on meeting the needs of a diverse student population. The authors recommended more research studies be conducted to examine how methods courses, foundations courses, and field experiences contributed, singularly and in interaction with one another, to the preparation of beginning special education teachers.

**Pedagogical Practice in Preparation Program**

Teacher educators need to identity effective pedagogical practices in preparing PSTs in order to best promote the situated knowledge that beginning special education teachers need in educating students with moderate to severe disabilities. Many practices have been advocated in teacher education literature (e.g., case studies, video cases, action research, peer coaching), but how each component contributes to deepen PST’s learning is unclear.

**Course methods**

Rainforth (2000) focused on one inclusive education course to prepare teachers to work with students with severe disabilities. Adult learning principles were applied. Course methods included introducing students to best practices through current literature, lecture, large group work, small group discussion, guest talk by parents of students with severe disabilities, field placement, collaborative teaming among classmates, video case, action plan, meeting with parents of students with severe disabilities, and a few course assignments aimed at facilitating PSTs’ learning in the areas of assessment, planning, and instruction. Data sources included student products such as written feedback, reflective essays and
questionnaires to indicate the impact of the course. The author concluded that prospective special education teachers needed ongoing support to learn, practice, reflect, integrate new skills into their daily routines, and keep abreast of the latest reform efforts, new technology, and strategies that continue to surface as best practices in educating students with severe disabilities.

**Case methods.** Darling-Hammond (2006) described case methods as a viable means to "help candidates bridge the gap between theory and practice and develop skills of reflection and close analysis by engaging them [in the process]" (p. 103). Case study methods provide PSTs with authentic problem-solving opportunities, enable them to make decisions based on an available situation, and engage them with in-depth discussions. Gibson (1998) advocated case method teaching because the process "equips pre-service students for teacher roles that require higher levels of confidence, resourceful team players, and competent problem solvers" (p. 347). As Lengyel and Vernon-Dotson (2010) stated in their study, for teacher educators preparing special education teacher candidates, case methods are essential because teachers need to be prepared to serve a student population with much variation.

Lengyel and Vernon (2010) explored two examples of case method instruction that extended beyond university classrooms to field sites: case report and case study. In case report, PSTs wrote their own cases entirely based on experiences with students in school-based classrooms. With case studies, teacher candidates read "context-specific narratives about students, teaching events, or teaching and learning environments; then analyze and interpret those narratives in the light of other knowledge from research, theory, and experiences" (Darling-Hammond, 2006, p. 119). As a result of the use of case methodology, special education teacher candidates showed improvement in areas as designing data systems, collecting data, utilizing data-based decision making processes, employing evidence-based practices, and following the appropriate procedures mandated by the current regulations.
Specifically, they were prepared to enter the profession with the knowledge, skills, and tools necessary to educate students with moderate and severe disabilities. The authors also concluded that an unforeseen benefit to use cases in the special education courses was "the development of candidate dispositions toward the special education profession and meeting the individual needs of students with disabilities" (p.255).

**Modeling co-teaching.** Collaborative teaching skills are critical for special educators of students with severe disabilities because they are expected to work collaboratively with a range of staff members including nurses, paraprofessionals, intervention specialists (Brownell, Ross, Colon, & McCallum, 2005). However, teachers co-taught in K-12 reported that they received little training on co-teaching skills in their preparation program (Vaughn, Schumm, & Arguelles, 1997). Ideally, some collaborative practice should occur at the preservice level so that PSTs may feel comfortable and empowered to enter their first teaching assignment. In such an effort, Stang and Lyons (2008) examined preservice special education teachers’ reaction to and experience in a collaboratively taught a higher education course. They learned about co-teaching by watching the two faculty members co-teach their course and responded to a survey about their knowledge and comfort with co-teaching. PSTs identified several strategies for successful co-teaching, including interpersonal skills, collaborative skills, and instructional issues. Social skills, flexibility, and awareness of others were critical interpersonal skills identified by PSTs. Preplanning and planning, collaboration and communication, and equity were considered as important collaborative skills by PSTs. Instructional issues mentioned by PSTs included knowledge of pedagogy and content and complementary teaching styles. Overall, participants’ knowledge of co-teaching increased and faculty modeling of co-teaching was reported as the most valuable contributing factor.

**Coaching.** According to Joyce and Showers (1995), coaching involves an expert (e.g., university faculty or supervisor, lead teacher, skilled peer) providing individualized support to
teachers after an initial training occurs. Three coaching approaches have demonstrated effects in literature: (a) peer coaching (Maniaci-Ireland, 2003), (b) cognitive coaching (Hull, Edwards, Rogers, & Sword, 1998), and (c) instructional coaching (Knight, 2007).

Instructional coaches work with teachers to ensure accurate and sustained implementation of teaching behaviors and empower them to incorporate research-based instructional methods into their classrooms (Knight, 2007). According to Knight (2007), instructional coaching is an approach to professional learning that involves practices (the components of coaching) and a theoretical framework. Coaching practices employed by instructional coaches are grounded in seven principles: (1) an equal relationship between instructional coaches, (2) teachers should have choice regarding what and how they learn, (3) empower and respect the voices of teachers, (4) enable authentic dialogue, (5) reflection is an integral part, (6) teachers apply in real-life practices, and (7) instructional coaches benefit from the coaching process.

In a comprehensive review of coaching conducted by Kretlow and Bartholomew (2010), the authors found that highly engaged, small-group initial training, followed by multiple observations, feedback, and modeling were critical components across coaching interventions. This review offered several suggestions for preservice teacher preparation programs. The authors suggested that PSTs needed “(a) high-quality instructive training, (b) multiple opportunities to practice newly learned strategies with real students, and (c) individualized observation, feedback, and modeling, including side-by-side or supervisory coaching whenever possible”(p. 294). According to the authors, coaching would be an easy replacement for the typical "observe and give feedback" (p.294) format used in field experience since coaching would occur in the generalization setting (i.e., the classroom) and may make these experiences even more powerful.

Field Experiences
Field experience is considered by teacher education researchers as an integral and primary component of teacher preparation programs (Recchia & Puig, 2011). Field experiences offer student teachers opportunities to engage in authentic learning (Clifford, Macy, Albi, Bricker, & Rahn, 2005), gain experiences in team collaboration (Fox & Williams, 1992), raise questions about curricular choices (Recchia, Beck, Esposito, & Tarrant, 2009), and see the realistic world of everyday teaching (Lava, Recchia, & Giovacco-Johnson, 2004).

In one study, Recchia and Puig (2011) explored the challenge and potential learning opportunities that self-contained settings offered to early childhood special education teachers. According to the authors, many children with more severe disabilities continued to be educated in segregated settings based on their IEPs regardless of one's philosophical and political beliefs on issues of inclusion. They argued that since segregated settings might be potential places of employment for graduates pursuing special education certification, especially for those who intend to work with students with moderate to severe disabilities, including placements in those settings would contribute to PSTs’ knowledge of and experiences with the full continuum of services (Recchia & Puig, 2011). Results showed that self-contained settings were valuable to learning and development of PSTs. It allowed PSTs practice with collaboration, learning to implement curricular adaptations, familiarizing PSTs with assessments and terminology for moderate to severe disabilities, and increased comfort levels and practical experiences working with students with severe disabilities. Finally, these settings afforded opportunities to learn from other professionals with a wide range of knowledge and skills.

**Pedagogical Tool Appropriation**

Learning to teach is a complicated process. The field of special education needs information on how individual characteristics (e.g., prior experiences and knowledge) interact with their coursework and field experiences to either advantage or disadvantage preservice
special education teachers as learners (Humphrey & Wechsler, 2005). Leko and Brownell (2011) used activity theory to examine PSTs' adoption of tools for teaching readers with high-incidence disabilities. The authors theorized that PSTs were most likely to appropriate knowledge when the activity systems of the individual, university, and practicum aligned to provide them with "(a) access to knowledge and tools for teaching reading to students with disabilities, (b) confidence in their abilities as special educators, intrinsic motivations to appropriate knowledge and tools, and (c) opportunities to apply knowledge with adequate support and feedback" (p.247). PSTs felt that when given opportunities to appropriate conceptual and practical tools, they were better be able to appropriate knowledge in practice. Personal attributes relevant to the high appropriation of pedagogical tools of PSTs in this study centered on qualities such as reflectiveness, dedication, confidence and initiative, personal concern for students' academic needs, personal goals to be special educators who provide effective instruction. In addition, participants who had intrinsic motivation for assimilating knowledge reached higher levels of tool appropriation. The final component that impacted appropriation was access to knowledge. Sources of knowledge included prior experiences, cooperating teachers, field supervisors, and reading methods coursework.

According to Leko and Brownell (2011), "no prior special education teacher education study has utilized activity theory" (p.249) to examine the influence of individuals and preservice preparation programs on PSTs learning. Their study was the first attempt to use activity theory to examine PSTs' learning in teaching students with high-incidence disabilities. Grounded in an activity theory framework, the purpose of this study is to examine the experiences of PSTs and their appropriation of pedagogical tools for teaching reading instruction to students with moderate to severe disabilities. This study intends to address the following research questions:

What is the influence and interaction among preservice teachers’ characteristics and
contextual factors (e.g., reading course, field placement) on the appropriation of pedagogical tools for teaching reading to students with moderate to severe disabilities?
CHAPTER 3
THEORETICAL ORIENTATION AND METHODOLOGY

Teacher learning is a complicated process and scholars have suggested that a variety of individual and contextual factors might impact teacher learning and the types of pedagogical tools as well as the extent of tool adoption (Grossman, Smagorinsky, & Valencia, 1999). The purpose of this study is to better understand the various individual and contextual factors that influence preservice special education teachers' learning experiences. Teacher education is composed of a number of distinct activity settings, including university coursework, field experiences, supervision and "each of these activity settings has its own specific motive, structural features, sets of relationships, and resources for learning to teach" (p.11). The individual also constructs these activity settings in particular ways through their internal representations of the situation. The interaction among individual characteristics and activity settings creates multiple opportunities for PSTs to have access to knowledge as well as apply knowledge in settings.

Theoretical Orientation

The theoretical perspective underlying this study is constructivism (Crotty, 1998). One of the tenets of constructivism is that people construct their own understanding and knowledge of the world through experiencing things and reflecting on those experiences. The activity theory framework developed by Grossman et al. (1999) serves as a conceptual framework in guiding this mixed methods investigation of PSTs’ learning. Activity theory focuses on the interaction of human activity and cognition within relevant environmental contexts and is a viable framework to study the interaction among PSTs' experiences, knowledge, and practices (Jonassen & Rohrer-Murphy, 1999; Leont'ev, 1981). Hence, constructivism is well aligned with the principles of the activity theory.

Grossman, Smagorinsky and Valencia (1999) adapted the tenets of activity theory to
the field of education. They proposed that how PSTs interacted with their teacher education program context would influence their learning. The teacher education program context provided PSTs with pedagogical tools. According to Grossman and her colleagues, there was potential to develop two types of pedagogical tools - conceptual and practical:

Conceptual tools are principles, frameworks, and ideas to guide decisions about teaching and learning while practical tools are classroom practices, strategies and resources that do not serve as a broad conception to guide an array of decisions but, instead, have more local and immediate utility. (p.14)

For example, a reading methods course proposes alignment frameworks (conceptual tool) through which teacher educators encourage PSTs to align individual learning goals and assessments with lesson plans and instruction. Embracing this conceptual tool would result in the demonstration of practical tools rooted in this conceptual framework. For example, PSTs might develop a lesson plan with goal statement, informal/formal assessment results, and interpretation.

The extent to which PSTs appropriates tool use, however, depends on the congruence of a learner’s values, prior experiences and goals with those of the powerful members of the culture (e.g., cooperating teachers, faculty) (Grossman et al., 1999). As Grossman and her colleagues put it, “Through the process of appropriation, learners reconstruct the knowledge they are internalizing, thus transforming both their conception of the knowledge and, in turn, that knowledge as it is construed and used by others” (p.15).

Tool appropriation might occur at different levels. According to Grossman et al. (1999), there were five degrees of tool appropriation: lack of appropriation, appropriating a label, appropriate at a surface level, appropriate conceptual underpinnings, and achieving mastery. At the lowest level, learners might not adopt a tool because they lack knowledge of the tool, or their beliefs do not support using the tool, or the context is not conducive to
utilizing the tool. At the second level, a person may know the name of the tool but none of the features of the tool. For example, PSTs may know the label *Big Mac switch*, but cannot identify any of the features. At the third level, PSTs reach the level of knowing some or most features of the tool, but lack of an understanding of the holistic picture of the tool. For example, students may be aware of the steps involved in the Picture Exchange Communication System (PECS), but cannot explain how PECS contributes to students’ communication and learning. Moving a step further, PSTs reach the fourth level of appropriating conceptual underpinnings, in which they grasp the theory behind the tool. When PSTs are able to integrate tools effectively in their own classroom, they reach the final level of tool mastery.

According to Grossman et al. (1999), there are two factors that affect tool appropriation. One is the social context of learning, and the other is individual characteristics. Thus, activity theory is grounded in social contexts and social contexts provide the environment in which one learns how to use tools. The social context for learning in teacher education programs includes field experiences, student teaching, and internships. The shift from one activity setting to another (e.g., from college classroom to field placement) can mediate PSTs’ conception of teaching and learning in powerful ways. For example, the culture of the school setting may or may not in agreement with the culture of the university. According to Hollingsworth (1989), the contrasts between the two cultures helps students further articulate and define their own beliefs.

As for the individual characteristics of learning, Grossman et al. (1999) noted that PSTs’ prior experience of being a student, personal goals and expectations, knowledge and beliefs of the content are personal attributes that will affect the ways in which teachers developed conceptions of teaching.

**Methodology**
This is a qualitative grounded theory study (Strauss & Corbin, 1998). Qualitative inquiry is "an inquiry process of understanding" where the researcher develops a "complex, holistic picture, analyzes words, reports detailed view of informants, and conducts the study in natural setting" (Creswell, 1998, p.15). In qualitative research, data was collected in natural settings, which participants share their values, experiences and perceptions. Ultimately, it "produces an understanding of the problem based on multiple contextual factors" (Creswell & Miller, 2000).

In the next section, I first present my subjectivity statement because the researcher is an integral part of data collection and analysis (Glesne, 1999). Then I explain how this study was designed. Specifically, I describe the context of the study, including the selection of study participants. I also describe data collection and analysis procedures, in addition to methods used to ensure the trustworthiness of the representations contained in this report.

**Study Design**

**Personal Subjectivity**

In qualitative research, subjectivity is always a part of research from deciding on the research topic to selecting a frame of interpretation. Subjectivity needs to be discussed and recognized so that it would be monitored for trustworthiness and contribute to research (Glesne, 1999). By examining my own subjectivity, both my readers and I will come to the realization of the lens through which I see the world and interpret my data. As my supervisor once said, everyone who goes into the field of special education has a story to tell. My story starts with my personality of being an empathetic and caring person. My family believed strongly in the power of education. They had high expectations for my academic achievement and celebrated every accomplishment I had in school. I completed my master degree in Literature and Applied Linguistics and then worked in a higher education institution for four years in my home country. I decided to pursue a doctoral degree in Special Education in the
United States in 2008 because I wanted to experience a different culture and learn a different approach to teach students with disabilities. Prior to enter the doctoral program in University of Cincinnati, I had limited background knowledge on teaching students with significant disabilities. During the course of my study, I was exposed to evidence-based practices for teaching this population. I got involved in research projects in which I helped collect data, take field notes, transcript video and audio files and conduct initial analysis. My learning experiences, cultural background and personal experiences are possible subjective lens that impacted my choice of research topic, formation of research questions, methods and interpretations.

Much of my early educational philosophy came from my mother, who was an empathetic and caring elementary school teacher. She believed strongly in equal opportunities for education and that every child could learn. I spent most of my childhood in the school where she worked, doing homework in her office while she was teaching in classrooms. Thus, school has always been a familiar setting to me.

However, I had two cousins, one who was deaf and the other who was paralyzed, and they barely received any formal education. It is common in my country for people with disabilities to stay at home, well taken care by immediate family members, for their entire lives. People with disabilities, such as my cousins, frequently lose opportunities to be independent and contributing community members. Those who are fortunate enough to go to schools are educated in self-contained settings, with no interaction with typically developing peers. My cousin lived with my family for years, and I remember being amazed by how smart she was. Later, my personal and professional experiences showed me how easy it was for people to stereotype people with disabilities. I see people with disabilities as no different from us, although they may have different ways of learning, feeling, and living the world. Most importantly, all individuals deserve to have the tools to explore the world as everyone
else does, and education is the key.

**Study Context**

This study took place in one of the separate schools of Children’s Services Department of Middleview County Developmental Disabilities Services (the Agency) (pseudonym). The Agency provides educational services in collaboration with the 22 local school districts in Middleview County (pseudonym). OMDDS operates two separate school programs and 7 satellite classrooms which serve children with disabilities in public schools.

During the 2010-2011 school year, the Agency provided educational services to 241 students with intense medical, physical, cognitive and behavioral disabilities. All students served by the Agency were eligible to participate in the alternate assessment program. The Agency, through its Early Intervention Program, provides services for infants and toddlers, age zero to three, who have developmental delays in self-help, fine and gross motor skills, communication, cognitive, or social/emotional development. Transition consultants provided transition services to local school districts for students close to graduation. The Agency also provided contract agencies and itinerant support services to students with disabilities serviced in their local school districts.

Of 241 students served, 232 receive speech therapy, 227 received occupational therapy and 149 received physical therapy. Eighty-two percent of students receiving transition services continued to achieve their post-secondary outcomes. Families enrolled in early intervention achieved 62% of their identified IEP goals. Of the 241 students served, 36 students had a behavior support plan as part of their IEP with 8 students on a positive behavior plan and 28 students with an aversive behavior plan. There was a steady emphasis to decrease the number of students on aversive plans. Many aversive plans were the use of a bus harness for safe transportation purposes only. All staff members received Crisis Prevention training. A behavior support specialist was assigned to each Agency school. Each school
location had two full time nurses to address intense medical needs of the students. One hundred percent of the teachers met the highly qualified teacher requirement. Principals were licensed. A professional development committee was formed to address staff needs. Monthly professional training was organized, national and local university speakers/professors presented on requested topics, a website for staff to use as a resource for sharing information, lesson plans, and activities was designed, and informational quick tip sheets were developed.

The Special Education Program

The teacher education program at Midwest University, a pseudonym, is an urban preservice preparation program with pathways to two initial special education licenses. All students enrolled in the moderate/severe certification program are required to participate in a two-course block paired with a field experience aimed at preparing PSTs to teach students with moderate to severe learning needs. Previous coursework included a reading methods course focused on teaching reading and writing to high-functioning students. The primary purpose of the course, as described in the course syllabus, was to "understand and use a variety of instructional strategies to encourage the development of PSTs' critical thinking, problem solving, and performance skills" (Young & Wright, 2012). In this course, students were taught to collect pupil data by administering informal assessments to obtain data to guide their instructional decisions. Teacher educators planned several course activities and assignments to facilitate PSTs’ learning. PSTs were paired in teams and were assigned to different classrooms to work with designated students.

The embedded courses were in the fourth year of implementation. This was the first year that the courses were paired with the moderate to severe teaching associate placement, which required PSTs to have experience in moderate to severe placements three hours per week at school. Field supports were provided to teachers at both university and school level, such as on-site supervision and coaching.
Participants

To better understand the individual and contextual influences on PSTs’ appropriation of pedagogical tools for teaching reading, a sample of participants with heterogeneous beliefs, knowledge, and prior experiences were recruited. A total of 30 special education PSTs enrolled in this two-course block paired with a field experience participated in this study. Of the total 30 PSTs, 29 were female and one was male. All of them, except one person, were white with ages ranging from 20-45.

Table 3-1. List of participants and assigned students

<table>
<thead>
<tr>
<th>Tea</th>
<th>PST names</th>
<th>Gender</th>
<th>Race</th>
<th>Age</th>
<th>Assigned student</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jessica</td>
<td>F</td>
<td>White</td>
<td>22</td>
<td>David</td>
</tr>
<tr>
<td></td>
<td>Ashley</td>
<td>F</td>
<td>White</td>
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</tr>
<tr>
<td>2</td>
<td>Natalie</td>
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<td>22</td>
<td>Olivia</td>
</tr>
<tr>
<td></td>
<td>Amanda</td>
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<td>White</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Kimberly</td>
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<td>White</td>
<td>24</td>
<td>Ben</td>
</tr>
<tr>
<td></td>
<td>Anna</td>
<td>F</td>
<td>White</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nicole</td>
<td>F</td>
<td>White</td>
<td>24</td>
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</tr>
<tr>
<td>4</td>
<td>Joe</td>
<td>M</td>
<td>White</td>
<td>N/A</td>
<td>Jacob</td>
</tr>
<tr>
<td></td>
<td>Elizabeth</td>
<td>F</td>
<td>White</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jasmine</td>
<td>F</td>
<td>White</td>
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<td></td>
</tr>
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<td>Melissa</td>
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<td>Christina</td>
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<td>Jade</td>
<td>F</td>
<td>White</td>
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<td>Mark</td>
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<td>Sophie</td>
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<td>Sarah</td>
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<td>43</td>
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<td>Lily</td>
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<td>Derek</td>
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<td>Emma</td>
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<tr>
<td>14</td>
<td>Amy</td>
<td>F</td>
<td>White</td>
<td>22</td>
<td>Sally</td>
</tr>
<tr>
<td></td>
<td>Mia</td>
<td>F</td>
<td>White</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>
**Qualitative Data Collection**

Qualitative data sources included observation and field notes, PST produced course artifacts (i.e., assessment case study, intervention plan, and video reflection), course materials (e.g., Power Point Lectures, assignment sheets), coaching notes (e.g., logs, meeting) and interviews with course instructors, the teaching assistant, field supervisors, and PSTs.

**Field notes and observations.** Field notes were taken during the field teaching (8:00am-1:00pm Tuesday) and coursework (12:30pm-3:30pm Tuesday) for a total of 10 weeks. Field notes provided rich descriptions of the participants' reading instruction and classroom contexts. Observations and field notes of lectures were collected around learning opportunities afforded to PSTs. Observations and field notes during field placements were collected around tools, knowledge, and strategies demonstrated by PSTs, and were used to document instances and the level to which the tools were appropriated as demonstrated in course assignments.

**Course artifacts.** Course artifacts included copies of five assignments: communication assessment and literacy assessments, teaching protocols, case study part I-present levels, and case study part II-intervention plans. PSTs were asked to first administer assessments to determine their students' current communication and literacy abilities. Based on the assessment results, PSTs determined the student's present level and identified goals and objectives, and then planned lessons and instruction accordingly. Each group of PSTs was asked to observe the tutee in their classroom setting for 30 minutes and complete the informal assessment report on students' communication abilities. They were asked to take notes of students’ literacy learning opportunities, collect information from the student’s teacher and family, conduct reading assessment and summarize the data from above in a written narrative with a list of instructional implication and an instructional decision making framework. PSTs were also required to complete an intervention plan based on the
assessment results (i.e., communication and literacy). The intervention plan served as an overview of interventions that helped PSTs organize their instruction. PSTs were asked to identify goals and objectives and create lesson plans for each instructional session and monitor student progress weekly. PSTs were also asked to complete two video tape self-assessments. Collaboration was strongly encouraged. PSTs were asked to work in groups, share information and concerns, and reflect upon practice with their group members.

**Video and video reflections.** PSTs were required to video record two sessions of their instruction and reflect on their experiences using video recordings. This process gave PSTs the opportunity to view their teaching and reflect on their teacher experiences.

**Interviews.** Interview data included one semi-structured interview with one course instructor, Dr. Young, one semi-structured interview one field supervisor, Professor Boat, one semi-structured interview with teaching assistant Kelly and three semi-structured interviews with four groups of PSTs (N=9). Interviews are an important data source to the activity theory framework because they provide critical insights into potential relationships between PSTs and their preparation program. Each interview lasted between 30 to 90 min and was recorded and transcribed verbatim. The interviews with the course instructor, field supervisor and teaching assistant focused on questions such as their background, reading philosophies, perceptions of PSTs' strengths and weakness, and the type of pedagogical tools PSTs were exposed during the embedded reading course. PSTs were asked semi-structured questions of their learning experiences, challenges and concerns, and how various activity systems influenced their learning, either in positive or negative ways.

**Collaborative meeting logs.** Collaborative meetings between field supervisors and each PST team were observed. During collaborative meetings with field supervisors, PSTs discussed their perspectives on: (a) what were working, (b) current focus, challenge, and concerns, (c) PSTs’ next steps, and (d) cooperating teachers' next steps. The collaborative
meeting process taught PSTs to talk about teaching with either their partner or the field supervisors, providing them with a forum to discuss what they observed in the classroom and how they would think critically about what they observed to improve their own teaching skills.

Table 3-2. Summary of data sources

<table>
<thead>
<tr>
<th>Data Collected</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field notes and observation</td>
<td>Field notes taken during course lecturing and discussion PTs will be observed while providing one-to-one instruction to tutee.</td>
</tr>
<tr>
<td>PST teaching video and reflection</td>
<td>PTs tutoring of students will be recorded.</td>
</tr>
<tr>
<td>Interview</td>
<td>• Semi-structured interview with 9 PSTs</td>
</tr>
<tr>
<td></td>
<td>• Semi-structured interview with 1 teacher educator.</td>
</tr>
<tr>
<td></td>
<td>• Semi-structured interview with 1 field supervisor.</td>
</tr>
<tr>
<td></td>
<td>• Semi-structured interview with 1 teaching assistant</td>
</tr>
<tr>
<td>Course artifact</td>
<td>• Communication Assessment and Literacy Assessment</td>
</tr>
<tr>
<td></td>
<td>• Teaching Protocol</td>
</tr>
<tr>
<td></td>
<td>• Case Study Part I- Present Level</td>
</tr>
<tr>
<td></td>
<td>• Case Study Part II- Intervention Plan</td>
</tr>
<tr>
<td>Collaborative meeting log</td>
<td>Collaborative meeting between PSTs and field supervisor</td>
</tr>
</tbody>
</table>

Data Analysis

Data were analyzed by using constructivist grounded theory methods (Charmaz, 2000; Strauss & Corbin, 1998). According to Corbin and Strauss (2008), the world is very complex and there is no simple explanation for phenomenon, "events are the results of multiple factors coming together and interacting in complex and often unanticipated way" (p.8). Experiences and events need to be located within a bigger social context (e.g., social, political, cultural, racial) and researchers need to capture the complexity as much as possible and "obtain multiple perspectives on events and build variation into our analytic schemes" (p. 8). Process is integral to the grounded theory analysis because "experience, and any action/interaction
that follows, is likely to be formed and transformed as a response to consequence and contingency" (p. 7). Concepts at various level of abstraction form the basis of analysis. Concepts provide tools for talking about and arriving at a common understanding among professionals (Blumer, 1969).

Grounded theory method (GT) is a systematic methodology in the social sciences involving the discovery of theory through the analysis of data (Charmaz, 2000; Strauss & Corbin 1998). This methodology is a good fit for the purpose of this study because ground theory is linked to a micro-sociological perspective, in which human social interaction and agency is a main concern.

The GT process consisted of three stages (Strauss & Corbin, 1998). Open coding is conceptualizing at the first level of abstraction. Open coding can be achieved through two basic analytic procedures: making comparisons and asking questions of the data. This part of the analysis was concerned with identifying, naming, categorizing, and describing phenomena found in the text. All the interview data and course artifacts were open-coded, which means that no prior codes were imposed. Codes emerged from the data and were constantly refined throughout the analysis process. Moving to the second stage of axial coding, “data are put back together in new ways after open coding, by making connections between categories” (Strauss & Corbin, 1990, p. 96). In axial coding, the conditions that give rise to a phenomenon's occurrence are specified. Conditions can exist as causal, intervening, contextual, or all of these (Brown, Stevens, Troiano, & Schneider, 2002). Causal conditions are factors that lead to the occurrence of a phenomenon. Intervening conditions are those conditions that “mitigate or otherwise impact causal conditions on phenomena” (Strauss & Corbin, 1998, p. 131). Contextual conditions are the “specific set of conditions (patterns of conditions) that intersect dimensionally at this time and place to create a set of circumstances or problems to which persons respond through actions/interactions” (p. 132). Selective
coding is the process of choosing one category to be the core category, and relating all other categories to that category and results in the development of theory (Strauss & Corbin, 1998).

Table 3-3. Elements of grounded theory

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenomenon</td>
<td>The subject or the outcome of interest</td>
</tr>
<tr>
<td>Causal conditions</td>
<td>These are the events or factors that lead to the occurrence or development of the phenomenon.</td>
</tr>
<tr>
<td>Intervening conditions</td>
<td>Factors that mitigate or impact causal conditions</td>
</tr>
<tr>
<td>Contextual conditions</td>
<td>Specific set of conditions (patterns of conditions) that intersect dimensionally at this time and place to create a set of circumstances or problems to which persons respond through actions/interactions</td>
</tr>
<tr>
<td>Action</td>
<td>The purposeful, goal-oriented activities that agents perform in response to the phenomenon</td>
</tr>
<tr>
<td>Consequences</td>
<td>These are the consequences of the action strategies, intended and unintended.</td>
</tr>
</tbody>
</table>

**Trustworthiness.** In qualitative research, establish trustworthiness and credibility to improve validity (Brantlinger, Jimenez, Klingner et al., 2005). In this study, data triangulation was achieved by collecting both quantitative data (survey) as well as qualitative data (interview, observation and artifact). Interview data from various participants were also triangulated (PSTs, field supervisor, and course instructor).

Wellard and McKenna (2001) asserted that transcription formed part of the data analysis process and should be clearly disclosed in the methodology of a project. To ensure the validity of transcripts, I transcribed all interview data to avoid errors made by transcribers due to lack of knowledge of interview subjects and involvement in the interview process. I kept reflective journaling before and after the interview and also triangulated interview data with field notes and observation to obtain a thorough and descriptive representation of the situation (Poland, 1995).

**Overview of the Dissertation**
In Chapter 4, findings from grounded theory analyses of PSTs' tool appropriation are presented. The types of conceptual and practical tools and extent of appropriation are described. In Chapter 5, I first present the grounded theory framework by illustrating the core concept as well as the component concepts. I then discuss individual and contextual factors that influence PSTs’ appropriation of pedagogical tools. Finally, Chapter 6 concludes with an overview and discussion of the findings of this study, implications for practice, and recommendations for future research.
CHAPTER 4
IDENTIFICATION OF CONCEPTUAL AND PRACTICAL TOOLS

In this chapter, I discuss the pedagogical tools that PSTs were able to appropriate during their coursework and practicum placement. The identification of the pedagogical tools was based on (a) field notes and classroom observation, (b) video and video reflection, (c) course artifacts, (d) interviews with PSTs, course instructors and field supervisors, and (e) collaborative meeting logs. I describe the types of pedagogical tools afforded to PSTs during the embedded reading course with definitions and examples. I then compare PSTs on their extent of tool appropriation.

Conceptual Tools

According to Grossman, Smagorinsky, and Valencia (1999), conceptual tools are broad principles, frameworks, and ideas about teaching and learning. Conceptual tools appropriated by PSTs included (a) efficacy of instruction, structure, behavior, and assessment, (b) beliefs about students with severe disabilities, (c) beliefs about the teaching profession, (d) knowledge of instructional frameworks, and (e) collaboration.

PSTs Efficacy

Data indicated changes of efficacy at the end of the courses and field experience. At the beginning of the course, PSTs felt (a) lacked knowledge of communication devices, (b) uneasy interacting with students, (c) unprepared to deliver lessons, and (d) uncertain interpreting students' behaviors. For example, Amy reflected that they not well prepared when they first started the lesson “we did not make Sally fully aware of all of the activities that were expected of her to be complete.” Jasmine commented that “we need to do a better job of implementing phase 1 in PECS by following the protocol.” Rina's initial comfort level in interacting with students and deliver lesson was also low:

I noticed how attentive I was to my surroundings. I was a little uneasy about doing
this type of lesson with Reagan because I didn’t feel that I was educated enough to deliver the lesson. With the help of my partner, Dr. Wright, and Kelly, I learned a lot about how to speak to Reagan in an appropriate tone and ways to maximize her success.

As PSTs gained more experiences and opportunities to learn and practice, they gradually developed comfort (a) interacting with students with significant disabilities, (b) administering assessments, (c) providing explicit and structured instructions, (d) managing behavior problems, and (e) collaboration. For example, Lily said that “I felt very relaxed during my interactions with Tina. This was something that I struggled with because I have very little one on one experience with students on the spectrum.”

Sarah’s sense of efficacy improved after a few weeks of the coursework and practicum experiences. She said “I learned that as a teacher I am good at getting to the lesson at hand and can put distractions and anticipated behaviors out of my mind.” Sophie felt more confident in collaborating with her partner, “I felt that the things that worked well in this lesson was the collaboration between Eva and myself, both of us reinforced Jon and worked well together to make sure that the lesson went smoothly.”

PSTs also believed that their teaching led to students' progress, engagement and motivation to learn. Megan felt confident that her lesson improved her student's engagement dramatically, “I have heard other teachers say that Maya can only sit during lesson for about eight minutes. I was able to engage her for fifteen and she was not distracted. I believe that she was motivated by the animal pictures and I praised her right answers.” Eva commented “Alan’s data showed us that he had almost mastered the first objective. I believe that our other work with Jon had contributed to this achievement.” Joe commented “I think that Jacob is now benefiting from our instruction and we are starting to see some of his academic potential.”
Monica also indicated an improvement in her level of efficacy “I was definitely more confident in completing the lesson and was more confident in my individual role.” Ashley summarized at the end of her reflection that, “From these lessons I’ve learned that I am able to teach a student like Ana. Before I came to the setting, I never thought I would be able to be a teacher in that type of setting. But now I know just how capable I am... It amazed me that he was getting when I, myself was trying to teach him.”

**High Expectations for Students with Significant Disabilities**

PSTs were able to see potential in their students and felt responsible for improving their students’ academic outcomes. PSTs were also able to gain insights into the teaching profession and appropriate beliefs about the value of working as a special educator. Evidence suggested PSTs embraced a sense of the mission to teach students with moderate to severe disabilities. As one of the course instructors, Dr. Young, put it:

> I want them to understand that everyone can learn. You know, to me that is the biggest thing because I want them to understand that everyone can learn, all children are able to learn. And it's up to teachers to figure out how to help that happen.

**Beliefs about student potential.** Holding high academic expectations for students with significant disabilities is critical for teachers working with students with significant needs. All PSTs were able to appropriate this conceptual tool by holding their students to high expectations, planning challenging activities, and believing in their students’ full potential to achieve beyond their current level. Kimberly, after one successful lesson with her student Ben, reflected that:

> I learned that as a teacher if you have faith in your student, and push them that many times they will achieve their goals. This lesson was monumental for Ben and it taught me to never underestimate a student or their capabilities. I will remember this lesson and Ben in the future, and never underestimate a student.
Another PST, Megan, expressed the same belief in student potential in her reflection:

This (lesson) told me that students are not limited in their capabilities but teachers need to find what is motivating, engaging, and how they can modify the curriculum to accurately determine a student’s learning level. In all my practicum experiences, I have never been more proud of a lesson that I was a part of than today.

One explanation for high levels of appropriation of this conceptual tool was the emphasis that “every child can learn” during course work, coaching, and collaborative meetings with field supervisors. PSTs were amazed at the progress their students made during the instructional time. Amanda expressed her sense of worthiness by stating that “It also makes you feel good to see the expression on the student’s face and how they are responding to what you are helping them with.” Meanwhile, they also felt that classroom teachers had too low expectations for the students that focused more on functional life skills instead of academic learning. The contrast between what they learned during initial preparation and what they actually saw in the settings afforded them the opportunities to struggle with their own educational philosophy. As Megan concluded in her reflection, “what I saw happening in this lesson is that my student is capable of achieving far more than his teacher thought he knew.”

**Beliefs about the Teaching Profession**

PSTs gained a deeper understanding of the teaching profession by working in the classroom with students with severe disabilities. They were able to (a) think broadly into the future, (b) develop a sense of mission as special educators, (c) feel motivated to make a difference, and (d) plan to take a leadership role in the future. Medium and low adopters, on the other hand, were (a) less reflective, (b) unable to think beyond their current case, and (c) resistant to teach the field. As the teaching assistant Kelly put it:

I think for me, one of the concerns that I have around them maximizing their (PSTs) learning experience is that ability to think beyond this class and this experience. I
think to be broad learning experience, they really need to be thinking to the future and
some of them are able to do that really well, and some of them aren't. And that is, I
think my greatest concern with any group of students in this kind of course is are you
just in the here now or are you thinking what this is mean for the future and for future
kids. That is something I've always been thinking about as an instructor as how I can
help them make that shift. I think, I keep talking about this because I think it's an
important theme of this whole going, especially with this is their senior year......this
learning is going to have really specific meaning to them on day one of their first
teaching job.

Distinguishing characteristics of high adopters of this conceptual tool were that they were (a)
highly reflective, (b) able to think broadly, (c) motivated to teach in the field. High adopters
for the belief tool were able to think hypothetically as future classroom teachers. They gained
a deeper insight of the teaching profession and a stronger motivation to make a difference. As
Elyse put it:

After watching the video a couple times I noticed how happy our student was working
with us. It really made me so happy and I feel like I’m making a difference. This
whole experience has been a learning process for me. I definitely know that I’m in
perfect place for me and I’m doing exactly what I’m meant to be doing.

Laura expressed her willingness to work in the moderate to severe setting, “I feel that I will
have the correct mindset to work with severely disabled individuals.” Amber referred one
instance during which “We (Amber and her partner) discussed hypothetical scenarios in
which we were the classroom teacher.” Monica also mentioned that “When I have my own
classroom, it will be very important to consistently expose all students to age appropriate
activities and materials.” Even better, one of the high adopters of the belief tool, Joe, already
developed a sense of mission and planned to step up and took a leadership role in the future:
I'm realizing more and more that it is my job to make changes that can have a
dramatic effect in my students' lives. If I don't do it, nobody may. Whether it is
developing a functional communication system, teaching self-advocacy, or teaching
academic knowledge. I have to step up and make it happen. If I rely on someone else
to do it or expect it to just happen, it may not and that has a direct impact on that
student's quality of life and their contributions in the society.

Medium to low adopters for this belief tool, were less reflective of the meanings that this
experience carried for their future employment. Different career goals made some of them
resistant to the moderate to severe settings. For example, Kimberly, though a high adopters
on many of the practical tools, expressed her resistance to working in the field of moderate to
severe disabilities:

It’s hard for me because it makes me anxious. Like I can’t and don’t like to wait and
that I don’t think I would be good at this because I just get so frustrated. Like I really
like the kids I had in fall, like mild to moderate, but like…… they are just like kids
with learning disabilities. Like, I get anxious in that room because there is not enough
going on and like again…. I want to do more…. But like circle times, like sometimes
it goes an hour and it takes forever, and I’m feel like, I’m just like, what do we do
next? I know it sounds bad.

**Collaboration**

PSTs were asked to specify how they collaborate with their partners in each of the
assignment they completed. When discussing the collaboration tools, PSTs focus on (a)
strategies for collaboration, (b) challenges for collaboration, and (c) benefits of collaboration.
High adopters for this tool were those that are (a) highly reflective about their collaborative
experiences, and (b) collaboratively completed assignments. Low adopters, on the other hand,
were (a) less reflective of the experiences, and (b) divided assignments and ended up with
less coherent product qualities.

**Strategies for collaboration.** Strategies for collaboration included (a) interpersonal skills, and (b) preplanning and planning skills. Interpersonal skills included respect, trust and equality, and the ability to take in different perspectives and recognize each other's strength and weakness. For example, by working closely with each other throughout the quarter, PSTs understood that their partners were able to help them see little things that might be overlooked, provide them with different perspectives and constructive criticism. As Megan commented:

> Having feedback from my peers enabled them to see little things that I would have otherwise overlooked. In the future, I want to use my peers to offer suggestions, changes, etc. It is not just one person, but all teachers can help one another.

Preplanning and planning was another important collaborative skill during which PSTs brainstormed and planned for lessons. Central to this kind of collaboration included sharing core values, philosophy, and have complementary knowledge of pedagogy and content. As Sarah reflected in the CAL meeting with Professor Boat:

> We study and do these assignments together most of the times. But usually, we walk together, we walk 5 miles, and we talked about everything and kind of hash things out.

> By the time we’re ready to study or doing the assignments, we have a positive attitude.

> And that has really helped us.

**Challenges for co-teaching.** PSTs mentioned certain challenges of co-teaching including (a) personality challenges, (b) role confusion, and (c) giving up control. Personality challenges included different work ethics, beliefs, and/or passions about education. Initial role confusion was challenging to PSTs. Kimberly reflected that “None of us had a clear duty during the lesson......it was very difficult coordinate.... at the beginning of the lesson we were all trying to lead the instruction.” With the help from course instructors, they are able to
"assume particular roles."

Giving up control and learning to coordinate is challenging for some PSTs because “teachers tend to want to have control of their classroom” (Nicole). As Nicole noted,

Sometimes it’s hard to let someone else take control of a lesson or implement a lesson in ways that you may not have considered. Although hard, it helps having those group members there to give feedback and weigh pros and cons of a situation. I found myself understanding what my “co-teachers” wanted to get across to Ben. In the end we all had a common goal and a broad understanding of the lesson… I intend to learn more about a co-teaching model and how to use it the best way possible, especially for students with more significant needs. Giving up control is not easy, and something I need to build on as I grow in my profession.

**Benefits of co-teaching.** Benefits of co-teaching cited by PSTs included (a) co-teaching evolved into a mindset, (b) interdisciplinary collaboration, and (c) willingness to collaborate in the future. The co-teaching collaborative experience made PSTs realize the importance of collaboration and the co-teaching model gradually evolved into a “mindset” for PSTs. They realized the value of relying on each other for opinions, strategies, and perspectives. As Nicole put it:

As educators, our end results are the same…we want students to learn. If my peers find that they are inspired by what I’m doing, they can use the same or similar things with their class and vice versa. It’s important to consider having an observer who can tell you what they saw and how to improve areas of weakness within the instruction aspect of the lesson.

Jasmine commented on how each group member contributed ideas and perspectives:

Elizabeth made a good point that although our writing session has a nice connection to the reading, Isaiah does not seem to be very engaged in the writing portion. Joe had
the idea to maybe find a tangible for Jacob to fill in the blank. Lastly, we all agreed that during the communication phase, there were some trials that are not accurately following the PECS protocol.

Some PSTs were paired with speech language pathology students (PSLPs). This interdisciplinary approach was helpful for both PSTs and PSLPs. For example, Elizabeth, a PSLP, reflected on her experience working with a PST partner:

Since I’m a speech pathology student, I have not been exposed to many of the things that other students in the class have been exposed to. It was very beneficial to me being paired with a Special Education student because I was able to collaborate with her on lessons and assignments that I would have had no idea how to do.

PSTs also realized the valuable input PSLPs. For example, Kathy said, “having criticism both negative and positive can only help improve my teaching abilities. It's really good to had Grace's input on our lessons due to her focus on speech and language.”

Also notable was the effect of having PSTs collaborate around course assignments. This gave some PSTs ideas understandings about how to create collaborative relationships in the future. Sarah noted:

The relationship with coworkers is extremely important. This has been great practice for when I have my own classroom and staff to incorporate. Our collaboration in the evaluation process, present levels, creating lessons, and collecting data is something that I will be participating in for the rest of my career.

**Instructional Frameworks**

During coursework, PSTs were taught to plan daily literacy lessons based upon communication, which included reading, writing, and word work, or a balanced literacy approach. PSTs were also taught to use before, during, after format in reading to emphasize thinking and activate background knowledge for literacy activities. In addition, assignments
emphasized aligning all lessons with content standards and individual student goals. As a result, PSTs were able to appropriate three instructional frameworks for teaching students with moderate to severe disabilities, including (a) before, during and after framework, (b) balanced literacy framework, and (c) alignment framework. Eight out 11 groups included reading, writing and word work activity into their lessons. As Elizabeth said, "We learned in class (that) the before, during, and after could go together with all three sections.”

All groups appropriated the before, during and after format in teaching reading and the alignment framework because these frameworks were embedded in course assignments. For example, PSTs were first asked to administer assessments to determine the present level of a student’s communication and literacy ability, then set goals and objectives based on the assessment results. PSTs then planned lessons with a consideration of the strength and weakness of the student, the environment in which he/she was currently functioned and will function in the near future. Sarah, one of the PSTs, showed evidence of internalizing this framework by saying:

This video shows me the true value of assessing all students. It takes a lot of time but you cannot adapt curriculum to the student’s individual needs without knowing their capabilities and learning levels. Individualized and differentiated instruction cannot take place without the assessment piece.

Embedding frameworks into course assignments resulted an appropriation of this conceptual tool for all PSTs. However, the overall quality of instructional frameworks appropriation can only be realized by the level of application of practical tools embedded within those frameworks. For example, in order to appropriate the alignment framework tool to a mastery level, PSTs needed to demonstrate a high level of appropriation on a range of practical tools such as communication assessment, literacy assessment, planning, structured instruction and embedded support. The level of appropriation of those practical tools will be
discussed in the next section.

Table 4-1. Summary of conceptual tools

<table>
<thead>
<tr>
<th>Conceptual tools</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>High expectation for students with significant disabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Believe in student potential</td>
<td>The belief that student can learn, make academic progress if given opportunities to learn</td>
<td>Ashley “as an educator, it is very important to remember that no matter what it looks like a student can or cannot do, they should be given the chance to show the things they can do.”</td>
</tr>
<tr>
<td>Value student as contributing community members</td>
<td>The vision to consider student independence, and transition to adulthood</td>
<td>Lydia “It is our goal, as a special educator, to provide our students with the necessary skills to be contributing and valued members of their communities”</td>
</tr>
<tr>
<td>Feel responsible for student learning.</td>
<td>The sense of responsibility for student learning</td>
<td>Joe “I’m realizing more and more that it is my job to make changes that can have a dramatic effect in my students’ lives.”</td>
</tr>
<tr>
<td>Beliefs about the Teaching Profession</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Think broadly into a future,</td>
<td>Think hypothetically as classroom teacher and what the current teaching experience means for future students</td>
<td>Monica “When I have my own classroom, it will be very important to consistently expose all students to age appropriate activities and materials.”</td>
</tr>
<tr>
<td>A sense of mission as special educators</td>
<td>Responsibility for student learning</td>
<td>Joe “Whether it’s developing a functional communication system, teaching self-advocacy, or teaching academic knowledge, I have step up and make it happen.”</td>
</tr>
<tr>
<td>Take the leadership role</td>
<td>Mange the classroom and the staff within the classroom</td>
<td>See Joe's quotes in the text</td>
</tr>
<tr>
<td>Collaboration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaboration strategies</td>
<td>Interpersonal skills, preplanning and planning</td>
<td>See Sarah's quotes in the text</td>
</tr>
<tr>
<td>Benefits of collaboration</td>
<td>Evolve as a mindset, interdisciplinary collaboration, a skill used for future classroom</td>
<td>Elizabeth &quot;Since I’m a speech pathology student, I have not been exposed to many of the things that other students in the class have been exposed to. It was very beneficial to me being paired with a Special Education student because I was able to collaborate with her on lessons and assignments that I would have had no idea how to do.”</td>
</tr>
<tr>
<td>Challenges of collaboration</td>
<td>Personality challenge, role confusion, and giving</td>
<td>Nicole &quot;Sometimes it’s hard to let someone else take control of a</td>
</tr>
</tbody>
</table>

59
up control lesson or implement a lesson in way that you may not have considered. Although hard, it helps having those group members there to give feedback and weigh pros and cons of a situation.”

<table>
<thead>
<tr>
<th>Instructional Frameworks</th>
<th>Activities comes with each reading phase: before, during, after</th>
<th>Ashley “As we learned in class, the before, during, and after should go together with all sessions.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balanced literacy framework</td>
<td>Daily reading, writing and word work activity</td>
<td>Reflected in daily lesson plan.</td>
</tr>
<tr>
<td>The alignment framework</td>
<td>Alignment among assessment, curriculum, goals and instruction</td>
<td>Nicole “by defining Ben’s need for communication, we wrote goals specifically correlating with alternate assessment, which connects with the general education curriculum in some way.”</td>
</tr>
</tbody>
</table>

**Practical Tools and the Extent of Appropriation**

According to Grossman et al. (1999), practical tools are classroom practices, strategies and resources that do not serve as broad conceptions to guide an array of decisions but, instead, have more local and immediate utility. During the coursework and field experiences, PSTs were also be able to appropriate a range of practical tools, including: (a) communication assessment tool, (b) literacy assessment tool, (c) communication instruction, (d) strategies for presenting content that is age appropriate, (e) goal and objective setting, (f) lesson planning, (g) organizing classroom environments, (h) structured instruction, and (i) embedded support. In the following section, I present practical tools that PSTs were able to appropriate and the extent of appropriation by PSTs during coursework and field experiences. I offer examples across low, medium, and high adopters to help readers grasp a more thorough and holistic picture. Tool appropriation can occur at a continuum from no appropriation to tool mastery (Grossman et al., 1999). Thus, practical tool appropriation was categorized into four groups based on the framework proposed by Grossman and her colleagues and use these terms consistently across the study (see Table 4-2).
Table 4-2. Definition of level of tool appropriation

<table>
<thead>
<tr>
<th>Level of tool appropriation</th>
<th>Rating</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>High adopter</td>
<td>4</td>
<td>Integrating tools effectively in their own classroom, they reach the final level of tool mastery.</td>
</tr>
<tr>
<td>Medium</td>
<td>3</td>
<td>Appropriating conceptual underpinnings, in which they gasp conceptual underpinnings of a tool and the theory behind the tool.</td>
</tr>
<tr>
<td>Low adopter</td>
<td>2</td>
<td>Knowing some or most features of the tool, but lack of an understanding of the holistic picture of the tool.</td>
</tr>
<tr>
<td>Label adopter</td>
<td>1</td>
<td>know the name of the tool but know none of the features of the tool</td>
</tr>
</tbody>
</table>

*Note: Definitions based on Grossman et al. (1999)*

**Assessment Tools**

PSTs in this course were exposed to two assessment tools: communication assessment tools and literacy assessment tools. By administering the communication assessment, PSTs gathered information on the communication abilities of their student, including the setting, content, communicative partners, as well as forms and function of the communication. The literacy assessment tool, on the other hand, enabled PSTs to gain better understanding of the reading levels of their students. By assessing students before setting goals and objectives and planning lesson, PSTs were able to obtain a more accurate and holistic picture of their students' communication and literacy level. Administering assessments with real students in real settings maximized PSTs' learning experiences. As the course assistant, Kelly, put it:

I think they understand assessment in a different way. In another course they take, they get sort of foundation of assessment for kids with more significant needs, and what does that look like, but that is all video-case based. But I think there is something really important about having this application-based course where they can actually use these strategies with kids in a nice scaffolded way so that they understand maybe their conceptualization of what some of these assessments look like, and then
what they look like in practices are not necessarily the same. I think they are able to
tweak and reflect on that process a little bit better in this application setting. So I do
think they came away with some assessment tools as well.

**Communication assessment tool.** Assessing communication skills for individuals
with severe disabilities is difficult because their impairment may interfere with their ability to
engage in clear, reliable and intentional communication behavior (McLean, Brady, McLean,
& Bhrens, 1999). A clear understanding of students' communication abilities is essential to
their education. PSTs were asked by course instructors to complete a communication
assessment with the students they worked with. They were asked to gather information as to
the setting of communication, the communication partners, content, forms and purpose of
communication. According to Downing (2005), the forms of communication are the way the
students express thoughts, feelings and needs. Students can use multiple means of expressing
(e.g., facial, gestural, vocalization). Communication assessment tool appropriation varied
among PSTs.

Of the thirty PSTs, four groups \((N=8)\) were categorized as high adopters, four groups
\((N=11)\) were categorized as medium adopters, and four groups \((N=9)\) were categorized as low
adopters. One group's communication assessment summary was missing. High adopters were
those that (a) had the opportunities to observe students across settings (e.g., classroom, recess,
gym, one-on-one), (b) used appropriate terminology of communication assessment, (c)
offered sufficient details in their description, (d) made sense of the situation by drawing on
theory learned from previous coursework, and (f) made statements and interpretation based
on keen observation. Low adopters, however, (a) had limited opportunities to observe
students across different settings, (b) lacked detailed, thick description of the situation, and (c)
used vague and less accurate language in describing the situation. Medium adopters, however,
had fewer opportunities to observe students across multiple settings and this was reflected in
the quality of their assessment.

All PST groups were able to identify communication partners. For example, Emma and Monica wrote in their assessment summary that, “During our observation, Derek communicated mainly to the instructors. He didn't communicate with any of his peers.” Megan and Amber stated that their student Maya, who was non-verbal and used a communication device, “did not communicate with peers or teachers unless she was requesting something she required.”

High adopters were able to identify several forms of communication and offered detailed descriptions of the situation. For example, Jade and Lidia described the forms that their student used to communicate this way:

While Mark expresses his needs through nonverbal communication, it appears that he has proficient receptive communication skills. This is shown through Mark's abilities to follow directions communicated to him verbally from teachers and staff...we witnessed several instances where Mark communicated with the teacher. The teacher worked one on one with Mark through three fine motor oriented tasks. Through these tasks, Mark would become frustrated and protest by grunting while making eye contact with the teachers. Through his facial expression, the teacher was able to recognize that Mark was upset and didn't wish to continue the activity.

A medium adopter group (Jasmine and Melissa) were able to identify the student’s forms of communication (e.g., non-verbal, vocalization, eye gaze, and facial expression); unlike high adopters, they used more general language and provided less vivid description and sufficient examples to explain the situation. For example, they made the following comments about their student’s communication: “In addition to communicating with the strangers in the room, he used vocalizations, eye gaze, and facial expressions to initiate and respond to communication with his classroom teacher on several occasions during our two
hour initial observation.”

Kimberly’s group was categorized as low in appropriating the assessment tool. They were working with a five year old child with multiple disabilities and with limited visual abilities. They mentioned that: “he uses eye gazes as a method of indicating an object or person in the room.” PSTs failed to provide information regarding other forms of communication such as vocalization, gesture, and body movement, which were observed during work times. In another example of low adoption, Monica and Emma’s group simply stated the forms of their student’ included “facial expressions, such as smiling, and vocalizations, such as grunts or squeals” while providing no further elaboration.

**Literacy Assessment Tools**

By appropriating literacy assessment tools, PSTs were able to (a) realize the importance of assessing literacy, (b) familiarize themselves with different assessment tools and (c) become aware of the challenge of the assessment tools.

All PSTs were able to appropriate the importance of literacy assessment. They realized that assessments provided teachers with the information needed to develop appropriate lessons and improve instruction for all students, including students with disabilities (Rhodes & Shanklin, 1993). PSTs found that literacy assessments filled in gaps about students’ academic skills. For example, Jade and Lydia noted that they were “given a lot of information by the classroom teacher regarding the student's ability to communicate and current life skills. However, we were unsure of his academic levels in school.” Sarah and Lily commented that:

This (assessment) shows me the true value of assessing all students. It takes a lot of time but you cannot adapt curriculum to the student's individual needs without knowing their capabilities and learning levels. Individualized and differentiated instruction cannot take place without the assessment piece.
**Level of appropriation.** Of the fourteen groups ($N=30$) PSTs, seven groups ($N=16$) PSTs were categorized as high adopters, five groups ($N=10$) as medium adopters and two groups ($N=2$) as low adopters. The level of literacy assessment tool appropriation was tied to (a) time available to administer assessments, (b) content knowledge of reading, and (c) abilities to be creative when gathering information.

Time constraints were a barrier to thoroughly enacting assessment tools for all PSTs. Sarah and Lily, one group of high adopters, noted: “Due to time constraints, we were unable to assess Tina's ability to point to the book's title and author....I found myself rushing to get as much in with Tina as I could instead of taking more time during certain assessments.”

Content knowledge of reading also influenced PSTs’ level of adoption of the literacy assessment tool. While high adopters were clear and accurate and used the terminology included in the assessment portfolio, medium and low adopters had some misconceptions. For example, when assessing the concept of print, one group of PSTs (Melissa & Christina) stated that their student “doesn’t understand the concept of print on the pages.” However, they later mentioned that the student “turned the pages and imitated us pointing to the sentence/letter/picture we were reading,” which was a demonstration of concept of print. Thus, low adopters appropriated the label and nothing more. Another group of low adopters, Rina and Laura, failed to use the assessment portfolio to organize their assessments results and ended up with a more descriptive rather than evaluative product.

Assessing students with severe disabilities required PSTs to think out of the box and come up with creative ways of gaining information. High adopters came up with creative ways of assessing students anyway. For example, one group of high adopters, Kimberly, Anna, and Nicole, worked with a student with minimal visual acuity and tried to assess his ability to identify the front and back of a book. They consistently used different textures for the front and back of the book. They noted that by:
Providing Ben with tactile and sensory cues will increase his ability to distinguish the front and back of the book. Given Ben’s minimal visual acuity, providing a physical stimulant will allow him to use more than just his sight.

Medium adopters sometimes failed to offer complete pictures of student skills and abilities. For example, Monica and Emma stated that, “Derek was unable to demonstrate the skills in phonological and phonemic awareness assessment because he was unable to answer the question asked.” However, communication assessment results indicated that Derek had very limited verbal ability. Thus, without additional information about how the question was being asked, and the type of assistance provided to the student in order to show what he knew, the conclusions drew by PSTs could not be substantiated.

**Communication Tools**

Through the appropriation of communication tools, PSTs were able to (a) understand the link between communication and literacy, (b) become familiar with communication devices and realize the potential and limits, and (c) use PECs. As one PST Laura reflected, “Communication is an enormous part of one’s life and is a necessary skill. As speech-language pathologists and special education teachers, it is our job to assist the population who has difficulty in this area.”

Prior to this course, most PSTs had no experiences or knowledge of communication devices. As Kimberly stated, “I also never worked with any communication device and working with the Big Mac switch was eye opening...I also learned that I lacked experiences and knowledge of the different communication devices.” Course instructors dedicated a course session to discussing PECS with an emphasis on helping students with severe disabilities initiate communication. PECS is a form of augmentative and alternative communication. PECS is recommended as an evidence-based intervention for enhancing functional communication skills of individuals with ASD (Tien, 2008). Through coursework,
PSTs came to view PECS as a way to promote communication. After noticing the lack of a communication system for his student, Joe noted “after learning more about Phase I of PECS, we are on the right track.”

**Level of appropriation.** All PSTs were able to appropriate the importance of communication due to the continued emphasis of establishing a functional communication system for students with moderate to severe disabilities during the coursework. In addition, their practicum experiences helped them draw conclusions about the need to help establish communication systems for all students. For example, Rina and Laura noted:

We witnessed the child being talked to, but given nothing to assist her with a response. The instructors infer meanings from the child’s facial expressions and body language and proceed to speak for her. Therefore, we have both agreed on the fact that our student is in need of a communication system that allows her to express her wants and needs. This would allow her to engage in conversation and have meaningful social interactions (without assumptions being made by her communication partner).

Understanding of the importance of establishing of a functional communication system motivated many PSTs (e.g., Joe’s group, Monica’s group, Rina’s group) to try PECs with students, for the purpose of help students establish joint attention, initiate communication, differentiate among items, and make choices. PSTs also realized the strong relationship between literacy and communication and tried to link communication goal and language arts goal together. They realized that without a functional communication system in place, it was hard for teachers to interpret students' messages which decreased the quality of interaction and student independence.

Three groups appropriated PECS to medium-high level. Joe’s group appropriated PECS at the highest level. They were able to (a) understand the theory behind PECS, (b) identify motivators (e.g., rattles, bells, Dora, bubbles, songs, being read aloud to) through
preference testing, (c) follow the PECS protocol with minimum error, (d) help their student
generalize the skill across trainers, and (e) incorporate technology and other instructional
approaches into the training process. For example, when working with their student Jacob,
Joe’s group brought several items for preference testing. They showed Jacob a short video of
the group modeling the correct way to use PECS. They also realized that they need more
practice to better implement the PECS process with accuracy. Jasmine reflected that “we need
to do a better job of implementing phase 1 in PECS by following the protocol. We did not
really use the open hand method to provide information to Isaiah and can improve that for
next session.”

High adopters understood the theory behind the PECS – the idea of exchange – and
the implication of exchange for the students with whom they were working. As one group
member reflected, “My group is trying to help Jacob understand that whatever picture card he
touches he will immediately get the object he touched.” High adopters also recognized both
the potential and problems possible with PECS. For example, Joe, Elizabeth, and Jasmine
recognized the complexity of the task:

Our exposure to the strict protocol for PECS opened our eyes to our next step….The
problem is that non-modified PECS may not work given this student’s physical
limitations and undiscovered method for making choices….I’m very excited to use the
protocol because it limits problems with treatment integrity, provides specific
instructions for each of us to follow (remove human error) and provides a good
foundation for us to begin our lesson. Once we have a good foundation we can more
easily adjust/adapt/modify to meet the needs of the student.

Lower adopters, such as Monica’s group, had difficulties with some aspects of
implementing PECS. This group used one motivator- listening to music. They found that
although their student showed great interest in the first lesson session, the student lost interest
in the second session. In another example, Rina and Laura's group initially implemented phase I of the PECS procedure with accuracy. They stated that "having four people working with her (the student) at once, seemed to be very efficient. This was due to the fact that everywhere she looked, the child had someone to occupy her attention." Later they learned that having so many people working with the student was distracting, particularly when they were not using novel materials.

The level of appropriation of communication devices could not be determined across all participants, because not every group had the chance to work with a communication device. Furthermore, PSTs were not permitted to program a student's device without the classroom teacher's permission. However, PSTs were able to appropriate the benefits and limits of communication devices. For example, they questioned the functionality of communication devices that their student used. Lydia and Jade noticed that “the student was not correctly introduced to the program (on the communication device). It is used infrequently and there are multiple buttons for each request.” Kathy, while trying to help her student participate in a lesson using the communication device, found that "it isn't an available option on his ComLink ST communication device to ask to be read to.... and his CommLink ST communication device does not have all the necessary words or phrases to communicate about anything and everything.” Jessica also mentioned that her student’s “device does not allow him to build sentences of what he is trying.”

Another challenge encountered by PSTs was when their students used more than one communication device, they needed time to learn the function of each one and weigh the pros and cons. For example, the student that Kimberly, Anna, and Nicole were working with had two switches in place: a Big Mac switch and head switch. It took them a few weeks to figure out that the student used the head switch more efficiently.

**Age Appropriateness**
The concept of age appropriateness includes choosing age appropriate materials, talking to student in age appropriate tones, and planning age appropriate activities. Children with severe cognitive disabilities may not develop the way other children of their age do, and they are often given toys and engaged in activities that are more appropriate for younger children. The concept of age appropriateness is important because continued exposure to age inappropriate materials and activities will deteriorate students' independence and possibility of being contributing community members as they transition into adulthood (Brown, Nietupski, and Hamre-Nietupski, 1976).

All PSTs were able to appropriate this tool to a medium-high level. During the course work, course instructors encouraged PSTs to talk to students in age appropriate tones, identify age appropriate motivators and use age appropriate materials and plan age appropriate activities to facilitate students’ access to learning experiences. In the practicum placement, however, PSTs noticed many instances where the concept of age appropriateness was neglected in the classroom.

**Age appropriate materials and activities.** One PST, Laura, noticed that students in her classroom were “being spoken to as if they were babies or as if they were incapable of comprehending anything more than 'motherese’.” PSTs noted the use of age inappropriate materials, such as listening to nursery songs such as Old McDonald had a Farm. Laura and Rina believed that the use of inappropriate materials reduced their student's motivation to learn. "We have not witnessed age-appropriate materials being used for her specific age (the student is 13)…. She is constantly given materials that are below her age level and of no interest to her.”

The other PST Emma also mentioned that her student, who is 16, “plays in the classroom with a Fisher price piano that is more suited for toddlers. They are definitely not appropriate for a boy this age. Not only did we need to find a substitute motivator on the spot,
we also need to make sure that it would be age-appropriate.” After discussing this situation with the course instructors, Emma and Monica ended up using a piano application on iPad. This age appropriate activity was motivating to their student and the student appeared to be engaged during the whole lesson.

**Age appropriate interaction style.** For the PSTs who had no prior experience interacting with students with significant disabilities, they struggled with using appropriate intonation when interacting with their students. Christina recognized that she needed to change her interaction style:

The biggest concern that I had for myself was the way I talk to my students and that I may “baby” them too much. Although I have learned that you are to talk to a student age appropriately - I feel I did for a 6 year old! I almost feel that I have trouble telling her she can’t do something during the lesson or taking away from her discipline chart. I think that by being special education teacher, it is hard for me to not want to always give in.

However, after field supervisors and course instructors “modeled a few things with interacting with the students,” PSTs were able to develop a comfort level interacting with their student. As Rina and Laura put it:

With the help of my partner, Dr. Wright and Kelly (the teaching assistant), I learned a lot about how to speak to Lily in an appropriate tone and ways to maximize her success. I notice myself. I noticed myself speaking in a “mothers” tone towards Lily, which I now consciously try to avoid. I notice Dr. Wright and Kelly speaking to Lily as a typical 13 year old girl during the video. For example, Dr. Wright would say, “Alright, sister.” I have now tried to transfer that tone into Lily’s classroom to be consistent with her progress. I also noticed the importance of speaking to Lily in the appropriate tone according to her age; not her outward appearance.
Lesson Plan

After conducting communication and literacy assessments, PSTs were asked to summarize their students’ present levels using narratives and write two goals with corresponding objectives. Of the 14 groups of PSTs (N=30), six groups (N=14) were categorized as high adopters, four groups (N=8) were considered medium adopters, and four groups (N=8) were considered as low adopters. PSTs differed in their performance on (a) the communication/literacy assessment, (b) instructional implications, (c) instructional decision making frameworks, and (c) the appropriateness of goals and objectives. High adopters for determining the present levels were those that (a) did solid work on previous communication/literacy assessment summary, (b) had knowledge of strategies and interventions to promote learning, and (c) completed the instructional decision making framework. Low adopters (a) had less accomplished communication/literacy assessment reports, (b) did not mention strategies and interventions information, (c) and had incomplete instructional decision making frameworks.

Determining the present level. Based on the assessment results, PSTs were asked to develop present levels in the three areas (communication, literacy, self-help) including the strategies and interventions that would promote learning in this individual (e.g., visual schedule, reinforcers, sensory interventions special interests or topics, methods for promoting engagement). This tool helped PSTs connect assessment results to goal setting and lesson plan.

For example, the high adopter group (Joe, Elizabeth, Jasmine) did equally outstanding work in their communication/literacy assessment assignments. They summarized those assessment results at the beginning of their report and also discuss the instructional implications of their findings. Results also considered the student's communication abilities as: "(a) close face to face interactions, (b) dramatic speech, (d) physical limitations in fine
motor skills (throws items off tray, even if preferred item), (e) easily distracted by others-teach in limited stimulus environment, one-on-one.” Low adopters, on the other hand, provided no information on instructional implications and did not connect this information to their student’s communication system.

**Instructional decision framework.** PSTs were also required to complete an instructional decision making framework in which they provided (a) assessment data that suggests a reading problem area, (b) lesson goals and objectives, (c) strategies from the reading that looks promising, and (d) selection and rationale. Low adopters either did not include the instructional framework or provided inaccurate information. For example, one of the low adopter groups, Jessica and Ashley, stated the strategies for word work was "begin instruction where the student is." They described their rationale this way: "this strategy would be helpful because knowing what the student likes right away to help create a positive work environment where the student can feel more comfortable. Knowing what they like will jump start the therapy.” Thus both the strategy and the rationale suggested they knew little about word work for individuals with moderate to severe disabilities.

Medium and high adopters, on the other hand, were able to identify more relevant strategies. For example, Natalie and Amanda stated that for reading comprehension, they would use "read aloud, retellings, utilizing a variety of reading options, and drawing pictures.” The rationale noted that these ideas could benefit their student's reading comprehension because the student "can read a sentence, be asked a question, and then comprehend what the text means.” They also considered having students "draw picture of what the text means to her," as a way of improving the student's reading ability.

**Writing goals and objectives.** The heart of IDEA is a written document called an Individual Education Program (IEP). Key components of the IEP includes a description of student’s present level, measurable annual goals, objectives, and benchmarks, and a statement
of needed special education and other services. "Measurability" is an important ingredient in the 2004 IDEA (Bateman & Herr, 2006).

High adopters for this tool were PSTs who wrote appropriate and measurable goals and objectives based on the assessment results. They were able to (a) observe learner performance, (b) identify important conditions, and (c) state measurable criteria that specified acceptable levels of student performance. Low adopters, on the other hand, had misconceptions about concepts, let alone writing goals and objects. For example, one group of low adopter pairs, Natalie and Amanda, stated their language art goal for the student as, “Olivia will demonstrate her fluency by reading different words on a second grade level, improving the time it takes her to read them,” and "Olivia will expand her vocabulary by introducing her to new words in the text and also strengthen the sight words she already knows.” Both goals confused reading concepts, and neither of the goals was measurable.

Medium adopters appropriated a lot about the conceptual underpinnings of writing goals and objectives, while missing the nuance of application. For example, Monica and Emma stated that:

We did a communication goal and a self-help goal. And our communication goal was Derek will establish joint attention with at least two communication partners with 100 percent accuracy in 7 out of 10 trials. And then for our objectives, like indicate he will want to use the radio by motioning, making noise or saying radio with 100 percent accuracy in 7 out of 10 and then Derek will exchange, touch or exchange CD with partner in 100 percent in 7 out of 10 trials.

Professor Boat went over their goals and objectives and commented that:

So my take on at so far would be if you’re looking at your goal as far as establish joint attention, that would mean you need to be more specific about what you mean by joint attention. “Derek will indicate he wants to use the radio by motioning, making noise
or saying radio.” Those are things that aren’t observable or measurable to me. So

*motioning*, is that pointing?

High adopters not only understood the conceptual underpinnings of writing goals and objectives, but demonstrated their ability to apply these concepts with accuracy. For example, Amy and Mia were able to write measurable and appropriate goals and objectives for their student named Sally, second grader. They stated the language goal for their student as:

**Objective:** Given four pre-primer sight words with visual cues attached, Sally will correctly verbally identify all four words in 3 out of 5 attempts in a one on one setting.

**Objective:** Given four pre-primer sight words with visual cues attached, Sally will correctly verbally identify three out of four words in 3 out of 5 attempts in a one on one setting.

**Objective:** Given four pre-primer sight words with visual cues attached, Sally will correctly verbally identify all four words in 3 out of 5 attempts in a one on one setting.

This group of PSTs were able to specify condition (i.e., given four pre-primer sight words with visual cues attached) and measurable criteria (i.e., identify three out of four words in 3 out of 5 attempts in a one on one setting). They were able to appropriate the relationship between goals and objectives by breaking the skills as stated in goals down into discrete objectives, and described the amount of progress the child was expected to make.

**Reading Activities**

Shared book reading activities can benefit a range of emergent literacy targets across age ranges for children with significant developmental disabilities. The initial target of book sharing activities may simply be to establish joint attention, while others may be at the level of labeling objects in the books (Breit-Smith & Justice, 2010). Ten out of the 14 groups of preservice teachers did read aloud or interactive reading with their students. Of the ten groups that used read out or shared book reading activities, eight groups appropriated the tool to a
moderate-high level, two groups appropriated at a low level. PSTs differed in the number and quality of instructional strategies used for teaching reading.

According to Breit-Smith and Justice (2010), shared book reading refers to adult-child interactions surrounding text that involves conversation and discussion about the content as well as pictures and print in the book. Read aloud, on the other hand, refers that teachers read to students without doing as much scaffolding and discussion around the topic. Research studies have shown that students who are frequently read to perform higher on measures of language and literacy than students who experienced less opportunities (Bingham, 2007). Breit-Smith and Justice (2010) suggested prompting communication during book reading experiences by providing assistive technology or alternative and augmentative communication devices. Devices need to be programmed ahead of time for answering comprehension questions. In addition, teachers need to wait for a child's response before prompting since children with significant disabilities may require longer time to process information.

High adopters for of tool (a) used sufficiently easy but optimally interesting texts (Koppenhaver, 2010), (b) employed a range of prompts to facilitate interest and engagement (Whitehurst et al., 1994), (b) monitored story comprehension (e.g., sequencing events, draw pictures), (c) modeled think aloud for students to improve their comprehension of the text read, and (d) combined technology (e.g., AAC) with interactive book reading to increases responsiveness and task completion of their students (Browder et al. 2006). For example, high adopters made careful selection of reading materials, whereas medium adopters made age appropriate selections but neglected student interest. They frequently included music as part of lessons to facilitate student engagement.

High adopters facilitated student participation through attention to students’ communication systems. For example, Kimberly, Anna, and Nicole did a *Wheels on the Bus*
lesson with their student. They programmed the student's device ahead of time so that the student was able to pick words from different parts of the song to display what part he wanted to hear. This group of PSTs also reflected that they need to allow "sufficient time" because the student need more time to process information to make choices.

High adopters used several strategies to improve the students' comprehension, such as asking students to sequence stories or draw pictures about what they read. PSTs performed think alouds for students to model how to comprehend a story. In addition, PSTs were able to modify questions to meet the needs of their student’s ability to respond. For example, Kathy and Grace offered students two choices and had students use eye-gaze to answer yes or no questions. Sophie and Sarah created picture cards of sight words so their student could complete a response to a comprehension question. Sarah and Lily did interactive reading with their student and asked her to "answer explicit questions throughout.” They also asked her to "match pictures to key concepts that she learned through reading the text,” thereby affording multiple opportunities for the student to demonstrate what she understood from her reading.

Low adopters of this tool, however, did not use as many strategies and instructional approaches as high adopters. For example, Natalie and Amanda described their book reading activities as: "read aloud with Olivia and ask her questions relating to the text. Once she finished reading, ask her, "What happened in the story?" See if he can make connections based on what she comprehended while she read aloud.”

Writing activity

Eight out of 14 groups did writing activities with their students, including interactive and independent writing strategies. High adopters were able to (a) identify age appropriate and motivating writing activities, (b) model the writing process, (b) provide explicit instruction of writing conventions, (c) provide frequent supportive feedback, and (d) come up with creative ways for students to create their own writing. Low adopters, on the other hand,
had limited strategies for teaching writing. They either had students (a) copy letters and sight words, or (b) copy their names.

**Instructional strategies for writing.** Most students that PSTs were working with were at an early stage of writing development. According to Wolfe, Williamson, and Carnahan (2010), emergent writing refers to children’s attempts to convey information through written symbols. The development of writing follows a continuum from drawing, scribbling, to letter-like representation and formation. Technology and adaptive equipment may be used to foster emergent writing in children with significant disabilities (Bedrosian, Laser, Speidel, & Politsch, 2003).

Table 4-3. Stages of writing ability

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<thead>
<tr>
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<tbody>
<tr>
<td>Drawing</td>
<td>Children draw pictures to represent writing and may verbalize their drawing as if reading aloud. This demonstrates their understanding that writing is used to relay information.</td>
<td></td>
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<tr>
<td>Scribbling</td>
<td>Children began to scribble as if writing and to hold their pencil or crayon in a manner similar to an adult.</td>
<td></td>
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<tr>
<td>Letter-like unites</td>
<td>As children's writing matures, connected scribbles transition into separate, broken lines resembling letters.</td>
<td></td>
</tr>
<tr>
<td>Nonphonetic letter strings</td>
<td>Children begin to combine unrelated letters, in an effort to resemble words. They frequently use letters from their own names.</td>
<td></td>
</tr>
<tr>
<td>Copying environment print</td>
<td>Children copy words from their surroundings.</td>
<td></td>
</tr>
<tr>
<td>Invented spelling</td>
<td>Children's writing begins to resemble conventional style as they incorporate familiar words, However, word boundaries may still be confused and vowels may be omitted.</td>
<td></td>
</tr>
<tr>
<td>Conventional spelling</td>
<td>Children achieve correct or standard spelling.</td>
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McCarrier, Pinnell, and Fountas (2000) described four major instructional strategies to help children who are emerging writers including (a) language experience approaches, (b)
shared writing, (c) interactive writing, and (d) independent writing. Interactive writing is a process during which students and teachers jointly create letters, notes, or messages (Rycik & Rycik, 2007).

For example, Eva and Sophie used independent writing with their student. Independent writing provides opportunities for students to create their own text. They:

had Alan type what he wanted to first and then had him tell (us) what he typed and then (we) typed it underneath his. We went over what he said and then (we) had him type his name at the bottom, which he did very well.

Another group of high adopters, Eve and Sophie, worked with a 17-year-old student. They asked their student to use ESPN magazine to create his writing, and also modeled writing for him:

(We) had Alan perform journal writing where we had him look through an ESPN magazine and pick out a picture he wanted to put in his journal and then we had him give us two words that he thought of when looking at this picture, and then I wrote the two words in yellow highlighter in his journal and then he copied the words.

This group also asked the student to "use sight words and put them in the correct order to create sentence. The rationale for creating this writing activity was as follows:

Our focus for writing is for Alan to be able to dictate and identify how to put specific sight words into the correct order to create a complete sentence. In order to work on this we identified that there are five strategies that will help achieve this goals. The five strategies that are selected are dictation, prompting, scaffolding, sight words, and sentence strips. In order for Alan to be able to perform the task there needs to be some scaffolding and prompting for him to complete the task with as much success as possible as well as to stay on task. Sentence strips and sight words are both used so that he can use familiar words to put in the correct order and if he struggled, the
sentence strips can be used to help with completing the task.

On the other hand, PSTs who conceptualized writing as motor activities only, adopted pedagogical tools for writing at lower levels. For example, Jessica and Ashley said that,

We try multiple sessions have the student grasp a marker and draw. Every attempt was unsuccessful. This would be due to the fact that his motor skills are limited. Also, he did not seem as interesting in trying to draw as he did with reading and playing with toys.

Their conclusion that the student did not seem interested in writing seems disconnected to their stated instructional purpose, which was to “hold a pencil using a tripod grasp.” Thus, these students failed to recognize that perhaps the lack of meaning embedded in the task was the reason for the student’s disinterest.

**Word Work**

Instruction in word recognition is an aspect of balanced, integrated reading instruction for students with complex learning needs. According to Davis and Williamson (2010), word recognition is one of the two processing activities involved in reading, the other is comprehension. Word recognition includes the ability to identify words through decoding (i.e., sound-symbol correspondences) or sight (i.e., visual recognition of the whole world).

Eleven out of 14 groups did word work activities with their students. Five groups (Jade's group, Amy's group, Sarah's group, Kathy's group, Megan's group) appropriated word work tools at higher levels. Three groups appropriated the word work tool at medium level and six groups either appropriated the tool at a lower level or provided no information related to word work (i.e., Natalie's group and Jessica's group)

**Instructional strategies based on phases of development.** Emergent literacy learners have not yet acquired a concept of print (Rycik & Rycik, 2007). For readers at this stage, they do not understand the concept of alphabet, sound-symbol correspondence or print
conveys meaning. Their writings are characterized by scribbling (Erickson & Koppenhaver, 2007). According to Davis and Williamson (2010) for students at this stage, teachers need to focus on (a) concept of word and print, (b) letter-name knowledge/recognition, (c) letter-sound correspondence, and (d) sight word, especially for old emergent readers.

Students at the letter-name phase are able to use beginning and final consonant sounds to represent words, understand the basic conventions of print, and understand that letters correspond with sounds and words. Practicing word family sorts is a useful strategy for students at this phase. As Davis and Williamson (2010) suggested, word and picture sorts should be easily identifiable. It is also important to embed word study within meaningful contexts. Teachers can teach students concepts of sound-symbol correspondences by modeling and teaching them to blend sound together to produce words (Smith-Gabig, 2010).

High adopters used strategies such as (a) model reading, (b) read aloud with repetitive sound patterns, (c) concept sorts, (d) focused on letters in the student's own names and environmental print, (e) tailored instruction to individual needs and interests, and (f) incorporated AAC and technology. For example, Kathy and Grace also introduced a concept sort to their students and asked them to group words paired with pictures into different categories (i.e., food, person, and thing). Amy and Mia used word sorts and picture sort strategies to help their students identify “four pre-primer sight words with visual cues attached.” Megan and Amber also asked their student to “spell 15 core words with voice output device.” Another group of high adopter, Sarah and Lily, asked their student, who exhibited challenging behavior problems (e.g., kicking, hitting, throwing tables and chairs), to do a word work activity that included a matching game that included picture cards of people showing emotions with word cards to label emotions.

Low adopters used less appropriate word work activities. For example, Julia and Danielle stated that their group's word work activity with the student was "matching six
orally spoken letters of his name with the printed letters of his name.” While this activity would be appropriate for a young emergent reader, given the fact that their student Carter was already 21, sight word instruction on core words would have been a more appropriate choice.

Table 4-4. Summary of reading, writing and word work activities

<table>
<thead>
<tr>
<th>PSTs</th>
<th>Tutee reading level</th>
<th>Tutee age</th>
<th>Reading</th>
<th>Writing</th>
<th>Word work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jade &amp; Lydia</td>
<td>Pre-premier reading level</td>
<td>20</td>
<td></td>
<td>Interactive writing -prompting -model</td>
<td>Match words to community image card on iPad -Technology supported vocabulary instruction</td>
</tr>
<tr>
<td>Natalie &amp; Amanda</td>
<td>1st grade reading level</td>
<td></td>
<td>Read aloud Retelling</td>
<td>Write letters and familiar sight words - highlighter strategies</td>
<td>Expand vocabulary and strengthen sight words Find two words in the text that PST were reading that were unknown or unfamiliar - context clues - picture cues -flash cards</td>
</tr>
<tr>
<td>Jessica &amp; Ashley</td>
<td>N/A</td>
<td>13</td>
<td>Music book - push sound button with picture corresponds with the picture - optimal interest</td>
<td>Use a pencil using a tripod grasp - alternative pencils</td>
<td>Object - picture correspondence -identify motivator</td>
</tr>
<tr>
<td>Kimberly, Anna &amp; Nicole</td>
<td>Early emerging literacy learner</td>
<td>5</td>
<td>Concept of book -identify front and back of a book - explicit and systematic -being responsive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name &amp;変えさせた</td>
<td>Stage</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Julia &amp; Danielle</td>
<td>Early traditional emerging literacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sarah &amp; Lily</td>
<td>Early conventional literacy</td>
<td></td>
<td></td>
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<tr>
<td>Rina &amp; Laura</td>
<td>Early transitional emerging literacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sophie &amp; Eva</td>
<td>Emergent</td>
<td></td>
<td></td>
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<tr>
<td>Amy &amp; Mia</td>
<td>Transitional emerging literacy stage-pre-primer</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Name &amp;を変えさせた</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julia &amp; Danielle</td>
<td>Early traditional emerging literacy</td>
</tr>
<tr>
<td>Sarah &amp; Lily</td>
<td>Early conventional literacy</td>
</tr>
<tr>
<td>Rina &amp; Laura</td>
<td>Early transitional emerging literacy</td>
</tr>
<tr>
<td>Sophie &amp; Eva</td>
<td>Emergent</td>
</tr>
<tr>
<td>Amy &amp; Mia</td>
<td>Transitional emerging literacy stage-pre-primer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reading Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julia &amp; Danielle</td>
<td>Read aloud</td>
</tr>
<tr>
<td>Sarah &amp; Lily</td>
<td>Book sharing activity</td>
</tr>
<tr>
<td>Rina &amp; Laura</td>
<td>Read aloud</td>
</tr>
<tr>
<td>Sophie &amp; Eva</td>
<td>Pick picture sight word to fill in comprehension question</td>
</tr>
<tr>
<td>Amy &amp; Mia</td>
<td>Read News 2 You article</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reading Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julia &amp; Danielle</td>
<td>-Trace the letters of his first name - write 3 lettered word in journal</td>
</tr>
<tr>
<td>Sarah &amp; Lily</td>
<td>Fill in the blank sentence work</td>
</tr>
<tr>
<td>Rina &amp; Laura</td>
<td>Fill in the blank</td>
</tr>
<tr>
<td>Sophie &amp; Eva</td>
<td>Put sight words into the correct order Journal writing Emailing</td>
</tr>
<tr>
<td>Amy &amp; Mia</td>
<td>Write each words two times on handwriting without tears paper</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>Reading Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julia &amp; Danielle</td>
<td>Matching 6 orally spoken letters of his name with the printed letters of his name</td>
</tr>
<tr>
<td>Sarah &amp; Lily</td>
<td>Match emotion word card to emotional physical display picture card</td>
</tr>
<tr>
<td>Rina &amp; Laura</td>
<td></td>
</tr>
<tr>
<td>Sophie &amp; Eva</td>
<td>Match word from text to picture sight word card</td>
</tr>
<tr>
<td>Amy &amp; Mia</td>
<td>Theme: Words from News 2 You Verbally identify four preprimer sight words with visual cues -word sort</td>
</tr>
<tr>
<td>Name</td>
<td>Grade/Literacy Level</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Monica &amp; Emma</td>
<td>Early emerging literacy</td>
</tr>
<tr>
<td>Joe, Elizabeth &amp; Jasmine</td>
<td>Upper elementary middle school</td>
</tr>
<tr>
<td>Megan &amp; Amber</td>
<td>Early transitional emerging literacy</td>
</tr>
<tr>
<td>Kathy &amp; Grace</td>
<td>Early emerging literacy</td>
</tr>
<tr>
<td>Melissa &amp; Christina</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Organized Classroom Environment**

Three groups (Nicole's group, Sophie's group, and Joe's group) mentioned the importance of establishing an organized classroom environment and minimizing auditory and
visual distractions. Students with complex learning needs benefit from classrooms that are visually salient with areas that have defined boundaries to support natural transitions from one activity to another. Areas designated for particular activities contain visual cues, so that students can better anticipate where an activity is going to occur (Keefe, Copeland, & DiLuzio, 2010). PSTs noted that the placement setting afforded negative examples, as noted by Nicole:

    While doing the lesson with Ben, Ana was constantly interrupted by other adults in the room. It was difficult for Kimberly to help him focus attention on both the book and the instruction given the inherent noise challenge. Ana suggested that for our next lesson, we do it either in another classroom or make it clear that we are doing a lesson with Ben and need as little distractions and talking possible.

Eva and Sophie shared the same concern by stating that:

    It is important to remember that the classroom environment should reflect the goals and expectations for your students. The layout of the classroom could be changed in order to foster more “real life” learning. While we were working with Alan there were a lot of distractions in the classroom. There were two other groups going on at the same time. In the best of circumstances we would create an office with “walls” to separate Alan’s workspace and the rest of the classroom. This area would just be for his individual work time.

Thus, even though the setting was less than ideal, PSTs were able to recognize and articulate the need for organized classroom environments that minimized distractions. Nicole stated that they were able to segment a space to minimize distraction for a lesson session:

    Prior to starting the lesson, we sat up an area designated to our lesson. It took place in the corner of the room so we could face Ben in a less distracting area...... I noticed that Ben was significantly more engaged during this lesson compared to the
Structured Instruction

Hume (2010) stated that it is important to instruct students in a structured and systematic way. When teaching students new skills, such as those related to literacy, some of the strategies from applied behavior analysis (ABA) framework are effective (Alberto & Trouman, 2006). Many instructional practices can fall under the ABA framework, such as discrete trial training, pivotal response training, punishment and self-management.

Visual schedule. A practical tool that was emphasized during coursework was the use of a visual schedule. According to Hume (2010), a visual schedule communicates the sequence of upcoming activities or events through the use of objects, photographs, icons, words, or a combination of support. Visual schedules are important because they add predictability to the task. Visual schedules can serve as a continued reference after the verbal instruction is given. Eva and Sophie mentioned how visual schedules and work systems benefitted their student:

Prompting, visual schedules, and work system are the strategies that will be used. Alan struggles with staying on task and is distracted very easily. There is also no initiative for Alan to work independently. Using these three strategies we hope to create an environment where Alan can work independently and stay on-task for longer periods of time. He will also learn to use a schedule so that he can keep track of his day, which also helps for independence.

Some students seemed to struggle with understanding the concept of visual schedule. However, after a few exposures to visual schedules, students were able to understand the tool and improve their task engagement, independence, and academic progress. As Lydia put it:

Mark had not previously used a visual schedule during his in class activities until the past several weeks. The first time we used it, he did not seem overly interested in
it….However, the second time we used the schedule….he removed the fist work task himself. He now seems to understand the concept that the schedule is intended for. It was neat to actually see his engagement enhance. Mark displayed fewer moments of ‘protest’ and was more engaged in completing his tasks. We believe that the schedule played a large role in that progress.

Thirteen out of 14 groups incorporated visual schedule into their lessons. Of the thirteen groups, ten groups appropriated the tool at a higher level. For example, Jade and Lydia stated they used several different schedules for their student:

[The] main schedule that showed an overview of PSTs time with students had visual supports to coincide with the words, a separate visual schedule for each period, during "classroom work " periods, give student a visual schedule that listed "task 1""task 2" "task 3" and then desired activity

Kathy and Grace decided to use a first then chart because "the chart was better for him than the visual schedule,” and Sophie and Eva embedded a token board "to show how much work is to be done as well as how much is left.” Thus, high adopters understood the concept of using visual supports, and could articulate why they were important. On the other hand, three groups provided limited information regarding to the form and content of their use of visual schedules, which suggested they had not fully adopted these tools.

**Prompting systems.** Once the steps to complete an activity have been identified, teachers may begin to instruct students. One evidence-based prompting strategy that can be effective during literacy instruction is the least-to-most prompts (Neitzel & Wolrey, 2009). Under the least-to-most prompting system, teachers first using the least intrusive level of prompting and then proceed to more prompting if students are not successful. Least-to-most prompts may follow the hierarchy: gestural, verbal (full, partial), visual, model (full, partial), physical (full, partial). If students respond correctly after receiving a cue or instruction, they
may be reinforced. If students do not respond correctly, teachers can provide prompts based on hierarchy to ensure task completion.

High adopters were able to differentiate each level of prompting, and incorporate prompting into instruction. Low adopters, one the other hand, used only one form of prompting, such as verbal prompting or physical prompting. For example, a group of high adopters, Monica and Emma, were planning a PECS session with their student. They explicitly noted multiple prompts that went from least to most in their lesson plan.

**Positive reinforcement.** Reinforcement is used to increase the use of a target skill or behavior. According to Neitzel (2008), positive reinforcement is the contingent presentation of a reinforcer immediately following a student's use of target skill. All groups of PSTs used some form of reinforcement to improve their students' engagement and motivation. PSTs have reported using primary reinforcers such that ranged from food reinforcers to embedded reinforcers.

High adopters were PSTs who were able to (a) identify meaningful reinforcers, (b) specific in their verbal praise, (c) embedded reinforcers in their instruction to increase student engagement, and (d) helped students understand how reinforcement worked (e.g., token board, preferred activity). For example, while high adopters provided specific verbal praise such as "you're working really hard on your journal," low adopters were more general and broad in their feedback. For example, Megan reflected:

I needed to offer Maya different praise. I went back and reviewed the videotaped lesson and I was very surprised. I repeatedly offered the same exact praise. I stuck to two phrases: “Good job” and “You did it.” I probably repeated these two phrases over ten times.

A group of high adopters, Amy and Mia, explained how they used token boards in their session with the students:
Pull out token board and strip of visual aids that tell Sofi what she will be asked to do before she can earn her break/ reinforcer. Discuss with her what each symbols means (i.e., an ear means she must listen, a hand writing on paper with a pencil means she must write and a questions mark means she answers questions) and line it up with her token board. Have her choose her reinforcer and place it on the board. Make sure the board is visible the whole time. After she completes each task, place the smiley face on the Velcro.

Low adopters, on the other hand, did not plan carefully ahead of time on how to reinforce the student. For example, Jade and Lydia stated, "After four tasks, student would be able to participate in a desired activity for five minutes."

Embedded Support

**Offer choices.** According to Moes (1998), allowing students to make choices throughout the school day has been shown to increase task engagement, correct responding, and homework completion, as well as decrease disruptive behavior. Students can determine which activity they prefer to get involved in, choose materials within assigned activity, and select reinforcers for task completion. For example, Lily reflected the importance of offering choices:

After getting feedback from Sarah I learned that asking Tina if she wanted to continue was very valuable to the lesson. I feel that by giving her the "choice", I was able to gauge her frustration level.... after Sarah and I had a conversation about the lesson, I recognized how important giving the student choices is. I felt like Tina appreciated the fact that I respected her as a learner and I understood if she needed a break.

Another group of PSTs, Jessica and Ashley, mentioned that:

Once the entire activity is completed, the student is rewarded with choice time. He is given 2 or 3 pictures of items, one more reinforcing than others. He is able to choose a
picture and hand it to the teacher in order to have 5 minutes of choice time.

**Video modeling.** Video-modeling is an evidence-based strategy where adults or peers model target behaviors. Research indicates that skills taught through video modeling have a higher rate of acquisition and are likely to be maintained and generalized (Bellini & Akullian, 2007). Video modeling was used by only one group of PSTs (Joe's group). What this group did is to show the student "a video of us modeling the correct way to use a PECS.”

To sum up, during the embedded reading course, PSTs were able to appropriation a few conceptual tools, including (a) efficacy of instruction, structure, behavior management, and assessment, (b) beliefs about students with significant disabilities, (c) beliefs about teaching profession and (d) collaboration. They were also able to appropriate a range of pedagogical tools including assessment tools (i.e., literacy assessment, communication assessment), communication tool (i.e., importance, communication device, PECS), age appropriateness, organized classroom environment, goals and objectives, lesson planning (i.e., reading activity, writing activity, and word work activity), structured instruction and embedded supports.
CHAPTER 5

GROUNDED THEORY FINDINGS

The purpose of grounded theory analysis is to propose a framework to explain the complexity of events and experiences. According to Hage (1972), theory "denotes a set of well-developed categories that are systematically interrelated through statements of relationship to form a theoretical framework that explains some phenomenon" (p. 34). The cohesiveness of a theory occurs through the use of an overarching explanatory concept, one that stands above the rest. Taken together with other categories called component concepts, explains the what, how, when, where, and why of something happens (Corbin & Strauss, 2008).

Chapter 5 presents a theory of PSTs’ appropriation of pedagogical tools for teaching students with moderate to severe disabilities. I first describe the core concept and each component concept. I then briefly describe how selected samples of text were identified and how I employed grounded theory on these samples. At the end of this chapter, I use an integrative diagram to illustrate the relationships between categories and summarize the interaction among each category (Figure 5-1).

Individual Construction of Activity Settings as a Core Concept

According to Grossman et al. (1999), individuals construe settings (e.g., school) in particular ways through their internal representations of their experiences within the situation. Lave (1988) made a distinction between an arena, which has visible structural features, and a setting, which represents the individual’s construal of that arena. While two PSTs may attend the same reading methods course and were placed in the same settings, they may have different understandings of the experiences and leave with tools appropriated at different levels based on their own goals, histories, and activities within the settings. In this study, individual
characteristics interacted with four activity settings (i.e., coursework, practicum, coaching, and collaboration). The interaction between individual qualities and activities settings influenced both the types and level of tool appropriation. Thus, individual construction of activity settings emerged as the central or core concept in the grounded theory.

Individual Characteristics

The component concept of personal qualities comprises several elements, including (a) efficacy, (b) reflexivity, (c) care and concern for the student population, (d) out-of-box thinking, and (e) initiative in seeking support and feedback from various resources. PSTs showed different levels of motivation, depending on how much they expected to learn, and the care and concern they had for this population. PSTs also differed in their out-of-box thinking, reflectivity, and problem-solving skills. Based on observation, PSTs' reflection, and interview data, PSTs stated that they lacked knowledge and experiences in working with students with significant disabilities.

Efficacy. Upon entering the course, PSTs' felt that they had (a) limited prior experiences in teaching the student population, (b) limited knowledge of communication devices and how to develop communication systems (e.g., PECS, Big Mac switch), and (c) low comfort levels in interacting with their students (e.g., managing and interpreting behavior). Experiences were novel to PSTs as this educational setting was different from those they had experienced as students, which limited their ability to access their apprenticeship of observation (Lortie, 1975) as a resource and touchstone. PSTs reported they lacked preparation working with this population and had limited knowledge of many of the practical tools (e.g., communication device, PECS, communication assessments). For example, Nicole stated that their group "lacked knowledge of Big Mac switch." Laura said that their group was “not comfortable administering a modified of PECS, since we were not yet trained on the original format.”
PSTs also felt anxious dealing with the physical needs of their assigned students, and interpreting students' behavioral, facial, and verbal cues. Monica commented that interacting with her student “was something I struggled with because I have very little one on one experiences with students on the spectrum.” As Rina put it:

I was little uneasy about doing this type of lesson with R because I don’t feel I was educated enough to deliver the lesson...I’d like to be more relaxed around here… I was nervous because I don’t know much about Regan at that point and I want to be successful.

In the first few weeks with students, PSTs questioned their own interpretation, and they lacked assertiveness and confidence. Elizabeth mentioned that:

We are really not sure if there is any intent behind why he is choosing what he is choosing. We noticed that almost every time he chooses a picture card, he looks away while touching it. This was the main challenge because it seemed like he understood what we were doing but then again he wasn’t watching himself make his choices.

Also complicating the situation was PST's sense of "being a visitor in the classroom,” trying to "negotiate the relationship with classroom teachers" (Professor Boat), and "do innovative practices with their students" (Kelly). PSTs' reluctance of "stepping on classroom teachers' toes" (Rina) thereby adding another layer to their initial discomfort. This sense of initial discomfort and apprehension was also noticed by the teaching assistant, Kelly, who said in her interview that:

I think the things that stand out to me (long pause) with this particular practicum experience is their initial discomfort working with kids with more significant challenges and more intense disabilities. I think that initially the PSTs are pretty apprehensive about
working with that population of students and one thing that I appreciate is that they ask a lot of questions. So I think that they really want to learn, but they have very little experience working that population of kids. So I think they are feeling a little out of their elements all together.

The field supervisor Professor Boat also expressed concern for PSTs' lack of prior experience working with students with significant disabilities:

I think (PSTs need to) develop a comfort level with students with significant needs, meaning as simple as feeling comfortable talking somebody who appears nonresponsive. And how do you determine, how you start your interactions with the person...I think it's really important in our practicum experience, to have experiences with individual with students with significant needs and even model conversation....our students are even, in this approach, "how do I get comfortable with the student, can I touch this student," just so when we were talking about implementing and making modifications, I think they are all just so scared. That is why it's really good that they had this first experience.

After taking the course and being in the field for a while, PSTs made "substantial growth" (Kelly) in terms of their comfort level. The opportunities to work with their students in the practicum placements and being exposed to a variety of pedagogical tools and the multiple observations and feedback they received from course instructors and field supervisors enable them to develop a higher level of efficacy. As Rina reflected later during the course in her video reflection, “this video has shown me to be more assertive and confident in my abilities because I have learned a lot from the professors thus far.”

**Out-of-box thinking.** Out-of-box thinking is characterized by PSTs' abilities to be creative and original with ways of make content accessible for students with severe disabilities.
As one course instructor Dr. Young put it, “Thinking out of the box would be like, so, I'm looking at a situation, and I'm trying to be very creative and solving it and I'm not talking about what I can't do, looking for what the kid can do.” High adopters of pedagogical tools shared the characteristic of being original and creative thinkers and doers. They emphasized not only what to teach but how to teach. While low adopters tended to restrict the content they taught, high adopters were more creative in making content engaging and accessible. For example, Kimberly, Anna, and Nicole demonstrated out-of-box thinking when they taught their student who was legally blind to identify front and back of book. They brought a tactile book with a soft texture on the front and a hard texture as the back. With this modification, their student was able to grasp the concept of front and back of the book in the end. While low adopters Julia and Amber asked their student, a twenty year old to copy letters in his name, Eva and Sophie, high adopters, asked their 16 year old student to read a magazine, select pictures from the magazine to put in his journal, and write an email to his teacher.

Self-reflection. Bandura (1986) considered self-reflection to be an important personal attribute that contributes to one's ability to positively alter his/her own thinking and behavior. Critical reflection helps teachers cope with problems that occur in classroom settings (Dewey, 1933). In this study, self-reflection was an important individual quality that influenced PSTs' level of tool appropriation. The levels of reflexivity were most evident in the two video reflection assignments that each PST individually completed as part of their course requirements. Reflection in other parts of assignments (e.g., communication assignments, literacy assignment, present level, intervention plan) were not evident perhaps due to the fact that these assignments were collaboratively produced by a team and individual reflection was not considered as integral to those assignments. Twenty out of 30 PSTs exhibited a medium-high level of reflexivity and
these twenty PSTs ended up being categorized as either medium or high adopters.

Watching themselves in videos and reflecting on their teaching and interaction with students made PSTs realize things that might not occur to them before. Highly reflective PSTs were those who (a) thought like teachers, (b) questioned existing practices and sought improvements, and (c) were good observers and interpreters. In addition, reflections focused on both students and their own practices. PSTs with lower levels of reflexivity were those that (a) thought like students, (b) restricted implications to only the student they were working with, and (c) provided summaries of what occurred.

For example, Sarah, a highly reflective PST and a high adopter for all the pedagogical tools, reflected that:

The problematic and challenging thing to me is that I don't think these teachers have ever really tailored instruction around their student's interest. Tina has behavior outbursts from time to time in school like biting, hitting, head butting, throwing desks or chairs, etc...I am beginning to wonder if this might be out of complete frustration that she is bored out of her mind...I worry because I have seen this same thing in three of my placements now, and it scares me to death that after the newness wears off that I will fall into this same pattern.

She also questioned the IEP goals of the student:

Both of the lessons we have done with Tina to this point were based off her IEP goals and she has blown right through them. Her goals are obviously too easy for her. Challenge the student and do it through their interests and they will surprise you every time.

Less reflective PSTs, such as Natalie, Julia, Melissa, Christina, and Danielle, focused on representing scenarios of working with their students. They were restricted by the single case
they worked with, and were not able to probe deeply into the situation and think broadly. Thus, their reflections were more like a summary detailed description of a lesson session.

For example, Danielle reflected that:

> What works well is that this is, for the most part, is the writing lesson, and Carter loves to write. Finding what a student likes to do and building your lessons around it will hopefully bring big successes. He seems to legitimately enjoy anything that has to do with writing. This lesson has the same linkage as the one from the first video. It is important for Carter to learn to write as many words as possible and especially how to write his name. Being able to recognize some words will greatly help him in his life in and out of school.

Another example of low adoption comes from Julia, who summarized her session as follows, "As a warm up to work study, he had to match the letters of his name. “Match the letters, "Where's the W?" "Where is the L?" He was able to match all of the letters in his name correctly, a goal of his...”

**Initiative and motivation.** PSTs who took initiative to ask questions, frequently requested on-site support, and sought answers for questions tended to appropriate tools to a higher level. For example, Monica and Emma frequently requested feedback and support from course instructors and field supervisors, and they ended up developing more sophisticated, appropriate activities for their student. Low adopters, on the other hand, exhibited less initiative in requesting feedbacks and seeking answers to questions. As the teaching assistant, Kelly, noticed that compared to high adopters, low adopters tended to:

strictly go by the supervision schedule, [they were] the ones you’d check on and say " do you want me to stop by and see anything today, I know we are not schedule to see each
other till next week, and they say “no, no, no, everything is fine, we're fine.” I don't think they make the same pace of progress as some of the other groups.

**Activity Setting-Previous and Current Coursework**

Previous and current coursework enabled PSTs to access to content knowledge in reading as well as pedagogical knowledge in teaching reading to students with moderate to severe disabilities. What was important was for PSTs to generalize what they learned from prior coursework, as they integrated new knowledge from their current experiences.

**Generalizing earlier coursework.** PSTs had already taken four reading courses, including a foundations course, a two-part phonics course, a content area literacy course, and a reading methods course that focused on teaching reading for students with mild to moderate disabilities. In addition, students had already taken a language course, where they talked about how typically developing individuals acquire language skills. During the reading methods course, PSTs had experience tutoring one child with reading difficulties at an urban school. Similar to the structure of the course under current study, PSTs developed assessment and intervention plans for their assigned students. The prior exposure to the reading content and strategies laid a good foundation for PSTs. As Professor Boat put it, “they know the content.” The course instructor, Dr. Young, also said that, “I’m not planning on adding any new content. I help them apply what they already know about instruction for individuals who have more intense needs, communication and otherwise.” Thus, this course required PSTs to access their background knowledge from previous reading coursework and apply that knowledge to students with moderate to severe needs.

The extent to which PSTs were able to generalize earlier coursework influenced how well they integrated pedagogical tools into their teaching. For example, when assessing their
student's literacy abilities, Melissa and Christina mentioned that, "We are unable to determine Victoria’s concept of print with a higher-level text because he is not at a higher level of text and is uninterested in those types of texts.” However, they later stated that "she imitated us pointing to the sentence/letter/picture we are reading,” which is a demonstration of one concept of print. This example illustrated that that this group of PSTs was able to appropriate the label of concept of print, but was unclear about reading behaviors that demonstrated concept of print. On the other hand, group of high adopters, Jade and Lydia, were able to evaluate their student's concept of print by observing his eye gaze: "When holding a book, Mark shows evidence of reading from left to right. Those observations are made through Mark's eye gaze. His eyes sweep from the left side of the page to the right side."

A negative example of the influence on tool appropriation through previous coursework involves PSTs' appropriation of goal setting tools. Course instructors asked all the PSTs to rewrite their goals and objectives because their original ones were not measurable. Monica and Emma stated that their difficulty in writing goals and objectives was due to the fact that "this was their (PSTs) first exposure to goals and objectives in real settings,” and they received confusing messages from different instructors regarding how to write goals and objectives. For example, in a collaborative meeting session with the field supervisor Professor Boat, Monica mentioned, “We had that honestly, like a couple of different goals and objectives classes, and they kind of tell us different each time.” She mentioned that one of her course instructors suggested that objectives as broad as “doing math” were appropriate. Because of the confusing message they received from different courses, Monica's group appropriated this goal setting tool to a medium level.

**The conceptualization of current coursework.** According to Grossman et al. (1999), "the extent of appropriation depends on the congruence of a learner's values, prior experiences,
and goals with those of more experienced or powerful members of a culture, such as school-based teachers or university faculty” (p. 15). Thus, the way that course instructors conceptualized the course influenced PSTs' level of appropriation of pedagogical tools. As one course instructor Dr. Young put it:

So.... when I started thinking about reading instruction for students with complex learning needs, I understood that there were going to be some differences from what we would see in a regular emerging literacy kind of course in that these students might have different response needs, they might have different ways of looking at things. So when I started thinking about how I want to conceptualize the course, I want to think about in terms of the framework of before, during and after activities, and then reading, writing and word work and how that would translate for kids with significant disabilities. So that was sort of how I would be thinking about it conceptually is how do I help them translate and remember the things that they already knew from previous coursework.

Course instructors' conceptualization of the reading methods course was deeply rooted in the model of balanced literacy instruction (Morrow, 2005) and before, during and after framework (Erickson & Koppenhaver, 2007), in which the importance of form (phonics, etc.) and function (comprehension, meaning) of literacy processes were recognized. Dr. Young also pointed out that the purpose of the course was to "put tools in a tool box.” The conceptualization of the course as application based embedded in real setting, rooted in most recent literacy instruction frameworks explained the overall success of the course in helping PSTs to appropriate pedagogical tools in teaching reading.

Eight groups (Natalie's group, Jessica's group, Julia's group, Sarah's group, Sophie's group, Joe's group, Monica's group, Amy's group) included daily reading, writing, and word
work activities into their lesson plan and specify lesson goals and objectives, instructional strategies and their rationale for choosing those strategies (See table 4-5). For example, Sarah's group did book sharing/read loud as reading activities, fill in the blank/sentence work as writing activities, and match emotion word cards to emotional physical display picture cards as word work activities. Five groups included two activities (reading and writing, reading and word work or writing and word work). Only one group included only word work activity. For example, Megan and Amber did read aloud with their student and asked the student to spell 15 core words with voice output device. Kathy's group intended to do writing activities, however "no goals and objectives were developed due to the classroom teacher's requests.” Amy's group did reading and word work activities with their student with great sophistication but did not mention writing activities.

Groups that embraced the conceptual tool of balanced literacy framework did not necessarily appropriate the practical tool (e.g., reading activity, writing activity and word work activity) to high levels.

Activity System-The Practicum Placement

A number of factors influenced the opportunities that PSTs had to access and practice pedagogical tools in the practicum, including: (a) student characteristics, (b) cooperating teachers, and (c) available instruction time with students.

Student characteristics. PSTs were paired with students who had different levels of physical, visual, and intellectual disabilities, as well as differences in communication and literacy abilities. Thus, student characteristics influenced the kinds of opportunities PSTs had to practice certain tools that they learned about in various activity settings. For example, three groups tried PECS with their student because their students were "rather limited in terms of communication.”
Others worked with students who exhibited very challenging behavior and ended up using the book titled *When You Are Happy* and did a matching emotion words with physical display of emotion cards activity.

PSTs had to attend to the individual differences of their students in order to tailor their lessons to meet individual student's needs. For example, PSTs needed to be aware of positioning strategies for students with physical or visual disabilities. Rina and Laura noticed that their student "was most successful when her hand was oriented in her range of motion which was on the right edge of her tray table.” Some PSTs worked with students with intellectual disabilities such as autism and needed to figure out what students’ already knew and build on that knowledge base. For example, Megan and Amber were told by classroom teachers that "they were not sure that Maya knows her letters.” This group of PSTs was able to "prove in fifteen minutes that not only does he know his letters, but he can spell, and he is able to identify pictures to words without a visual prompt of the word.” Thus, individual student characteristics presented different kinds of learning opportunities for PSTs.

**Available instruction time with students.** Available instruction time denotes the amount of opportunities PSTs had to practice with students and try out pedagogical tools. However, many PSTs cited limited instructional time with their student due to: (a) student absences and disengagement complicated by student medical problems or fatigue, and (b) classroom schedules. Professor Boat mentioned that some PSTs were frustrated by the fact that “the child they have been paired with is absent a lot or unavailable a lot.” For example, Kimberley’s group switched their child after two weeks of working with him due to absences. For some students with medical problems, the length of instructional time was reduced because students got tired. As Megan noted, “Maya was sick with the phenomena for a week, and when she walked into the school
today, she laid (sic) down on the ground and did not want to do anything.”

The same concern was shared by Julia and Danielle:

There was not enough time to implement these goals and objectives as stated. We were able to touch on the areas a few times with some successes but we were not able to fully implement our intervention plan 100% due to student absence and pressure from OT, Art and classroom teachers to not allow him to be off of his schedule for too long.

Time constraints also made PSTs realize the importance of managing and predicting instructional time. For example, Aly stated,

I often over-plan lessons because I don’t want to be left with nothing if the student goes through it very fast, but then if the student moves slower, I often find myself rushing and skipping parts that I did not want to skip. I think I need to learn to manage and predict time better.

**Cooperating teachers.** Cooperating teachers influenced PSTs’ adoption of pedagogical tools in both positive and negative ways. As Dr. Young put it:

Another contextual factor that is at play is the cooperating teachers that we work with. And their level of expertise and their level of comfort allowing our students to take risks and jump in and try things. I mean every year we go, and when we talk to the school, we talk to the teachers before the courses start. And we encouraged the teachers to allow our students to try to figure things out, but often the teachers can't resist jumping in and offering their advice and trying to help fix it before our students really get the chance to practice their own problem solving skills.

PSTs mentioned that cooperating teachers had many experiences with the student population. They felt that cooperating teachers were good resources of knowledge and
information, especially in the area of functional skills training and behavior management. As Rina commented:

I mean no one in there is like, fresh, you know. They all used to it, they know what they were doing. And that is good. They have that experience, like if there is anything ever went wrong like, I feel like they would handle it.

However, PSTs felt much concern about academic instruction and meaningful involvement of students in activities. As Laura stated, "When we are here, they don’t do anything meaningful with their time. They just sit them in the corner and start talking about the weekends.” Rina shared the same concern by stating that: "they are very outdated…sometimes it appears that they are doing things just for the sake of doing things and there is no purpose behind it.” In a collaborative meeting with Professor Boat, Monica, when asked by Professor Boat, “Do you feel like seeing something in practice that is different from what you’re learning in theory?” Monica commented that, "I guess I have seen in all my placements what not to do. So that is kind of frustrating.”

Some cooperating teachers were cooperative and friendly to PSTs. For example, as Megan said “the teachers in my room have helped tremendously to collaborate and offer us time with our student.” On the other hand, some cooperating teachers did not "feel comfortable having someone else in classroom and were not necessarily friendly to the PSTs" (Professor Boat). In addition, in a separate setting, teachers can become over protective of their students because many students are medically fragile. In a collaborative meeting with Professor Boat, Kimberly, Nicole and Anna complained that the nurse "frequently checked on us while we were doing the lesson,” which make them very uncomfortable. The PSTs believed that "it's a trust thing.” In another example, Kathy and Grace wanted to wheel their student to another classroom
in order for the course instructors to model instruction and offer feedback. The cooperating
teacher refused this request, and the two PSTs worried that "the teacher will never treat us the
same."

PSTs also expressed concerns that the activities that they had with their students will not
be carried on by the classroom teachers after they left the setting:

When we started with him, we were told he doesn’t communicate. In just a few weeks
we found out that he has nearly mastered phase 1 of PECS. This is huge for him. If he
gets a functional communication system he will be able to learn more, tell people what he
wants, and contribute to his home, school, and community at a higher level. I’m very
excited for him, but also worried that his teacher won’t continue to help develop a
communication system for him.

**Activity Setting-Coaching**

Coaching is a distinct activity setting through which PSTs appropriated practical tools as
well as conceptual tools. Based on PSTs' produced artifacts and interview data, PSTs received
informal feedback and support in the following areas: (a) feedbacks on appropriate tool use (e.g.,
visual schedule, note card), (b) age-appropriate interaction style to establish rapport, (c) activity
(e.g., level of activity, focus of activity), (d) attending to students' needs (e.g., positioning needs,
communication device), (e) modeling occurred through student initiation, and (f) scaffolding by
asking reflective questions.

Course instructors and field supervisors provided coaching to PSTs through on-site
support or informal feedback or through Collaborative Assessment Log (CAL) meetings. Course
instructors and field supervisors visited PSTs in their classrooms regularly and provided
suggestions, modeling, and any support they might need. CAL meetings were informal meetings
that provided a framework for ongoing conversations between the mentor or participating teacher. During each meeting and classroom visit, the CAL guides the participating teacher to celebrate classroom successes, identify and problem solve issues of practice, and commit to specific next steps (Davis, 2006).

By observing coaches working with their students and achieving success, PSTs were able to carry on activities with much greater success. Coaches provided guidance on the use of practical tools, and in some cases, demonstrated how to think through a process by elaborating on the theoretical underpinnings of the tool and modeling the appropriate application. For example, as the teaching assistant Kelly put it:

I think if they (PSTs) took a lot of initiative to do more informal meetings that I think were actually probably really helpful in terms of getting direct feedback on the things that they were doing in the classroom and the additional opportunities of being in the classroom with them and be able to provide feedback directly on the things that they were doing with the student, I think it's really helpful. And I try to provide that feedback with a lot of guiding questions. So "tell me why you were doing this with this student right now? Or why do you think this student might not connect to this lesson?" (in order) to see if I can guide them through, really thinking critically about their lesson and maybe some of the pieces that might be missing.

Activity setting-Collaboration

Collaboration is both a pedagogical tool and an activity setting in which PSTs appropriated both conceptual and practical tools. PSTs appropriated the collaboration tool during their collaborative experiences with peers. These experiences made them realize both the benefits and challenges of collaboration. They realized that collaboration could help them "see little
things that I would have otherwise overlooked,” and that collaborating with peers could be very helpful. However, PSTs also struggled with "giving up control" and losing sight of clearly defined roles.

Collaborative experiences also enabled low adopters the chance to observe and learn from high adopters. High adopters of a specific tool tended to take on the role of leader in the group when it came to use that tool for teaching. This likely occurred as they had a clearer understanding of the tools in question, and understood "those nuances that are still challenging" for the lower level adopters. For example, Joe was the highest adopter of PECS in his group. Joe helped scaffold the PECS process for his group members, reminding his group members of the correct procedures, length of wait time, and the use of appropriate verbal or physical cues. Roles that group members assumed were not consistent, and depended on PST’s level of appropriation of different tools. For example, PSLPs had more knowledge on communication, and they took the lead role in assessing communication skills of their students. As Kathy stated, she felt that "it's really good to hear Grace's input on our lessons due to her focus on speech and language.”

**Component Concept**

The grounded theory of this study involved two component concepts - access to knowledge and opportunity to practice knowledge. In order to appropriate pedagogical tools, PSTs first needed to be exposed to and learn about tools in different activity settings (i.e., practicum, course work, coaching and collaboration). However, having exposure to pedagogical tools did not guarantee tool appropriation. Not surprisingly, unless PSTs had opportunities to practice these tools with students in real settings, they were unable to demonstrate appropriation of new tools. As the course instructor, Dr. Young said in her interview, “When it comes to the kids with significant needs, even though I can help them translate it (knowledge to practice),
unless they get practice doing it, then I worry that they won’t learn how to do literacy instruction with the kid with complex needs.”

**Access and Opportunities to Appropriate Conceptual Tools**

**Access and opportunities to appropriate belief tools.** The activity systems that influenced the appropriation of the belief tools included (a) individual characteristics, (b) coursework, (c) practicum placement, (d) coaching, and (e) collaboration.

Individual characteristics implicated in beliefs included reflexivity, motivation to teach, and the level of care and concern for students. These individual characteristics of PSTs were a prerequisite for appropriating the belief tool. The most important individual factors were reflexivity and the level of care and concern that centered on equal access to educational resources, dignity, independence and contributing members of society.

PSTs were exposed to the belief tool constantly during these preservice experiences. Course instructors themselves had strong beliefs that every child could learn and frequently used cases and videos to demonstrate how embracing this belief could make a difference in students' lives. On one occasion, course instructors showed a video about Dick Hoyt and his son Rick Hoyt, who had severe disabilities, as they competed together in various athletic endeavors. This video was very inspiring and many PSTs were in tears after watching it. Similarly, field supervisors shared the same educational philosophy as course instructors and offered examples that drew from prior experiences to prove that students with significant disabilities were able to progress as a result of good instruction. Peer collaboration offered PSTs opportunities to see things from different perspectives and use tools with more success, which thus further elucidated the belief that students could learn as a result of quality instruction.

Practicum experiences, on the other hand, offered mainly negative examples, since PSTs
observed little meaningful involvement, long down time, and little academic instruction, which reflected a "caretaking" perspective instead of an expectation that these students could learn. However, the opportunities that PSTs had in working with their students made them realize the potential of their students. As Megan stated, “This told me, that students are not limited in their capabilities but teachers need to find what is motivating, engaging, and how they can modify the curriculum.” The juxtaposition between coursework and the practicum setting offered valuable opportunities for PSTs to struggle with philosophical questions, which resulted in a higher level of appropriation of this conceptual tool.

**Access and opportunities to appropriate framework tool.** The activity settings that influenced the appropriation of framework tools included (a) coursework, (b) collaboration, (c) individual, (d) coaching, (e) collaboration, and (f) practicum placement.

The most important activity system that influenced appropriation of framework tools was the coursework. Framework tools were embedded in the course assignments, which compelled PSTs to practice using them. By completing the assignments in a certain order (e.g., communication assessment, literacy assessment, present level, teaching protocol and intervention plan) that included certain components within each part (e.g., reading activities, writing activities), PSTs were able to learn how framework tools were reflected in assessment, lesson plans, and instruction. For example, all PSTs used literacy/communication assessment results to determine their students' present level of instruction. Eight groups were able to plan daily reading, writing and word work activities. Coaching offered broad discussions of the alignment framework. Furthermore, the influence collaboration had on framework tools appropriation was reflected in the end product each group produced (e.g., the quality of case study and assessment, reading/writing/word work activity).
The lack of good frameworks in the practicum setting influenced PSTs' experiences negatively. PSTs failed to see good models of instruction rooted in frameworks introduced in the course work, and thus limited their learning opportunities within the real setting. However, the practicum offered student opportunities to practice practical tools with the conceptual underpinnings reflected in these knowledge frameworks, which was considered positive by PSTs.

**Efficacy improvement due to access to and practice knowledge.** Concepts under this conceptual tool included (a) comfort level with students with moderate to severe disabilities, (b) comfort level in using instructional technologies, (c) efficacy in instruction, structure, behavior management, and assessment. Activity systems that affected PSTs' sense of efficacy were (a) individual qualities, (b) coursework, (c) coaching, (d) opportunities to work with student in the classroom, and (e) collaboration. Personal qualities such as being reflective and motivated were important characteristics of PSTs with higher levels of efficacy. PSTs improved their efficacy when being exposed to a comprehensive knowledge base for teaching the student population during the coursework. Opportunities to work with students with severe disabilities also increased PSTs' level of efficacy. For example, Lily stated that "this (one-on-one) was something that I struggled with because I have very little one on one experience with students on the spectrum." Being a reflective learner, she went on to state that:

I felt really nervous before the lesson. I was intimidated by Tina due to previous outbursts that I had observed. I think that she would have been able to sense that my nervousness and that would have impacted the lesson in a negative way. After a few lesson sessions with the student, she greatly improved her efficacy in interacting with the student and "felt very relaxed." She stated that she "had a very successful lesson with the student and wish to have more time with her.” Amanda also stated that:
After completing this lesson I felt very good about what direction I was headed in as a teacher. I noticed that one of strengths was doing read aloud. I felt very confident about when to ask questions and when to refer to the text.....I noticed how happy Olivia was working with us. I really made me so happy and I felt like I'm making difference.

Coaching, immediate feedback, and modeling from course instructors and field supervisors helped PSTs in working with the student population with more ease and comfort. For example, Natalie and Amanda stated that their student would “lose her spot (while reading) and she would become frustrated. Sometimes, when the student lost her spot while reading, we would have to prompt her or guide her with our fingers.” They discussed their concern with the instructor and she suggested "that we cut a hole out of a note card and use it to guide her reading.” The lesson then turned out to be very successful and PSTs' sense of efficacy was improved.

**Access and application of collaboration tools.** The most important activity system that influenced the appropriation of collaboration tools was the collaborative experience in the field. The course's strong emphasis on team effort in both working with the student and completing assignments served as a catalyst. In addition, PSTs observed faculty co-teaching during the course, which afforded observation of collaboration in action. Individual characteristics such as being a reflective learner, willingness to be open to criticism were important qualities in the collaborative partnership. The practicum classroom, however, became the setting that PSTs observed negative examples of collaboration. For example, Rina mentioned:

I think Lucy (the classroom teacher) struggles with getting control over them (other staff). One is because I think she is very nice. She is a very, very nice woman, but I think that was her disadvantage too because I don’t think she knows when to speak up, like step up and speak and say, “no, we are going to do this (gossiping over the weekend, doing
nothing).” I think she is like, as long as everyone else is happy, she is happy. But it’s, you know, you got to put your foot down. You are the teacher. I mean your name is on the door. Like it’s your classroom and these are your students. So when are you going to take advantage of that?

Field supervisors, when discussing with PSTs about the problem of lacking good collaboration in the classroom, offered feedbacks on collaboration strategies:

What I would encourage you to do, is to use this collaborative collaboration log when you start teaching. This is a tool I think would at least help because you could say things like, ”You know, I really want to make this instructional time as meaningful as possible.” I also know that we all, you all are friends...and I don't want you to think I'm being critical or pushy. But you know...this is what has been driven to me and it's really important to me. You are the team leader. And I said that many times to my paraprofessionals, ”You know, the buck stops with me.” So we have to be able to show progress. We have to collect data to show we’re working on these goals.

Access and Opportunities to Appropriate Practical Tools

**Access and appropriate communication assessment tools.** PSTs learned about assessment tools during coursework and practiced the tool by completing an assessment report, documenting the form and function of students' communication skills by setting and communication partners. The available opportunities to observe students across multiple settings influenced the extent PSTs were able to appropriate this assessment tool. Some PSTs only had opportunities to observe their student in one setting (e.g., recess, one-on-one, or group work), which limited their abilities to compare and contrast their tutee’s communication pattern across different settings. For example, Rina and Laura said when they were in the classroom observing
their student, "it was rest time for the class, so many of our observation or information on him was given to us by his teachers."

Of all the assessment reports completed by PSTs, high adopters of this tool were able to provide both detailed description and in-depth interpretations of their observation. Low adopters, on the other hand, tended to use vague language without providing sufficient detail for readers to visualize the situation. For example, Eva and Sophie mentioned that “the forms that (the student) used to attempt to communicate are verbal, gestural as well as guiding. He will use any form necessary to get your attention.” However, the group failed to describe the receptive or expressive language abilities of the students. Such information would inform deeper understandings about the student’s communication needs.

Amy and Mia also commented that their student made an abrupt comment while they were talking with the mentor teacher (i.e., I’ve got a haircut) and concluded that the student needed to work on the "appropriateness of his conversation.” PSTs may also need to keep in mind that for students with severe disabilities who have limited life experiences, this comment may seem abrupt but may also be used as an experience to incorporate into future literacy activities. As Downing (2005) said, communicative partners of students with severe disabilities must provide opportunities that encourage these individuals to make comments.

However, when completing this assignment, PSTs did not attempt to obtain information from the significant others (e.g, teachers, family members, friends). According to Downing (2005), parents can provide considerable information regarding how their child interacts, with whom, and in what situations. The information parents provide usually pertains to the communication behaviors of children at home, which may be different than what is observed in school. Classroom teachers can provide information on whether the student responds to
directions, commands, questions or social interactions at school. The reason that most PSTs did not attempt to gather information from those significant others may due to the fact that this assessment task was their first assignment, and they may have not been in the field long enough to establish rapport with the classroom teacher and staff to gather information. Another reason might be that gathering information from significant others was not required or emphasized in this assignment.

**Access and appropriate literacy assessment tool.** The reason that most PSTs were able to appropriate the literacy assessment tool to a medium or high level was due to the explicit instructions provided by course instructors and opportunities to administer the tools in real settings. Course instructors introduced the assessment portfolio for PSTs to go over with their students, which provided a structure of what to assess.

In addition, PSTs took several reading courses before this experience and had exposure to the reading content knowledge. However, even high adopters seemed to have misconceptions about content knowledge. For example, Sarah and Lily stated that the classroom teachers' information that their student read at primer to first grade level was not accurate because they found that "her reading level is much higher than her comprehension level. After conducting a QRI with her we found that she is at a fifth grade reading level." But according to Dr. Young, "The student’s instructional level would be the lowest level of any reading component (i.e., word identification, fluency, comprehension), "which meant that PSTs conclusions were incorrect. This example demonstrated that even highly accomplished PSTs like Sarah and Lily may have holes in their content knowledge, and it took time and practice for those holes surface. Field placements, on the other hand, provided negative examples because the classroom teachers had limited information on students' reading levels. For example, Megan and Amber were told by
classroom teachers that “they were not sure that Maya knows her letters.” This group of PSTs was able to "prove in fifteen minutes that not only does he know his letters, but he can spell, and he is able to identify pictures to words without a visual prompt of the word.”

**Access and appropriate communication tool.** The activity settings that influenced the appropriation of PECS were the (a) coursework, (b) practicum, (c) coaching, and (d) collaboration. The course instructors kept emphasizing the importance of PECS, modeled PECS procedures, and suggested age-appropriate motivators. PECS handouts were passed out in the classroom and served as a protocol for PSTs. PSTs who realized the importance of communication for students with significant disabilities and had the opportunities to apply PECS with their students in the classroom, requested coaching from supervisors and course instructors and had them model the usage of PECS, achieved higher levels of tool appropriation. Group collaboration helped PSTs appropriate the tools by "reminding each other about missing steps” or "brainstorming a list of motivators to entice students to reach out for the item.”

**Access and appropriate planning tool.** Planning tools included setting goals and objectives, and writing lesson plans for literacy instruction (i.e., reading, writing and word work activities). The activity settings that influenced PSTs' appropriation of goal setting were previous and current coursework. PSTs were previously exposed to course content on writing goals and objectives. The current course emphasized the measurability of goals and objectives while previous courses did not. The inconsistency of information presented in previous courses compared to the current courses caused confusion. Course instructors clarified how to write goals and objectives in the class. When PSTs resubmitted their goals and objectives, they ended up with more appropriate and measurable goals and objectives (See Table 4-3).

PSTs also created lesson plans for each instructional session with reading, writing and
word work activities. The most important activity settings that influenced PSTs' appropriation of lesson plan tools (i.e., reading, writing and word work activities) were coursework, the opportunity to work with and apply tools with students, along with coaching and collaboration among team members. Coursework exposed PSTs to tools instructional strategies related to reading, writing, and word work. For example in the course, instructors talked about reading instructional strategies such as read aloud, interactive reading, music and movement, language experience activities, and games. As a result, Monica and Emma had their student "read aloud a book on the iPad, ask student to turn the page and ask at least two questions about the content and covering at least two important points." Sophie and Sarah asked their student to" pick picture sight word to fill in comprehension question and use strategies such as prompting, pictorial and written labels, being responsive and scaffolding.”

However, it was not until PSTs had the opportunities to collaboratively practice with their students that they were able to see the specific meaning each tool had for individual students. For example, Amanda and Natalie wrote less sophisticated lesson plans, and they only briefly mentioned that they would have students involved in a read aloud activity. When they actually implemented the lesson, they realized that:

When she read aloud, she would become overwhelmed by the words on a page. She would lose her spot and she would become frustrated. Sometimes when Olivia lost her spot while reading we would have to prompt her or guide her reading with our fingers. After discussing their concerns for the course instructor, Dr. Young, suggested that they "use a technique that she thought might help the student. She suggested that we cut a hole out of a note card and use it to guide her reading." Amanda and Natalie realized that the student "benefitted from this strategy. She read with more confidence and at a quicker rate.”
**Access and appropriate age appropriateness tool.** The activity systems that influenced PSTs' appropriation of age appropriateness were (a) coursework, (b) practicum experiences, and (c) coaching. PSTs were exposed to the concept of age appropriateness during the coursework and they were asked to (a) interact with students in age appropriate style, (b) plan age appropriate activities, and (c) identify age appropriate motivators. Being exposed to the concept of age appropriateness made Monica and Emma realized that:

There are ways in which Derek can start to make a transition into adulthood. Some of the ways in which this could be done is by expanding his areas of interest. Derek needs to establish some form of independence and decision making as he enters adulthood. He also needs to start transitioning into more age-appropriate activities.

Practicum experiences also reminded PSTs of the importance of the concept of age appropriateness. For example, Jade and Lydia, in their initial observations of Mark, noticed that “there is not a lot of variance in the exercises. A majority of them require him to match letters and the exercises are not changed frequently. Mark, being a 20 year old in the classroom, seems frustrated at times.” While course instructors and field supervisors visited PSTs in the classrooms, they also suggested PSTs consider age appropriateness when they planned their lesson and interacted with their students. For example, Megan and Amber asked their student Carter, who is 20 to "independently print the letters of his first names in a one-inch space.” After Dr. Wright observed this group and provided feedback, they decided to add on a journal writing activity, which was more sophisticated and age appropriate for his age:

Carter chose a picture of a rhino to write about in his journal. Dr. Wright offered choice words Carter could use to write about using the words "rhino" and "zoo.” She wrote the words in yellow so that Carter would trace over them. Carter produced a lot of scribbles.
and was attempting to say words when writing.

To sum up, the grouped theory analysis of the data showed that individual qualities interacted with various activity settings (e.g., coursework, practicum, collaboration, and coaching) to create access to knowledge as well as opportunities to apply knowledge. For a summary of the grounded theory results, please refer to Figure 5-1 and Table 5-2.
Figure 5-1: Grounded theory framework
Table 5-2. Grounded theory analysis results

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<thead>
<tr>
<th>Selective Codes</th>
<th>Axial Codes</th>
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<tbody>
<tr>
<td>Access and appropriate tools</td>
<td>Higher level of appropriation</td>
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<tr>
<td>Individual Characteristics</td>
<td>Conceptual tool (beliefs of students, beliefs of teaching and profession, efficacy) Pedagogical tool</td>
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<tr>
<td>Selective Codes</td>
<td>Axial Codes</td>
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<tr>
<td>Access and appropriate tools</td>
<td>Higher level of appropriation</td>
</tr>
<tr>
<td>Coursework assignments - in-class discussion</td>
<td>All conceptual and practical tools</td>
</tr>
<tr>
<td>Practicum Placement - observing classroom - practice with students</td>
<td>Observing classroom- conceptual tools Practice with students- conceptual and practical tools</td>
</tr>
</tbody>
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- Highly reflective
- High level of concern and care
- Level of efficacy as true reflection
- High problem-solving skills
- Persistent in seeking help and feedback
- Less reflective
- Literal, descriptive
- Low level of efficacy
- Little initiative
- Did not do reading
- Passive in participation
- Low quality assignments, miss one or several components
- Little or no communication with cooperating teacher
- Complain
- Less appropriate application of practical tools
| Coaching -on site feedback and support -collaborative Meeting Log | Conceptual tools (beliefs of the students, beliefs of teaching and profession, coaching, instruction framework) Practical tools (e.g., PECS, age appropriateness, communication device, reading level, reading-writing/word work activities, strategies) | • Initiate conversation and feedback  
• Insightful discussion during collaborative meeting with field supervisors | • Little or no initiative  
• Less insightful discussion during collaborative meeting |
| --- | --- | --- | --- |
| **Collaboration** | Conceptual tools (beliefs in students, framework, efficacy) Practical tools | • Collaboratively complete assignments (quality consistent)  
• Good communication with team members | • Each takes part of the assignment and completes different parts (quality inconsistent)  
• Less communication among group members |
CHAPTER 6

DISCUSSIONS AND IMPLICATION

This study resulted in the articulation of a grounded theory explaining the influences on special education PSTs' appropriation of pedagogical tools. According to Grossman et al. (1999), tool adoption is a complicated process and would be influenced by a variety of individual and contextual factors. In the parts that follow, I first summarize the pedagogical tools PSTs appropriated during the course, and then discuss the individual and contextual factors that influenced the tool appropriation. I will then present the implication of this study for practice and research.

Tools Appropriated during the Embedded Reading Course

Summary of the Conceptual Tools

In recent years, research on teacher reform included a great deal of discussion about the importance of helping teachers develop certain dispositions during teacher preparation. Dispositions can affect student-learning, motivation, and development, as well as the educator's own professional growth. According to LePage, Nielsen, and Fearn (2008), studies on special education teacher disposition focused on efficacy, collaboration, the need to be family-centered or attitudes toward inclusion. Sockett (2006) argued that higher education institutions need to teach dispositions as a form of philosophical inquiry.

During the preservice experience under study, PSTs were able to appropriate several conceptual tools, including (a) efficacy of instruction, structure, behavior management, and assessment, (b) beliefs about students with significant disabilities, (c) beliefs about teaching profession, and (d) collaboration. PSTs were able to improve their level of efficacy for teaching students with significant disabilities after participation in this experience.
Efficacy. Teacher efficacy has to do with teachers' perceptions of their ability to do their jobs. Pajares (1996) stated, "The higher the sense of efficacy, the greater the effort, persistence, and resilience" (p. 544). Higher levels of self-efficacy is related to a novice teacher's ability to effectively think about, cope with, and solve problems that arise in classroom settings. On the other hand, teachers who lacked self-efficacy have low expectation for students, tended to assign blame when things did not go as planned, and had a negative attitude toward student learning and behavior. Thus, teacher efficacy has been linked to student outcomes in a number of studies (e.g., Gordon, 2001). Findings of this study indicated that PSTs, after participating in these specially designed experiences, achieved a higher level of efficacy accompanied with more sophisticated classroom instruction, lesson structure, behavior management, and assessment. This increased sense of efficacy was a result of both being exposed to a wide range knowledge base of pedagogical tools and the opportunities to practice those tools with students.

Beliefs of students. During the embedded reading course, PSTs were able to (a) believe in student potential, (b) value students as contributing community members, and (c) feel responsible for student academic learning.

Beliefs about students with significant disabilities are closely tied to notions of teacher expectation, perceived responsibility, and capacities to teach them. Previous research found that unrealistic expectations of students were common among novice teachers and often resulted in PSTs’ struggles with accepting the responsibility for teaching everybody's children (Niertheimer, Hopkins, Dillon and Schmitt, 2000). Narkon, Black, and Jenkins (2009) showed that participants emphasized more about students' disabilities than their role as teacher. PSTs had low expectations for students with disabilities and believed that the low ability levels were the factor that impeded PSTs’ progress in teaching reading to these students.
Scharlach (2008) stated that PSTs who believed that they were able to teach all students to read tended to provide instruction with opportunities for student practice and application. They challenged students and accepted responsibility for progress. Findings of this study confirmed Scharlach's conclusions and showed that after teacher candidates participated in the course, they shifted in their beliefs toward assuming responsibility for helping students with moderate to severe disabilities make academic progress. PSTs started questioning the effectiveness of classroom reading instruction, especially reading strategies taught to students. PSTs stated that teachers should provide engaging opportunities for children to practice, build on children’s strengths, and teach children multiple, effective reading strategies.

**Insights into profession.** PSTs in this study were able to develop insights into the teaching profession and gain better understandings of what it meant to be a special educator for student with significant disabilities by (a) thinking broadly into a future, (b) developing a sense of mission as special educators, (c) feeling motivated make a difference, and (d) planning to take a leadership role in the future.

**Instructional frameworks.** PSTs were able to adopt a few instructional frameworks related to reading instruction including the before, during, after framework, the alignment framework, and the balanced literacy framework. Given the practical nature of these frameworks tools, and their connection to practical tools (e.g., lesson planning, assessment, structured instruction, embedded support), PSTs who were able to appropriate the framework tools tended to have a better grasp of practical tools (e.g., assessment tool, lesson plan tool).

**Collaboration.** PSTs were able to appropriate (a) strategies for collaboration, (b) understandings about the challenges of collaboration, and (c) benefits of collaboration. They recognized that the strategies for collaboration include included (a) interpersonal skills (e.g., trust,
equality, abilities to take in different perspectives), and (b) preplanning and planning skills. The challenges of collaboration included (a) personality differences related to work ethics, beliefs, and/or passions about education, (b) initial role confusion within the group, and (c) giving up control to learn to cooperate. PSTs mentioned the benefits of collaboration included (a) co-teaching evolved into a mindset, (b) interdisciplinary collaboration, and (c) willingness to collaborate in the future.

**Appropriating Conceptual Tools as a Process of Philosophical Inquiry**

Many PSTs in this study struggled with the gap between what they learned in college classroom and what they observed in actual classrooms. The theory-practice gap resulted in a cognitive dissonance among PSTs. Though the experiences were challenging, PSTs were able to appropriate conceptual tools to higher levels because they gained opportunities to struggle with philosophical questions, which enabled them to probe deeper into their assumptions and beliefs.

The current study confirmed LePage et al. (2008)'s conclusions on the importance of having opportunities to engage in philosophical inquiry of one's own dispositions. The authors examined the dispositional knowledge of special education candidates brought with them when they entered a teacher preparation program. They concluded that teacher candidates had assumption of children’s strengths, weakness, self-esteem, and potential at such an early stage of preparation. Dispositions affected a teacher's own ability to learn and "It is important for students to struggle with philosophical questions that help them probe deeper into the complexity of certain dispositions" (p.91).

**Collaboration as a Conceptual Tool reflected in Collaboration Experiences**

This study concluded that the conceptual tool of collaboration was appropriated by PSTs as a mindset, and collaboration skills and strategies were rooted in the collaboration mindset. In
addition, collaboration formed a unique activity system for PSTs to engage in various collaborative activities to demonstrate a collaborative mindset, strategies and skills. Finally, collaboration among PSTs facilitated their own learning and enhance their students' learning experiences.

Previous research stated that teachers co-teaching grades K-12 received little training to co-teach in their university training programs (Vaughn, Schumm, & Arguelles, 1997). In addition, the support for co-teaching continued to have limited empirical data (Murawski & Swanson, 2001). Researchers found there was a need to clearly define co-teaching and to further study the effect on student outcomes (Murawski, 2006). The current study demonstrated that students with moderate to severe disabilities benefitted from PSTs co-teaching because PSTs came up with more sophisticated activities and instructional strategies through a deeper understanding of the students' abilities and needs through collaboration. Combining faculty co-teaching with PSTs practice of co-teaching in actual classrooms was an efficient way to improve both PSTs' knowledge and skills of collaboration.

This study also extended the conclusion drawn by Stang and Lyons (2008) on the value of having faculty members model collaboration. Stang and Lyon's study only involved PSTs observation of faculty co-teaching but did not have PSTs practice collaboration skills in the field. Brownell et al., (2005) stated that teacher preparation should not only model practice but also allow the students to reflect and practice the technique (Brownell et al., 2005). The current study not only enabled PSTs to observe faculty members co-teaching, but also offered them opportunities to practice collaboration skills in real settings. As Kamens (2007) stated, student teachers construct their knowledge of co-teaching from practicing the experience. By collaborating with each other during coursework and practicum experiences, PSTs were able to
improve both their knowledge and comfort of collaboration.

**A Summary of the Practical Tools**

PSTs were able to appropriate a range of practical tools during the course, including assessment tools (i.e., literacy assessment, communication assessment), communication tools (i.e., importance, communication devices, PECS), age appropriateness, organized classroom environment, goals and objectives, lesson planning (i.e., reading activity, writing activity, and word work activity), structured instruction, and embedded supports. These tools were identified in literature as evidence-based practices and proved to be effective in teaching students with moderate to severe disabilities (Hume, 2010).

**Communication assessment.** For the communication assessment tool, PSTs learned to observe their students across multiple settings, identify communication partners, forms and functions of communication. According to Downing (2005), assessing communication skills can be used to clarify a student's current skills and help all educational teams recognize those skills, determine whether student need assistance, progress according to a specific intervention plan. A clear understanding of a student's communication abilities is essential for effective education.

**Literacy assessment tool.** PSTs were also exposed to literacy assessment tools, including literacy assessment portfolios, such as the Bridge (Pierce, Summer, & O'DeKirk, 2005) and the Staugler Literacy Rubric (Staugler, 2007). Rhodes and Shanklin (1993) concluded in their study that literacy assessment provided teachers with information to develop appropriate lessons and improve instruction for all students, including students with disabilities.

This study added evidence to the importance of assessing students' communication and literacy skills before lesson plan and instruction. Learning and practicing assessments not only benefit students but also facilitated PSTs' own learning experiences by improving their efficacy.
of instruction, problem-solving skills and decision-making abilities. As Pierangelo and Giuliani (2006) stated, a variety of situations require special educators to make practical decisions and relevant suggestions. It is always necessary to fully understand the assessment process and to be able to clearly communicate vital information to professionals, parents, and students.

**Communication.** PSTs were also exposed to communication tools, in which they were able to (a) learn the importance of communication and the link between communication and literacy, (b) become familiar with communication devices, and (c) use PECS. As Light (2003) stated, communication is essential to attaining quality of life and allowing human to connect with each other. Downing (2005) concurred that communication skill is a lifelong skill for students with severe disabilities. While in the field, PSTs realized the importance of communication, and familiarized themselves with different communication devices such as a *Big Mac switch*, head switch, and CommLink ST. They also learned about PECS, which is recommended as an evidence-based intervention for enhancing communication skills of individuals with ASD (Tien, 2008).

**Age appropriateness.** The concept of age appropriateness was important for students' academic and functional skill development (Downing & McFarland, 2011). During the preservice experiences, PSTs were exposed to the concept of age appropriateness, which included age appropriate materials, age appropriate interaction style and age appropriate activities. Downing and MacFarland emphasized the importance providing individualized instruction that is chronologically-age appropriate and meaningful for the student with moderate to severe disabilities. By participating within age-appropriate lessons, students have access to the academic content of their same age peers at a level that reflects their needs. This study added empirical evidence to literature base on how the use of age appropriate activities, interaction
styles and materials improved engagement, motivation, and learning outcomes for students with moderate to severe disabilities.

**Setting goals and objectives.** Another practical tool that PSTs were able to appropriate was setting goals and objectives. Based on the assessment results, PSTs were able to determine their students' present level in three areas (communication, literacy, and self-help). They set goals and objectives for the students, and planned interventions and instructional strategies (e.g., visual schedule, reinforcers, sensory interventions, and motivators) based on the assessment results.

**Reading, writing and word work activities.** After setting goals and objectives, PSTs used activity tools to plan and carry out their lessons. According to Breit-Smith and Justice (2010), some activities are found to be effective in increasing emergent literacy skills for children with significant developmental activities. After this preservice experience, PSTs were able to use appropriate reading (e.g., read aloud, interactive reading), writing (e.g., email, journal writing) and word work activities (e.g., alphabet book, matching, object-symbol correspondence) for students with severe disabilities.

**Organized classroom environment.** PSTs also realized the importance of organized classroom environment to (a) communicate literacy goals and objectives, (b) segmented working space, and (c) minimized auditory and visual distractions. They incorporated visual supports into lessons using (a) visual schedules, (b) work systems, (c) mini-schedules, and (d) first, then charts.

**Structure and support.** PSTs also learned to use prompting systems following the prompting hierarchy (e.g., verbal, gestural, physical) and reinforcements (e.g., tangible, verbal, preferred activity, token board). PSTs also frequently offered choices to students by letting them choose the length of activities, books to read, ways of responding, and break activities.

**Individual and Contextual Influences of Tool Appropriation**
Individual Qualities

Individual qualities that influenced the appropriation of pedagogical tools in teaching students with severe disabilities include reflectivity, high motivation and initiation, problem-solving skills, out-of-box thinking, and care and concern for the student population. PSTs with the following qualities tended to appropriate pedagogical tools to a higher level: (a) initiative in seeking feedback and support from course instructors and field supervisors, (b) highly motivated to make a difference, (c) reflective, (d) problem-solving skills, and (e) high level of care and concerns for the students. The individual characteristics influenced both the adoption of conceptual and practical tools and interacted with other activity systems in powerful ways.

Leko and Brownell (2010), when examining PSTs' appropriation of teaching students with high-incidence disabilities, concluded that personal attributes (i.e., reflectiveness, dedication, confidence, and initiative, personal concerns centered on students' academic needs, and future goals) led to higher levels tool appropriation. Similar personal attributes that contributed to higher levels of appropriation were identified in the current study. However, Leko and Brownell suggested, "The individual activity system influenced these preservice teachers' knowledge access, but it did so in limited ways" based on the argument that most PSTs had no prior experiences working with students with high-incidence disabilities. This study, however, demonstrated that individual attributes influenced both PSTs' access and application of knowledge. PSTs who were persistent in seeking answers, taking initiative, were highly motivated and reflective ended up accessing a more comprehensive knowledge base than those low adopters who did not share the same attributes.

Contextual Factors
Activity settings such as the practicum experience, group collaboration, and coaching mediated the individual influence on appropriation of pedagogical tools, either facilitating or hindering PSTs' appropriation of pedagogical tools.

**Activity Settings that Create Access to Knowledge**

Activity systems (e.g., coursework, coaching and collaboration) created opportunities for PSTs to gain access to a wide range of knowledge. PSTs learned evidence-based practices in their coursework. Course instructors also modeled and scaffolded those practices for PSTs in the class and offered on-going support in the field. On-site coaching, modeling and scaffolding deepened PSTs' understanding of the knowledge. Collaborative Assessment Log (CAL) meetings (Davis & Barbara, 2006) with field supervisors served as a forum for PSTs to raise questions and discuss concerns, which deepened PSTs' understanding of various pedagogical tools and enhanced their learning experiences. For example, Monica and Emma were confused about how to set goals and objectives. Based on the feedbacks from the field supervisor in a CAL meeting and course instructors' further elaboration in the course, they rewrote their goals and objectives and completed this task to a higher level. Collaboration during this preservice experience enabled PSTs to work together and learn from each other. Since each of the PSTs brought different perspectives, knowledge, skills, and background to the experiences, groups who collaborated beyond the superficial level and took time and effort to brainstorm ideas together were more likely to plan more sophisticated lessons for their students and deepen their own learning and understanding of pedagogical tools.

**Individual Construe Activity Settings to Render Access to Knowledge.**

According to Grossman et al. (1999), individuals construed activity settings (e.g., coursework, practicum, coaching, collaboration) in unique ways, which rendered themselves
different opportunities to access to knowledge. Leko and Brownell (2011) identified prior experiences, cooperating teachers, course instructors, field supervisors as providing PSTs access to knowledge. The current study, however, demonstrated that coursework, coaching, and collaboration were most important sources of knowledge, while the practicum offered PSTs limited access to knowledge, except behavior management and daily routine. PSTs in this study did not perceive cooperating teachers as good models in providing quality academic instruction and as valuable sources of information and knowledge.

Leko and Brownell stated that "the individual activity system influenced these preservice teachers' knowledge access, but it did so in limited ways" (p.245). The current study, however, argued that all activity settings (e.g., coursework, collaboration, practicum, coaching) filtered through individual activity system and individual attributes had powerful influences on the type and extent of tool appropriation. Individuals who were motivated to make a difference, highly reflective, sought assistance, and were flexible were more likely to actively incorporate knowledge, probe deeper into its meaning, and ended up with a more comprehensive knowledge base.

Activity Settings that Offer Opportunities to Apply Knowledge.

As Brownell et al. (2009) argued that special education preservice teacher preparation programs were unable to provide PSTs with in-depth knowledge of instruction in content areas such as reading and that they lacked opportunities to practice and deepen PSTs’ knowledge. Even though PSTs had a fair amount of knowledge about reading, they failed to transfer that knowledge into practice. The results of this study showed that PSTs’ opportunities to practice knowledge with their students were the most critical factor that influenced PST appropriation of pedagogical tools. As Leko and Brownell (2011) stated "the practicum and its opportunities to
appropriate conceptual and practical tools during instruction signified the point at which their course work knowledge began coalescing into a meaningful body of knowledge" (p.244). When PSTs had the opportunity to work with students with moderate to severe needs, and experiment with different instructional strategies, they were able to come up with a more comprehensive package that proved to be effective.

Previous research studies showed that during the tutoring experiences, PSTs were also able to change their beliefs, appropriate their knowledge and tools, and develop lesson plans based on assessment results (Al Otaiba, 2005; Al Otaiba and Lake, 2007). Findings of this study demonstrated that the longer PSTs worked with their students and the more information collected, the more confident they were with all aspects of teaching.

**Challenges of the separate setting.** Though offering opportunities for PSTs to practice knowledge with students, the field experiences posed challenges for PSTs’ learning as well. First of all, most PSTs complained that the instructional time they had with their students was rather limited. The already packed classroom schedules (e.g., groupwork, art work, check-in, check-out) made it hard for PSTs to find enough one-on-one time with their students. Student absences and their behavioral and medical problems complicated the situation. Time constraints negatively impacted the thoroughness of assessment results, and the quality and length of activities they planned for the students. Furthermore, PSTs did not observe good models of academic instruction in the classroom. Instead, they saw a low quality of academic instruction and long downtime in classrooms. They felt that classroom teachers did not hold high expectations for students, underestimated students' abilities, and much of the information teachers provided to PSTs regarding student's academic abilities were not accurate. For example, PSTs mentioned that teachers did art work for the students and gossiped about their weekend while the student sat
there doing nothing. Some classrooms spent a whole morning doing check-in, which was uninteresting to students. Some PSTs felt that the some cooperating teachers were overprotective of their students and were not supportive of PSTs' one-on-one instruction effort. Other PSTs expressed concern that the successful activities they began with their students would not be carried on into the classroom after they left.

According to Ricchia and Puig (2011), practicum experiences in separate settings offered unique learning experiences, including PSTs were able to (a) observe and learn about a more extensive array of learning and developmental needs, (b) observe multiple types of collaboration, (c) identify links between assessment and intervention, and (d) learn from cooperating teachers who have expertise in behavior management and curricular adaptations. The current study concurred with their conclusions about the benefits of placing PSTs in separate settings. On the other hand, this study also suggests that separate placements were considered by PSTs to have a detrimental effect on their levels of their tool appropriation due to lack of appropriate models.  

**Coaching as facilitating tool application.** Coaching in this course acted as the link between coursework and practicum placement. For example, course instructors discussed the concept of age appropriateness. However, it was not until course instructors came into the classroom and modeled appropriate ways of interacting with a student with moderate needs for PSTs that they were able to appropriate the age appropriateness tool to a higher level. The literature suggests two dominant models of coaching: supervisory coaching (Joyce & Showers, 1995) and side-by-side (i.e., in vivo) coaching (Blakely, 2001). In a comprehensive review of coaching conducted by Kretlow and Bartholomew (2010), they found that highly engaged, small-group initial training, followed by multiple observations, feedback, and modeling were critical components across coaching interventions. These components of coaching were
incorporated into this presservice experience and proved be effective in facilitating PSTs' learning. Coaches modeled and scaffolded effective instructional practices and also guided PSTs through the problem-solving process. When coaches were present in the classroom, either observing, aiding, modeling or scaffolding, PSTs were able to apply those tools with more sophistication and confidence. In addition, this study suggested that combining supervisory and in vivo coaching would be an efficient way to improve PSTs' learning experiences. Kretlow and Bartholomew's review on coaching located ten studies involved in-service teachers and three studies involved preservice teachers. The current study added further evidence to the knowledge base of how coaching can benefit special education PSTs' learning experiences.

**Collaboration as facilitating tool application.** Collaborative experiences facilitated the application of knowledge in the field placement. By collaborating with each other to complete assessments, set goals and objectives, and plan lessons and activities for their students, PSTs learned from each other, saw different perspectives and nuances, and came up with more sophisticated assignments and lessons. Importantly, group members appropriated different tools to different levels. The interactive nature of team work made it possible for team members to learn from each other and for low adopters to move to a higher level of tool appropriation.

**Congruence/ disjuncture among Activity Settings**

The disjuncture between the method courses and field placement was articulated by most PSTs who participated in this study. Instead of observing high quality teaching, PSTs saw little academic instruction, long downtown and use of age inappropriate activities and materials in the classroom. However, most PSTs were able to appropriate pedagogical tools to medium or high level despite the disjunction between the settings (e.g., practicum vs. individual, coursework, collaboration and coaching). The embedded nature of the course and the total presence of course
instructors and field supervisors mitigated the negative influences of practicum experiences had on PSTs' learning as long as PSTs took a reflective stance, had access to a comprehensive knowledge base in course work, obtained opportunities to practice new knowledge with students in the field, collaborated with peers, and received immediate feedback and support from faculty.

Grossman and her colleagues (2000) found that general education PSTs were successful in appropriating knowledge despite having student teaching experiences that did not align with the teacher education program as long as the programs emphasized reflection and supported PSTs in taking a reflective stance. Leko and Brownell (2011) however, argued that special education preparation programs' emphasis on reflective practices were not pervasive. Instead, special education teacher preparation programs stressed the importance of evidence-based practices in assessment, intervention and instruction, so PSTs benefited most "when there was congruence among the activity systems of the teacher preparation program and the practicum experience" (p.248). This study supported Grossman et al. (2000)'s conclusion and demonstrated that even if this preservice experience emphasized evidence-based practices, PSTs were able to appropriate both conceptual and practical tools to higher levels when course instructors used reflection as a pedagogical practice and supported PSTs in taking a reflective stance toward their student teaching experiences.

The Extent of Tool Adoption

According to Grossman, Smagorinsky, and Valencia (1999), tool appropriation can occur at a continuum from no appropriation to tool mastery. High adopters in this study were able to fully grasp the concept and use the tool effectively in classrooms. Medium adopters grasped the theoretical basis that informed and motivated the use of a tool in new contexts for solving new problems but may miss a few nuances of the tools. Low adopters knew some or most features of
the tool, but lack of an understanding of the holistic picture of the tool. PSTs appropriated pedagogical tools at different levels due to the interaction among individual and contextual factors. Overall, of a total of thirty PSTs participated in this study, sixteen PSTs were categorized as overall high adopters, eleven as medium adopters, and three as overall low adopters. Though individuals may adopt different pedagogical tools due to a variety of factors (e.g., individual goals, motivation, access to knowledge, opportunities to appropriate), the study showed that there was a general trend that high adopters performed well on appropriating a range of pedagogical tools.

**High adopters’ characteristics.** Individual characteristics of high adopters included being highly reflective and motivated to make a difference, high problem-solving and out-of-box thinking skills. High adopters also utilized the social context (e.g., practicum placement, course, coaching, and collaboration) to a greater extent by actively seeking answers for questions, requesting support and feedback from course instructors and field supervisors. They were open to new ideas when collaborating with team members, and laboriously tried innovative ways when working with their students.

**Low adopters’ characteristics.** Low adopters, on the other hand, were less motivated and reflective learners. They tended to be literal learners who were attached to details and not able to take a critical and reflective stance when encountering problems. They tended to complain instead of taking the initiative to make changes themselves. They had a less solid foundation of reading content built from previous coursework, and they came up with less original and diverse reading, writing and word work activities. The medium adopters fell in between the high adopters and low adopters. They knew most of the features of pedagogical tools, but may have missed a few nuances of the holistic picture.
Implications

As with any study, this study had multiple limitations. First, this study was conducted over a quarter (11 weeks). Information on whether pedagogical tools appropriated will be generalized into student teaching or future classroom teaching was unknown. Longitudinal studies that follow PSTs into their student teaching and future employment might offer insight to this question. Second, much of this work is interpretive; thus, others looking at the same data might construct different and equally valid explanations of the data (Glesne, 1999).

Implications for Practice

This study suggests a number of practical ways to improve teacher preparation programs in order to better prepare PSTs for teaching reading to students with severe disabilities.

Faculty co-teaching. Faculty co-teaching has proven to be an effective practice in teacher preparation programs. Harris and Harvey (2000) proposed that higher education co-teaching "provided the opportunity to model different ways of teaching and responding to conflict in the classroom" (p. 9). Similar recommendations were made by Stang and Lyons (2008), who examined pre-service special education teachers’ reaction to and experiences in a collaboratively taught higher education course. According to Stang and Lyons, higher education should "model, demonstrate, and promote" collaboration and collaborative skills (Duchardt, Marlow, & Inman, 1999). Such a collaboratively taught course offered preservice special education teachers the opportunity to observe co-teaching in higher education. PSTs reported that the act of observing faculty co-teach was the most valuable learning tool. Overall, participant knowledge of co-teaching increased and faculty modeling of co-teaching is reported as the most valuable contributing factor.

This experience featured faculty co-teaching with one course instructor who had a strong
background in reading and high-incidence disabilities, while the other had many experiences of working with the low-incidence population. They also had different teaching styles and personalities. This faculty co-teaching model enabled PSTs to have access to a more comprehensive knowledge base because two course instructors complemented each other by adding elaborations, perspectives, explanations and insights while the other led the lecture. The success in combining faculty co-teaching with PSTs practice in collaboration in classrooms also support the call for teacher preparation programs to not only model practice but also allow the students to reflect and practice the technique (Brownell et al., 2005).

**Embed courses with field placement.** Teacher educators need to make knowledge relevant through practical teaching experiences sooner in a preparation program rather than later (Darling-Hammond, 2006). It is critical for teacher educators to enable PSTs to have access to a rich knowledge base on teaching students with significant disabilities, while at the same time “provide special education preservice teachers with strong rationales for learning about various aspects of the reading process” (Leko & Brownell, p.249). The findings of this study showed that even though the practicum did not reflect the theory espoused in course work, PSTs were still able to appropriate pedagogical tools to a high level, as long as their personal qualities interacted with activity settings positively, and they were exposed to a well-structured knowledge base during course work, had opportunities to work with their students, received on-site coaching from field supervisors and instructors, and took a reflective stance during the experiences.

**On-site support and coaching.** In a comprehensive review of coaching conducted by Kretlow and Bartholomew (2010), they found that highly engaged, small-group initial training, followed by multiple observations, feedback, and modeling were critical components across coaching interventions and may provide the opportunity for PSTs to become reflective
practitioners (Brownell et al., 2005; Hudson-Ross & Graham, 2000). In order for PSTs to benefit most from coaching experiences, coaches needed to have lots of experiences in the field. This study also demonstrated the importance of congruence of values and actions among people involved in teaching the embedded courses. Coaches and course instructors needed to share similar educational philosophies and levels of expertise to ensure the consistency of the messages they conveyed to PSTs. Coaches also needed to visit PSTs in their placement classrooms constantly, providing immediate feedback, modeling and scaffolding for PSTs. Coaches should also possessed good interpersonal skills, were able establish rapport with course instructors, class teachers, and PSTs.

Collaboration among PSTs. Collaboration among teachers is essential to better make decisions of students with disabilities (Friend & Cook, 2003; West & Cannon, 1988). PSTs, whether obtaining employment in inclusive or separate settings, need to collaborate with a variety of team members (e.g., general education teachers, nurses, therapists) to improve student outcomes. However, teachers who co-taught k-12 reported that received little training in their preservice education programs (Vaughn, Schumm, & Arguelles, 1997). It is vital for preservice teacher education programs to identify the best model to promote co-teaching skills of PSTs (Kaff, 2004). This preservice experience answered the call by requiring PSTs to collaboratively work with the students in classrooms and complete assignments. Through collaborative experiences, PSTs were able to realize the importance of collaboration, assume clear roles within teams, and felt determined to collaborate with other staff after obtaining employment. The results of the study showed that pairing high adopters with medium or low adopters was a good strategy to help medium or low adopters to adopt tools at higher levels because high adopters modeled and scaffolded medium or low adopters’ tool application. This is a pairing strategy that field
supervisors might consider when assigning PSTs into different groups.

**Implications for Research**

*Activity theory as a framework to examine teacher learning.* Historically, studies on preservice teacher preparation have been few in number and scattered in their focus (Sindelar, Bishop, & Brownell, 2006). Learning to teach is a complicated process, and a variety of individual and contextual factors influence the process. Leko and Brownell (2011) argued most studies have not focused on the contributions of individual teacher qualities, teacher preparation coursework, and field experiences make to preservice teacher learning. Without a comprehensive framework to guide the research, researchers that attempted to study preservice learning may end up examining factors in isolation (Grossman et al., 2000; Valencia et al., 2009; Valencia et al., 2006). This study showed that activity theory would serve as a framework to identify the complex interaction among various elements within a teacher preparation program (Grossman, Smagornsky, & Velencia, 1999). Future research might apply the activity framework to examine PST learning, which might add to what is known about factors that influence tool appropriation.

*Longitudinal study.* Future research should also consider conducting longitudinal studies by following PSTs from practicum, to student teaching, to their classrooms (Pufpaff & Yessel, 2010). It is important to understand how new contexts (e.g., classrooms) that are dissimilar to those experienced in the preparation programs influence PSTs' ability to appropriate or continue to appropriate tools. It is also crucial to understand how individual qualities interact with contextual factors to facilitate or hinder learning in different settings (e.g., university, student teaching, classroom). Whether PSTs were able to continue using pedagogical tools gained from teacher preparation programs in their classroom teaching and actually make a difference in student outcomes are questions that worth future research.
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