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ANALYSIS OF STUDENT & TEACHER OUTCOMES FROM PRE-EXISTING DATA OBTAINED THROUGH THE LOW INCIDENCE INITIATIVE: TEACHING ACADEMIC AGE-APPROPRIATE LEARNING VIA COMMUNICATION PROJECT

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ABSTRACT OF THESIS

ANALYSIS OF STUDENT & TEACHER OUTCOMES FROM PRE-EXISTING DATA OBTAINED THROUGH THE LOW INCIDENCE INITIATIVE: TEACHING ACADEMIC AGE-APPROPRIATE LEARNING VIA COMMUNICATION PROJECT

Students with significant cognitive disabilities frequently exhibit reduced communicative and academic competence. The Low Incidence Initiative (LII) project was a professional development model designed to train school-based teams to facilitate increased communicative and academic competence with such students via distance-technology coaching. This study analyzed pre-existing data from year one of the LII. Data were analyzed to determine effectiveness of the project on communication status of students and on training school personnel to accurately identify student levels of communication, and for overall satisfaction with the project. Results indicated that all student participants demonstrated improvement in expressive communication output. 100% of students who required augmentative and alternative communication (AAC) increased in the complexity of AAC used. Some improvement in school personnel's identification of student communication levels was demonstrated, however, the continued discrepancy between LII staff and school personnel indicates a need for additional training in this area. Qualitative analysis of survey question responses, and other anecdotal information, revealed an overwhelming satisfaction with the LII model, increased communicative sophistication of students, improvements in collaborative teaming, increased access to general curriculum for students, and improvement in school personnel skill-level. Implications of the results of this study and areas for future research are discussed.

KEY WORDS: significant cognitive disabilities, augmentative and alternative communication (AAC), professional development and coaching, communicative competence, general education curriculum

April M. Holman

April 1, 2011

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THESIS

April M. Holman

The Graduate School

University of Kentucky

2011

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THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in the
College of Health Sciences
at the University of Kentucky

By

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Lexington, Kentucky

Director: Dr. Jane O'Regan Kleinert, Professor of Communication Sciences and
Disorders

Lexington, Kentucky

2011

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CHAPTER ONE: INTRODUCTION

Introduction

Students with significant cognitive disabilities, who participate in Alternate Assessments based on Alternate Achievement Standards (AA-AAS), comprise approximately 1% of the school population (Beukelman & Mirenda, 2005; Reichle, 1997; Towles-Reeves, Kearns, Kleinert, & Kleinert, 2009; U.S. Department of Education, 2005). These students are a heterogeneous population in regard to the type and number of medical conditions they represent, their unique learner characteristics, and the diversity of communicative competence they exhibit, ranging from behavior that lacks communicative intentionality to symbolic communication (Koppenhaver, Hendrix, & Williams, 2007; Light & Drager, 2007; McLean, Brady, & McLean, 1996; Reichle, 1997; Ronski & Sevcik, 1997; Towles-Reeves et al., 2009).

Although these students can be classified as a heterogeneous population, with representation of all disabilities as defined by the Individuals with Disabilities Education Act (2004), communication disorders are among the most prominent concomitant disabilities and often impede traditional modes of communication interaction. Thus, these students often do not have full access to the multiple modalities by which most individuals communicate, inhibiting their ability to successfully participate in communicative exchanges and resulting in substantial difficulty interacting with those around them (Blockberger & Johnston, 2003; Downing, 2001; Higgenbotham & Yoder, 1982; Kearns, Towles-Reeves, Kleinert, Kleinert, & Thomas, in press; Light & Drager, 2007; Reichle, 1997; Siegel, Maddox, Ogletree, & Westling, 2010; Snell et al., 2010). The communication challenges faced by students with significant cognitive disabilities highlights the importance of developing communicative competence for this population. As such, federal and state funded grant projects have begun to focus on professional development for school-based teams to foster communicative competence in students of all ages.

The Low Incidence Initiative (LII) model, funded by the Kentucky Department of Education as a part of its federal State Professional Development Grant, was created as a professional development program designed to work directly with school-based teams in facilitating the communicative and academic competence of students with significant

cognitive disabilities. This study will analyze pre-existing data collected from the LII subcomponent entitled *Teaching Academic Age-Appropriate Learning via Communication* (TAALC), in an attempt to determine the effectiveness of the LII process across a variety of domains. The acronym LII will be used throughout this paper to refer to the project data that are being analyzed.

CHAPTER TWO: RATIONALE FOR THE STUDY

Review of the Literature

Exclusionary practices and restrictive eligibility policies often target students with significant cognitive disabilities (National Joint Committee for the Communication Needs of Persons with Severe Disabilities, 2003a; Snell et al., 2003). Similarly, “in the past, students with moderate or severe disabilities were often exempted from large-scale assessments that were a key component of school reform” (Browder, Ahlgrim-Dezell, Flowers, et al., 2005, p. 209). Thus, in recent years, federal legislation sought to eliminate discriminatory practices against individuals with disabilities and to provide them with equal opportunities as able-bodied persons through the passage of legislation such as the Americans with Disabilities Act of 1990 (Americans with Disabilities Act, 2008, as amended). The implementation of the Individuals with Disabilities Education Act Amendments of 1997 (IDEA 1997) and the Individuals with Disabilities Education Improvement Act of 2004 (IDEA 2004) require that educators ensure children with disabilities have access to a free and appropriate public education in the least restrictive environment, are able to participate in the general curriculum and extracurricular/non-academic activities, and are included in district and state educational assessments. These landmark pieces of legislation are pivotal in ensuring that students with significant cognitive disabilities develop communicative and academic competence.

Similarly, in the past few decades several organizations have united in their efforts to serve persons with significant cognitive disabilities, citing communication as both a basic need and right of all human beings (National Joint Committee, 1992). One such organization is the National Joint Committee for the Communication Needs of Persons with Severe Disabilities (NJC), which is dedicated to helping persons with severe disabilities communicate effectively. Similarly, the American Speech-Language-Hearing Association advocates for the rights of individuals with significant cognitive disabilities and emphasizes the critical role that speech-language pathologists play in ensuring the communication needs of persons with significant cognitive disabilities are met across the lifespan (ASHA, 2005a).

Alternate Assessments

When students are not included in accountability assessments, there is essentially no pressure for schools to work to ensure academic success for those students. In an effort to remediate the instructional and academic challenges faced by individuals with significant cognitive disabilities, alternate assessments based on alternate achievement standards (AA-AAS) were mandated as a function of the Individuals with Disabilities Education Act (IDEA 1997, 2004) and designed to provide school accountability by including all students in state and district assessments (Browder et al., 2005; Browder, Flowers, Ahlgrim-Delzell, et al., 2004; Browder, Spooner, Ahlgrim-Delzell, et al., 2003; Towles-Reeves, Kearns, Kleinert, & Kleinert, 2009). AA-AAS are designed for the small number of students with disabilities who are unable to participate in the regular grade-level assessments, even with appropriate accommodations (Kearns et al., in press; U.S. Department of Education, 2005). The U.S. Department of Education (2005) describes students with the most significant cognitive disabilities as “the small number of students who are (1) within one or more of the existing categories of disability under the IDEA...and (2) whose cognitive impairments may prevent them from attaining grade-level achievement standards, even with the very best instruction” (p. 23). Alternate assessments must be aligned with the state’s general curriculum content standards and allow students to demonstrate learning outcomes in different ways (Browder et al., 2005; U.S. Department of Education, 2005). Alternate academic achievement standards differ in complexity from grade-level achievement standards but must still be linked to grade-level content (U.S. Department of Education, 2005).

Due to changes in legislation and shifts in educational philosophy, inclusive education for students with significant cognitive disabilities is becoming more common (Beukelman & Mirenda, 2005; Browder et al., 2003; Downing 2005; Dymond & Orelove, 2001; Hunt, Soto, Maier, Muller, & Goetz, 2002). Inclusive education is founded on the belief that all children can learn, and all have the right to be educated with their peers in age-appropriate, heterogeneous classrooms (Hunt et al., 2002). Inclusive education provides many benefits, including but not limited to, increased communication skills via an increase in the number of naturally occurring opportunities to communicate, increased academic and functional skills, increased socialization, and friendship

development—all of which can facilitate increased academic and communicative competence in students with significant cognitive disabilities (Downing, 2005; Dymond & Orelove, 2001). While inclusion can be viewed on a continuum, from no integration to full integration, the relevant issue of concern is whether children with significant cognitive disabilities have access to the same educational, extracurricular, and social opportunities as their typically developing peers. Beukelman and Mirenda (2005) explain that full integration ensures students with significant cognitive disabilities are “doing what everyone else does, when and where everyone else does it” at a level that is suitable for their individual needs” (p. 396).

Although federal legislation (IDEA 1997; IDEA 2004) requires inclusion of all students in accountability assessment systems and access to the general curriculum, and despite the benefits of inclusive classroom settings, many challenges and barriers still exist, making it difficult for individuals with significant cognitive disabilities to receive the support services necessary for success in inclusive educational settings (Beukelman & Mirenda, 2005; Downing, 2005). Recent research suggests linkage to grade-level content standards poses a significant obstacle for educators working with students with significant cognitive disabilities, as curriculum linkage requires extensive changes in classroom structure and content and must be individualized for each student, often resulting in extremely limited academic curriculum for students in this population. Similarly, continuous collaborative teaming is critical to effectively deliver the supports and services needed to develop academic and communicative competence in this population, and a lack of collaboration and attitudinal barriers often exist among teachers and school personnel regarding the purpose of inclusion (Browder et al., 2005; Browder et al., 2004; Browder et al., 2003; Browder et al., 2006; Calculator & Black, 2009; Downing, 2005; Hunt et al., 2002; Kearns et al., in press; Kearns et al., 2009; Rainforth, York, & McDonald, 1992; Towles-Reeves et al., 2009). Among the many barriers of access to general curriculum, literacy instruction of students with significant cognitive disabilities is consistently underemphasized, ignored, or dismissed as challenging and unattainable educational goals. Research, however, demonstrates the effectiveness of inclusive instruction, with appropriate support and adaptations, in teaching foundational literacy skills to students with significant cognitive disabilities (Beukelman & Mirenda,

2005; Browder et al., 2008; Browder et al., 2006; Erikson & Koppenhaver, 1997; Koppenhaver & Yoder, 1993; Koppenhaver, Hendrix & Williams, 2007; Myers, 2007; Towles-Reeves et al., 2009).

Even with recent legislative and educational reforms, students with significant cognitive disabilities continue to face many challenges, including access to the general curriculum, literacy instruction, access to communication and language intervention, and utilization of augmentative and alternative communication, resulting in reduced communicative and academic competence (NJC, 2003b; Kearns et al., in press; Kleinert et al., 2010; Towles-Reeves et al., 2009).

Communicative Competence for Students with Significant Cognitive Disabilities

While the philosophy of educational inclusion is largely gaining momentum, “education takes place through the process of communication,” further highlighting the need for all students to be able to participate in active communication with peers and adults in educational settings for academic access and success (ASHA, 2000, p. 22). Thus, the critical role communicative competence plays in access to academic content cannot be underestimated. People cannot *not* communicate and “in fact, everyone does communicate in some way, somehow” (Mirenda, 1993, p.4). While there are many definitions of communication in the literature, communication has been defined as “the exchange of a message between a sender and a receiver, such that the message is understood. Communication requires a form, content, and reason or purpose” (Downing, 2001, p. 148). The NJC (1992) further describes communication as, “intentional or unintentional, may involve conventional or unconventional signals, may take linguistic or nonlinguistic forms, and may occur through spoken or other modes” (p. 3). Thus, oral speech and abstract language are not necessary for effective communication, as one can communicate via modes such as facial expressions, gestures, vocalizations, body movements, or picture systems (Beukelman & Mirenda, 2005; Downing, 2001; NJC, 1992; NJC, 2003b). Kleinert et al. (2010) define communication using a simple equation based on the work of numerous researchers and authorities in communication over three decades:

Communication = an intent or function + a form or mode + listener comprehension (p. 46).

Using this equation, successful communication occurs when some topic or intent (i.e., greeting) is transmitted via a form/mode (i.e., smile or wave) and the listener understands the intended message. Communication not only includes expressive output, but also includes the receptive understanding of others' messages (Kleinert et al., 2010). Thus, in order for students to develop functional communication and language skills, they must be able to understand and produce communicative acts (Ronski & Sevcik, 2005).

It is also important to differentiate between the terms communication and language.

While communication refers to the transmission of information from one individual to another, language refers to the different types of symbols used to represent ideas, entities or events. The use of these symbols is governed by a set of rules (ASHA, 2004).

While all students communicate in some way, the ability to communicate functionally with those in one's environment is essential for communicative competence (Light, 1989, 1996; NJC, 2002; Snell et al., 2010). Students with significant cognitive disabilities are "frequently characterized by their lack of communicative competence" (Siegel et al., 2010, p. 148); and their communication attempts are often limited to non-symbolic or unconventional means, which can be difficult to interpret (Downing, 2001; Reichle, 1997). The significance of developing communicative competence for students with significant cognitive disabilities is prevalent throughout the literature in rehabilitation sciences, and regular and special education. Communicative competence ensures that one is able to meet the four main goals or purposes of communication, which Light (1997) has identified as expressing wants and needs, developing social closeness, exchanging information, and fulfilling social etiquette routines. Light (1997) explains that one's goals for communication alter throughout life, and "communicative competence means being able to meet the changing demands and to fulfill one's communication goals across the lifespan" (p. 63). As such, while "infants communicate primarily to express wants and needs and to develop social closeness...school-aged children need the means and skills to meet all four communication goals" (p. 62). Communicative competence must be taught to all students, including those with significant cognitive disabilities, and is a learned skill that is practiced by social experiences and meaningful opportunities to communicate (Light, 1989). Thus, "becoming a competent communicator is a step-by-step incremental process" that is the "outcome of commitment, appropriate instruction,

and hard work” (Light, 1997, p. 65). Research has shown a lack of communicative competence in students with significant cognitive disabilities results in the need for effective communication programming

In order to fully understand how to facilitate more complex forms of communication, one must understand the communication development of typical children (Kleinert et al., 2010). Many descriptions of the stages or levels of communication development exist in the literature. Among the many examples, Bates (1976; 1979) describes a three level model of communication development, Dunst and Lowe (1986) describe a seven-level sequence of communication development, and Rowland and Schweigert (1989; 2011) describe a seven-level sequence of the development of communication leading to communicative competence. Similarly, Wetherby and Prizant (1989) developed a detailed list of communicative behaviors used to operationally define intentional communication.

For the purpose of the LII, the subject of this paper, Bates’ (1976, 1979) model was utilized, as her three level descriptors were the simplest and most commonly used across multiple disciplines for a number of years to explain communication development (Kearns et al., in press). Pre-symbolic communication (Perlocution Stage) refers to the stage in which the intent of the communicator must be interpreted; communication certainly takes place, however intentionality is not yet established (Bates, 1976, 1979; Kleinert et al., 2010). Bates (1979) and Kleinert et al. (2010) described pre-symbolic communication in the context of babies crying. When infants cry or fuss, caregivers interpret those cries as communicating a need, and respond to meet those needs. At this level, the child’s communication can be considered a reaction to an “internal state,” such as hunger, happiness, or discomfort (Bates, 1979, p. 140). Repeated response to an infant’s output reinforces the earliest attempts at communication, and over time the infant learns to be an intentional communicator, or an emerging symbolic communicator (Illocutionary Stage), and moves to the next stage of communication development (Kleinert et al., 2010). Emerging symbolic communicators utilize such means of communication as regularized gestures or differentiated vocalizations instead of words to express various communicative functions (i.e., requesting, refuting) and are easily understood. For example a once simple reaching behavior toward a preferred toy is

transformed into a repetitive open-and-shut movement of the child's hand as he gaze-shifts between a preferred toy and looks at an adult, thus indicating the child's intentional control over the expressive signal and movement up the communication hierarchy (Bates, 1979; Kleinert et al., 2010). The highest level of communication development is symbolic communication (Locutionary Stage). Symbolic communicators, or true language users, utilize formal symbols to communicate, such as spoken or written words, manual signs, Braille, or language-based AAC systems (Bates, 1979; Kleinert et al., 2010).

Communication is a basic need and right of all individuals and is inherent in all persons regardless of the mode or function employed (Hourcade, Pilotte, West, & Parette, 2004; Light, 1997; Mirenda, 1993; NJC, 1992; NJC 2003a). Thus, while the communication modes of individuals with significant cognitive disabilities may not be conventional, they must be acknowledged and recognized in order to be shaped into higher levels of symbolic communication (Beukelman & Mirenda, 2005; Downing, 2001; Kleinert et al., 2010; Reichle, 1997; Reinhartsen, 2000). Furthermore, all behavior communicates and one can facilitate communicative competence via improved communication skills in students with significant cognitive disabilities at any age (Beukelman & Mirenda, 2005; Downing, 2005; Hourcade et al., 2004; Kleinert et al., 2010; NJC, 1992; NJC 2003). In a recent review of the literature by Snell et al. (2010) examining the development of communicative competence among individuals with significant cognitive disabilities, researchers found that ninety-six percent of the reviewed studies reported positive changes in the communication skills of persons with severe disabilities. This indicates "the clear success that individuals with severe disabilities can have in learning a broad range of expressive or interactive communication when they are provided with systematic intervention" (p. 378).

"Symbolic communication remains the cornerstone in the acquisition of reading, mathematics, and science concepts and skills" (Kearns et al., in press). Indeed, the belief that all behavior communicates is pivotal if educators are to move students with significant cognitive disabilities up the hierarchy of symbolic communication and language use and ensure positive educational outcomes (Kleinert et al., 2010, p. 43). However, research indicates educators often fail to interpret or misinterpret the

communicative acts of students with significant cognitive disabilities (Carter & Iacono, 2002; Downing, 2005; Iacono, Carter, & Hook, 1998). Similarly, recent research suggests that students with significant cognitive disabilities have fewer opportunities to communicate, have fewer communicative partners, and have restricted environmental access for communication interactions. Similarly, many students in this population end up in their final high school years without effective communication strategies or access to conventional communication modes (Beukelman & Mirenda, 2005; Downing, 2005; Light & Drager, 2007; Rowland & Schweigert, 1993). These reports indicate a need for effective communication programming designed to increase the communicative competency of students with significant disabilities.

Augmentative and Alternative Communication

As previously stated, the ability of students with significant cognitive disabilities to develop academic competence is largely dependent on their “access to effective and efficient modes of communication” (Calculator & Black, 2009, p. 329). Indeed, participation in general education coursework requires communication in a variety of modes (i.e., writing, drawing, reading, speaking). Often, students with significant cognitive disabilities lack such means of communication. This condition highlights the critical need for effective augmentative and alternative communication systems for such school-aged students who do not develop speech and language skills as typically developing students, even after extensive language intervention efforts.

Augmentative and alternative communication (AAC) has been defined as a group of components, including the symbols, aids, strategies, and techniques used by individuals to communicate (ASHA, 2004; Hourcade, Pilotte, West, & Parette, 2004). AAC is best thought of as a system, and encompasses all forms of communication (other than oral speech), from simple gestures, facial expressions, manual signs, and pictures boards, to sophisticated hi-tech computer-based systems with voice output (ASHA, 2004; Beukelman & Mirenda, 2005; Hourcade et al., 2004). AAC systems involve the use of multiple modalities for communication and can be used temporarily or permanently, depending on the need of the user (ASHA, 2004). AAC includes unaided modes of communication that rely on the individual’s body to transmit messages, such as gestures, signs, or facial expressions; AAC also includes aided communication modes that require

the use of tools outside of the individual's body (Beukelman & Mirenda, 2005; Johnston, Reichle, & Evans, 2004). Thus, AAC is multi-modal and enables a child to use any mode possible to communicate messages and ideas (Ronski & Sevcik, 2005).

Hourcade et al. (2004) provided an overview of the historical development of AAC services: In the 1950s-1970s, early practices utilizing AAC primarily relied on unaided forms of AAC, such as natural gestures and sign language, with limited use of communication boards, and an overall primary focus on speech development. In the 1970s-1980, the acceptance of sign language and other AAC techniques in lieu of speech for students with severe disabilities increased in popularity. Several aided symbol systems were developed during this time, including Bliss symbols, and early forms of electronic communication devices emerged. Simple switches and scanning devices were developed as well. From 1981-1990, AAC expanded tremendously as did the philosophy behind language intervention and AAC, with an increased emphasis in providing services within the natural environment. A greater variety of computer technology led to voice output devices. This time period also saw a combination of utilizing both unaided and aided AAC strategies to communicate a variety of functions and enhancing communicative power. Prior to 1990, individuals often had to demonstrate eligibility for AAC services by attaining certain prerequisite cognitive skills. From 1991 to the present, the expansion of AAC has shifted to the "acquisition of functional communication skills within natural environments," with AAC instruction "naturally embedded within the child's daily routines" along with a near total abandonment of the prerequisites once deemed necessary for services (Hourcade et al., 2004, p. 240). As such, the NJC position is now consistent with a zero exclusion policy with respect to determining an individuals' eligibility for AAC services (NJC, 2003b). This current period has also showed great advancements in the type of assistive technology available to individuals with significant communication disorders (Hourcade et al., 2004).

Evidence indicates that individuals with significant cognitive disabilities can use AAC successfully (Ronski & Sevcik, 1997, p. 364; Beukelman & Mirenda, 2005; Reichle & Yoder, 1985; Ronski & Sevcik, 2005; Ronski, Sevcik, & Pate, 1988). Due to the heterogeneous nature of the communication needs of students with significant cognitive disabilities, the utilization of AAC can provide access to the "power of

communication” by increasing communication skills and encouraging expressive and receptive language development (Light & Drager, 2007, p. 204; Millar, Light, & Schlosser, 2006; Ronski & Sevcik, 1997). Research suggests that utilizing AAC can increase communicative competence and also help develop oral speech production (Light, 1997; Millar, Light, & Schlosser, 2006). Essentially, “AAC has enormous potential to enhance the lives of individuals. It can promote independence, promote the development of social relationships, and facilitate the acquisition of skills in classroom settings” (Johnston et al., 2004).

Collaborative Teaming Barriers and Professional Development Needs

Differentiation of the communication levels of students with significant cognitive disabilities is often difficult, but is critical to ensuring accurate judgments about the skills and abilities of these students for effective communication programming that will transition students toward higher, “more recognizable levels” of symbolic communication (Carter & Iacono, 2002; Kleinert et al., 2010, p. 45). Thus, to successfully facilitate communicative competence in students with significant cognitive disabilities, all members of the trans-disciplinary team must accurately recognize when, how, and at what level these students communicate (Carter & Iacono, 2002; Iacono, Carter, & Hook, 1998; Kleinert et al., 2010; Rowland & Schweigert, 1993). Recent research suggests school personnel lack the skills and abilities to accurately identify the communicative levels of students with significant cognitive disabilities, may often not provide best practice services to individuals with severe disabilities, and encounter various barriers impacting effective collaboration (Cater & Iacono, 2002; Downing, 2005; Siegel et al., 2010). Research also suggests that professional development training can assist the school based disciplinary team in addressing the communication levels of students with significant cognitive disabilities and ensure these students have access to grade-level curriculum (Calculator & Black, 2009; Downing, 2005; Kearns et al., in press; McSheehan et al., 2006; Rainforth, York, & McDonald, 1992; Siegel et al., 2010; Towles-Reeves et al., 2009). This research indicates a need for professional development and in-service training for school personnel which is focused on identifying communicative competence and effective intervention strategies for students with

significant cognitive disabilities to achieve higher levels of communicative functioning and facilitate positive communication outcomes.

Learner Characteristics Inventory

The previous section of this paper outlined the need for identification and appropriate intervention for students with the most significant disabilities. As mandated by IDEA (1997, 2004), these students must be assessed along with the general school population and given access to the general school curriculum. Students with the most significant disabilities are typically included in the AA-AAS system for assessment. However, little is known about the learning characteristics and skill levels of this broad population of students.

Likely due to the heterogeneous nature of students participating in the AA-AAS, little research exists that precisely defines this population of students. Currently, there are only two studies that attempt to “compare the students participating in the AA-AAS across states” and describe the learning characteristics of these students (Kearns et al., in press, p.8; Towles-Reeves et al., 2009). Students in the AA-AAS with significant cognitive disabilities have historically been challenging to “measurement experts and educators who seek to understand what these students know and can do,” as these students exhibit highly variable skills in the areas of expressive and receptive language, vision, hearing, motor skills, and engagement (Kearns et al., in press, p.1). The *Learner Characteristics Inventory* (2006) was developed for the purpose of describing this heterogeneous population, which includes students with significant cognitive disabilities and complex communication disorders (Kearns et al., 2009; Kearns et al., in press; Towles-Reeves et al., 2009). The *Learner Characteristics Inventory* (LCI) is a valid and reliable tool developed by researchers at the National Alternate Assessment Center along with experts in the fields of occupational therapy, physical therapy, speech-language pathology and communication disorders, deaf-blindness, reading, mathematics, and special education (Towles-Reeves et al., 2009). The instrument includes 10 questions: nine that depict a broad range/continuum of skills in the areas of expressive communication, receptive language, vision, hearing, motor, engagement, health issues/attendance, reading and mathematics; and one question that is a dichotomous variable asking if students used an augmentative communication device, and what type if

indicated (Kearns, Kleinert, Kleinert, & Towles-Reeves, 2006; Kearns et al., 2009; Towles-Reeves et al., 2009). When using the LCI, teachers are asked to rank where their student falls on this continuum for each skill area. Demographic information is also provided by the LCI, including student grade level, student disability label, English Language Learner status, classroom setting, and a description of the extent of speech-language intervention (Kearns et al., 2006).

Towles-Reeves et al. (2009) described the population of students participating in the AA-AAS, via a three-state investigation. While multiple areas are included on the LCI, information specifically regarding communication found that 63%-74% of students utilized symbolic means of communication (oral language, language-based AAC systems); 17%-26% of students were identified as emerging symbolic communicators, as they utilized understandable communication through modes such as gestures, pictures, or objects to express a variety of intentions, while an even smaller group of students (8%-11%) were pre-symbolic communicators, communicating via such modes as cries, changes in muscle tone or facial expressions. Towles-Reeves et al. (2009) found that overall, only a minority of students utilized AAC systems; furthermore, a strong correlation existed between levels of receptive and expressive communication skills and academic measures in reading and math.

In a larger seven-state study utilizing the LCI to describe over 12,500 students across the United States participating in the AA-AAS by Kearns et al. (in press), researchers found similar results, including that most students participating in the AA-AAS were symbolic communicators (61%-79%), while the smallest group of students included those at a pre-symbolic communication level (7%-17%). Initially Kearns et al. predicted that language skill development would improve across time, or the over number of years in school. Their research, however, found little change across the grade span in levels of communication and communicative competence. The percentages of students at pre-, emerging, or symbolic expressive communication remained essentially unchanged from elementary to high school, in all but one of the seven states studied. It is especially of interest that this state reported the greatest percentage of students who used AAC. Similarly, the researchers found little change in reading or mathematic skills and limited access to general curriculum.

The researchers in these studies also found that of the students communicating at pre-symbolic or emerging levels of symbolic communication, 50% or less had any form of AAC system, which may well have impacted communicative and academic competence (Kearns et al., in press; Towles-Reeves et al., 2009). Although these studies were cross-sectional data and not longitudinal studies, one would still expect significantly lower numbers of students at pre-symbolic levels in high school after multiple years of education and intervention. This however was not the case, as data in all but one state showed no significantly different change in communication competence across the grade-span. Obviously, this demonstrates the need for longitudinal studies designed to examine communication changes over the grade-span for students with significant cognitive disabilities, but the current data show an unsettling trend with only limited movement toward symbolic communication and use of AAC for students with the most significant cognitive disabilities.

As shown, recent research suggests students with significant cognitive disabilities evidence limited communicative and academic competence (Kearns et al., in press; Kearns et al., 2009; Kleinert et al., 2010; Towles-Reeves et al., 2009). Towles-Reeves et al. (2009) state, “instruments such as the LCI could be used to tailor professional development on the AA-AAS to ensure teachers receive in-service training that addresses the communication levels of their students, an essential variable in accessing the grade-level curriculum” (p. 251).

The Low Incidence Initiative Project Process

In light of the research described above, the Low Incidence Initiative/TAALC project was initiated by the Kentucky Department of Education. This initiative was designed in an effort to increase communicative and academic competence for school-aged students with low incidence disabilities participating in the AA-AAS. The LII project was created as part of a Kentucky State Personnel Development Grant. Funded in 2009, the LII model utilizes an innovative approach of working directly with school-based teams via distance technology coaching. This project trains teachers and related service personnel to implement research-based instructional practices to facilitate the communicative competence and academic achievement for students with significant cognitive disabilities, especially those with complex communication needs (CCN). From

2009 to 2010, the project worked with three school districts in the state of Kentucky. This project was distinctive as it worked with students with significant cognitive disabilities who experienced limited access to general curriculum and had substantial difficulties communicating with those around them, resulting in low communicative and academic competence.

The current study will analyze a pre-existing, non-identifiable data set from students and school personnel who participated in the LII. The following is an overview of the steps specific to the LII process.

LII Process Steps

1. *Recruitment*: School districts and team members educating students in the AA-AAS, such as teachers, related service personnel, and district technology specialists, expressed interest in and were recruited for participation in the LII program model. Collectively these team members will be referred to as “school personnel,” for the purpose of this study.
2. *Identification of students*: In each participating district two to four students were identified to participate in the LII. LII staff supplied program information to families and guardians.
3. *Description of current student status by school personnel*: Prior to the initiation of the LII program via district training, cooperating districts submitted pre-program data, which included video segments of targeted students in a variety of settings displaying current communicative output and academic programming, demographic information, and a teacher completed, *Learner Characteristics Inventory* (LCI) (Kearns, Kleinert, Kleinert & Towles-Reeves, 2006) (Appendix A). Each teacher and school personnel who participated in the LII program was provided with an initial packet of information, which explained the LII process, and included a Videotape Collection Protocol (Appendix B), which detailed what to include when collecting a video sample.
4. *Analysis of student status information by LII staff*: To obtain reliable pre-intervention and baseline LCI data, video segments of targeted students were analyzed and LCIs were scored by two LII staff, including a doctoral level special educator and speech-language pathologist. Inter-rater reliability was established

for the communication sections of the LCI, with 100% agreement in the provided data set.

5. *District Training:* Teachers, special educators, related service personnel, other district personnel and families of students participated in a face-to-face, on-site, one-day training, which included: 1) identifying communication with students with CCN; 2) facilitating communicative competence and academic achievement with students with significant cognitive disabilities, via developing communication within academic content, and; 3) an overview of the LII process. During this training, each team reviewed the baseline tapes of targeted students. With assistance from LII staff members, the educators and other school personnel collaborated to develop an evidence-based Action Plan and initial communication goals for each student. Joint problem solving and technological assistance were provided throughout this process, and Augmentative and Alternative Communication (AAC) systems were suggested when indicated. At the end of the district training, participants completed a satisfaction survey.
6. *Weekly data:* After returning to their school, teachers were asked to record data to monitor student progress toward weekly goals. During each data collection session, teachers were asked to record the topic or educational task, the number of student initiations and responses (via AAC or other communication modalities), and whether the communication partner was an adult or peer.
7. *Coaching calls and progress monitoring:* One of the most unique and important elements of the LII process included regular use of coaching the entire school team for each targeted student. Utilizing distance technology (audio conferencing via telephone meetings), coaching calls occurred weekly or bi-monthly between the school team for each district (including families of target students) and LII staff to provide technical and evidence-based instructional support. The agenda for coaching calls involved: reporting of student data, discussion of progress or challenges, solving problems that arose, updating action plans, and discussion of weekly assignments. Calls focused on developing and increasing the student's communication throughout his or her educational day via inclusion in academic learning activities. Coaching calls occurred for six to 12 weeks. Coaching calls

included all participating personnel in each district, with the goal of providing each team access to other professionals with whom they could learn and problem-solve. Team members were asked to complete anonymous weekly satisfaction surveys after each coaching call. Students were also videotaped throughout the LII process, as an easily accessible means to view progress throughout the program. Videotapes of target students were kept on file in each district for future teachers and therapists working with these students.

8. *On-site visits:* LII staff made follow-up school visits and on-site meetings for a few specific students and their teams if needed to gain a better understanding of the challenges these teams were encountering. This occurred for four of the ten students involved in the project. Suggestions and discussion of observations occurred with all team members regarding the best evidence-based solutions for their student.
9. *Post-LII status per school personnel:* Post-LII video segments were obtained for each student, along with repeated measures of the communication sections of the LCI (Kearns, Kleinert, Kleinert & Towles-Reeves, 2006) (Appendix A).
10. *Post-LII status analysis by LII staff:* Post-LII video segments of targeted students were reviewed and the communication sections of the LCI were scored by two LII staff, including a doctoral level special educator and speech-language pathologist. Inter-rater reliability was established for the communication sections of the LCI, with 100% agreement in the provided data set.
11. *LII Data Collection and Evaluation:* The following complete set of information was obtained from LII participants: demographic information, weekly action planning data collection forms, pre-program and post-program *Learner Characteristics Inventory*, pre- and post video samples, satisfaction surveys, and anecdotal comments from coaching calls.

Purpose of the Current Study

The purpose of this study was to examine a pre-existing data set collected from the first year of the Low Incidence Initiative/TAALC project (2009 to 2010) to determine if that model facilitated improved communication levels in students who participate in the

AA-AAS with complex communication needs (CCN). This study also sought to determine the success of the model in training teachers and school personnel to accurately identify the level of communicative functioning of their students, and finally to analyze participating school-based teams' and parents' satisfaction with the model. This study analyzed only a non-identifiable pre-existing data set collected by LII staff members.

Research Questions

The following research questions were addressed in this study:

1. Does the use of the LII model facilitate student progress toward symbolic communication in students with significant cognitive disabilities participating in the AA-AAS, as measured by the Learner Characteristics Inventory (Kearns, Kleinert, Kleinert & Towles-Reeves, 2006)?
2. Is the LII model effective in training teachers and school personnel to accurately identify levels of communication of students participating in the AA-AAS, as measured by the Learner Characteristics Inventory?
3. Were school personnel and parents satisfied with the LII model and what themes emerge within their comments regarding the LII model?

CHAPTER THREE: METHODOLOGY

Overview

This study is a retrospective analysis of pre-existing data collected by the LII, and includes the following information: anonymous student identification numbers, grade-level, disability category as described by the student's teachers, teacher completed and LII-staff completed pre- and post-LCIs, anonymous satisfaction surveys, and anecdotal comments from coaching calls. This study examines a pre-existing data set to determine the following: (1) Does the use of the LII model facilitate student progress toward symbolic communication in students participating in the AA-AAS, as measured by the LCI (Kearns, Kleinert, Kleinert & Towles-Reeves, 2006)? (2) Is the LII model effective in training teachers and school personnel to accurately identify levels of communication of students participating in the AA-AAS, as measured by the LCI? (3) Were school personnel and parents satisfied with the LII process and what themes emerge within their comments regarding the LII process?

This study was approved by the University of Kentucky Institutional Review Board, which reviewed all components of this study. A copy of the IRB document is included in Appendix C.

Data Selection Criteria

Data utilized in this study were provided by the LII, and were in existence prior to this study. LII staff provided a non-identifiable data set on ten student participants and 24 adult participants involved in the first year of the LII grant, from August 2009 through May 2010. For inclusion in the data analysis for this study, the student data set was required to contain pre- and post school personnel completed LCIs (including demographic data) and pre- and post-LII staff completed LCIs. Only four of the descriptive items on the LCI, which were directly related to communication status, were included in the analysis for this study. Those sections were: Augmentative Communication System, Speech Language as a Related Service, Expressive Communication, and Receptive Language. All student data were included in research questions one and two analyses. Anonymous teacher and school personnel satisfaction surveys, as well as other anecdotal information, were also provided by LII staff. All

satisfaction surveys and other anecdotal information were included in analysis for research question three.

The Data Set

Quantitative Data

Student participant demographic data. The data set to be analyzed was comprised of non-identifiable information on ten student participants from three school districts in the LII. All student participants participated in the AA-AAS in the state of Kentucky, and students ranged from kindergarten to twelfth grade. Student participant demographic information is reported including the following: the number of participants by gender; grade level; IDEA disability label; classroom setting and speech-language delivery status both pre- and post-intervention. Detailed participant information is provided in Table 4.1.

Student participant communication status data. Student progress data included pre- and post-communication status as judged by LII-staff via the Learners Characteristic Inventory. Specific elements included receptive language, expressive communication, and AAC system status.

Learner Characteristics Inventory agreement data. The data set included school personnel Learners Characteristic Inventory judgments and LII expert staff Learners Characteristic Inventory judgments regarding pre- and post-communication status of each student participant.

Qualitative Data

Satisfaction surveys. The data set included 18 anonymous satisfaction surveys completed by school personnel and parent participants after district trainings and coaching calls. Respondents to the surveys included both males and females, in the following professional positions: general educator, special educator, speech language pathologist, occupational therapist, physical therapist, paraeducator, district technology specialist, school principal, other school personnel as needed for each student, and parents. Survey completion was not mandatory; therefore, some team members completed all surveys and some did not. While all survey responses that were collected were analyzed, responses may not reflect all 24 participants on each survey.

Other qualitative data. The data set also included other anecdotal information obtained by LII staff throughout the LII program model, including coaching call notes from each coaching call, email correspondence, and end-of-program summaries provided by school personnel. All anecdotal information provided was analyzed.

Intervention Conditions

This study uses data collected by the LII during the implementation year of 2009 to 2010. As a result, all intervention conditions were those carried out by the LII. Detailed information regarding the LII process is explained above in Chapter 2, under the heading “Low Incidence Initiative Project Process.” Each student and school-based team in the LII received individualized technical assistance and instructional support in planning and monitoring the implementation of their action plan.

Data Analysis

Question One

Question one asked: Does the use of the LII model facilitate student progress toward symbolic communication in students participating in the AA-AAS, as measured by the LCI? Analysis for question one utilized student pre- and post-LCIs data, completed by expert project staff using taped samples of the participating students. Data included information on the following four descriptive items: Expressive Communication, Receptive Language, and Augmentative Communication System/Type. Inter-rater reliability was 100% agreement on judgments made by the LII staff regarding the communication sections of the LCI. Pre-post student data were analyzed for progress on the LCI and a percentage of overall group change was established.

Once the pre-post student data were analyzed, if a given student’s pre-post LCI status remained at the emergent level of expressive communication but anecdotal data from information gained during the project from school personnel and end of project videos indicated a change in the student’s communicative behavior, it was determined that a finer instrument other than the LCI should be used to analyze that student’s expressive status. The instrument chosen was the *Seven Levels of Communicative Competence* developed by Rowland & Schweigert (2011, 1989). This instrument has seven rather than three levels, by which to analyze a student’s expressive output. Levels

III to V equate to the LCI's emergent symbolic level, but with greater specificity regarding communicative behaviors and so can account for smaller incremental changes within the stage of emergent symbolic communication. This tool is included in Appendix D.

Question Two

Question two asked: Is the LII model effective in training teachers and school personnel to accurately identify levels of communicative functioning of students participating in the AA-AAS, as measured by the LCI? Analysis for question two utilized school personnel scored pre- and post- LCIs (including information on the following two descriptive items: Expressive Communication and Receptive Language) and compared those to the LCIs scored by the project staff. A count and percentage of responses from school personnel that were in agreement with expert LII staff (i.e., matched the LCI expert scoring) regarding the student's level of communicative functioning was obtained.

Question Three

Question three asked: Were school personnel and parents satisfied with the LII process and what themes emerge within their comments regarding the LII process? Two forms of analysis were used for question three:

Quantitative. School personnel and parent completed satisfaction surveys were analyzed and the investigator obtained levels of satisfaction by converting Yes/No responses and Likert-scale responses to numerical forms. All data were entered into a Microsoft Excel spreadsheet and analyzed for percentages and means where appropriate. Post district training satisfaction surveys were included from District B and C. A post district training satisfaction survey from District A was not provided. Thus, a total of 16 additional satisfaction surveys following coaching calls were included in the data set, with five surveys from District A, six surveys from District B, and five surveys from District C.

Qualitative. Adult participant open-ended comments to satisfaction surveys following the trainings and coaching calls, and other anecdotal data (i.e., email correspondence and coaching call notes) were also analyzed using qualitative methods to determine common themes.

Reliability for Question Three

Open-ended survey question responses and all other anecdotal data provided from the first year of LII implementation were compiled. A total of 227 qualitative statements were included. After reviewing all comments, the author identified 12 preliminary themes. Next, the author reviewed and explained the categories developed with a second reviewer. Then the author and the second trained reviewer independently read the comments and descriptions, and together reduced and revised the major themes from 12 to seven. The seven major themes identified by the author and the second reviewer included the following:

1. Behavior Changes: increased interaction, alertness, positive affect, and improved behavior of student.
2. Parental Involvement: importance of parental and/or guardian involvement.
3. Communication Outcomes: Increased sophistication in communicative output of student and increase or improvement in supports for communication in place.
4. Evidence of Adult Participant's Knowledge of Communication: increased ability by adult participants to read student's communication, increased opportunity provided for students to communicate, acknowledgement and responsiveness of communication by school personnel.
5. Inclusion in General Curriculum: access to general curriculum, membership and participation in the regular classroom with same-aged peers.
6. Evidence of Adult Utilization of Training Elements: improved instructional skills and increased team interaction, collaboration, and data monitoring.
7. Critique of the LII Process: suggestions for change and positive/negative satisfaction.

After establishing the above categories, the investigator and the second reviewer independently reviewed all qualitative information and sorted the data into one of the above-mentioned categories. After beginning analysis of comments, the investigator and second reviewer agreed upon the addition and need of an eighth theme. The theme was as follows:

8. Barriers to Implementation: barriers to implementation of LII suggestions and LII process.

Reliability in coding and classification of qualitative data was established across the author and the second reviewer. Initial agreement between the author and second reviewer was 87%. Disagreements between categorizations were discussed and agreed upon to obtain a 100 percent inter-rater reliability rating.

Comments within Theme Seven: “Critique of the LII Process” were further analyzed to determine the following: (1) the percentage of negative comments or dissatisfaction with the LII process; (2) the percentage of positive comments or satisfaction with the LII process; and (3) the percentage of constructive comments regarding the LII process. Reliability in coding and classification of theme seven was established across the author and the second reviewer. Initial agreement between the author and second reviewer was 88%. Disagreements between categorizations were discussed and agreed upon to obtain 100% inter-rater reliability.

CHAPTER FOUR: RESULTS

Demographic information of the student participants in this non-identifiable data set is displayed in Table 4.1. Results of the three major research questions are displayed as follows: For Question one, *Does the use of the LII model facilitate student progress toward symbolic communication in students participating in the AA-AAS, as measured by the LCI?*, results are located in Tables 4.2, 4.3, 4.4, and 4.5 and Figures 4.1, 4.2, 4.3, and 4.4. For Question two, *Is the LII model effective in training teachers and school personnel to accurately identify levels of communicative functioning of students participating in the AA-AAS, as measured by the LCI?*, results are located in Tables 4.6 and 4.7. For question three, *Were school personnel and parents satisfied with the LII process and what themes emerge within their comments regarding the LII process?*, results are located in Tables 4.8, 4.9, 4.10 and Figure 4.5, 4.6, 4.7, and 4.8.

Student Demographic Information

Student demographic information is displayed in table 4.1. Student participants in the LII included four males and six females. Of the 10 students' data analyzed, six (60%) were elementary school students, one (10%) was a middle school student, and three (30%) were high school students. Demographic data for all of the ten LII students included information on their IDEA disability category as defined by their educational program. Of the ten students in the LII project, two (20%) students were categorized as having autism, one (10%) student was categorized as having an emotional behavior disorder, one (10%) student was categorized as having an orthopedic impairment, two (20%) students were categorized as having multiple disabilities, and four (40%) students were categorized as having an intellectual disability. One of the four students placed in the intellectual disability category was classified as having a Functional Mental Disability (FMD), a category used in Kentucky to reflect moderate to severe intellectual disabilities, while the other three students were unspecified. No students were categorized under the

remaining IDEA labels. Specific information detailing the inclusive nature of the child's classroom setting, as well as speech-language service delivery models, is identified below in Table 4.1.

Table 4.1: Student's grade level, gender, disability category, classroom setting and speech-language service delivery model.

Student Non-Identifiable label	Gender	Grade Level	Disability Category	Classroom setting (PRE)	Classroom setting (POST)	Speech-language Services (PRE)	Speech Language Services (POST)
1	Female	Kindergarten	Autism	6	6	1 & 2	1 & 2
2	Female	9	Mental Retardation (FMD)	4	4	2	2
3	Male	12	Mental Retardation	4	3	2	2
4	Female	7	Mental Retardation	4	4	1	2
5	Female	3	Emotional Disability	5	3	2	1
6	Male	1	Autism	4	4	1 & 2	2
7	Male	3	Multiple Disabilities	2	3	1	2
8	Female	3	Orthopedic	5	5	2	2
9	Female	11	Mental Retardation	5	4	2	2
10	Male	5	Multiple disabilities	3	3	3	3

Classroom setting	Speech-language Services
1 = Special school 2= Regular School, self contained classroom for almost all activities 3= Regular school, self contained classroom except for homeroom, lunch, and specials 4= Self contained 5= Resource room 6 = Inclusive Collaborative	1 = Direct services for communication/language therapy (pull-out) 2 = Direct services integrated into student's routine/classroom collaboration 3 = Consultation services only 4 = Student does not receive speech-language services

Question One: Changes in Student Communication Status

In order to be included for the overall analysis of question one, student data had to include pre- and post-communication portions of the LCI as judged by LII project staff. Of the total 10 student data sets, all 10 met this criterion.

Changes in Communication Status of Students

Table 4.2 identifies each individual student's Receptive Communication, Expressive Communication and Augmentative Communication System status pre- and post-project participation as judged by LII project staff. The LCI includes four levels of receptive communication and three levels of expressive communication. A detailed description of the levels of AAC system complexity used is listed below Table 4.2. Briefly, however, the four levels of AAC complexity included: 1) Uses only a few single signs or symbols; 2) Can combine two symbols with broader intents expressed; 3) Uses multiple iconic symbols or signs functionally; 4) Uses multiple abstract symbol, signs, or print (i.e., true language users). Tables 4.3 and 4.4 and Figures 4.1, 4.2, 4.3 and 4.4 display changes from pre- to post-LII participants in the areas of Expressive Communication, Receptive Language, use of AAC system and complexity of AAC system used for each student.

Receptively, 20% of students demonstrated improvement in Receptive Communication status. While this percentage seems small, 30% of students were already at the highest level of receptive communication on the LCI prior to the start of the project and so could not demonstrate an increase receptively. It should be noted that one student began the LII project already at the highest level of Receptive and Expressive Communication on the LCI.

Expressively, 40%, or four of ten student participants showed improvement on the LCI moving from either pre-symbolic to emerging-symbolic or emerging-symbolic to symbolic Expressive Communication. Initially, one student began the LII project already at the highest level of Expressive Communication on the LCI. At the end of the project, 40% (or four of the ten participants) were at the highest level of Expressive Communication on the LCI.

Student 10 was the only student identified as pre-symbolic both expressively and receptively before the LII project. During the three month LII-project, this student moved to the emergent levels of receptive language and expressive communication.

Table 4.2: Student Pre- and Post-LII project Communication Status on the LCI as judged by LII staff

Student Non-Identifiable label	Receptive Language		Expressive Communication		AAC System		Type of AAC**	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	Emerging	Symbolic	Emerging	Symbolic	Yes	Yes	1	3
2	Emerging	Emerging	Emerging	Emerging	Yes	Yes	1	1
3	Symbolic	Symbolic	Emerging	Symbolic	Yes	Yes	2	4
4	Emerging	Emerging	Emerging	Emerging	No	Yes	0	1
5	Symbolic	Symbolic	Symbolic	Symbolic	No	No	0	0
6	Symbolic	Symbolic	Emerging	Symbolic	Yes	Yes	2	3
7	Emerging	Emerging	Emerging	Emerging	No	Yes	0	1
8	Emerging	Emerging	Emerging	Emerging	No	Yes	0	1
9	Emerging	Emerging	Emerging	Emerging	Yes	Yes	1	1
10	Pre-symbolic	Emerging	Pre-symbolic	Emerging	Yes	Yes	1	1

**Type of AAC as described by the *Learner Characteristics Inventory*

1 = Uses only one symbol or sign at a time and is able to use only a few symbols in total to express simple or early intents

2= Can combine two symbols together to express broader intents such as social content, answer simple questions, etc.

3= Uses mostly iconic symbols or signs together in sequence to express functional intents, extensive social interactions, academic content, and to respond consistently to answer questions.

4= Uses multiple abstract symbols, signs, or print in sentences or phrases on the AAC system to express a variety of academic, social, and self-initiated interactions.

Table 4.3 Changes in Pre- and Post- communication status of students as judged by LII staff

		%		Average Difference Post/Pre	Number of Improvers
		Pre	Post		
Receptive Language	Pre-symbolic	10%	0%	0.2	2
	Emerging	60%	60%		
	Symbolic	30%	40%		
Expressive Communication	Pre-symbolic	10%	0%	0.4	4
	Emerging	80%	60%		
	Symbolic	10%	40%		

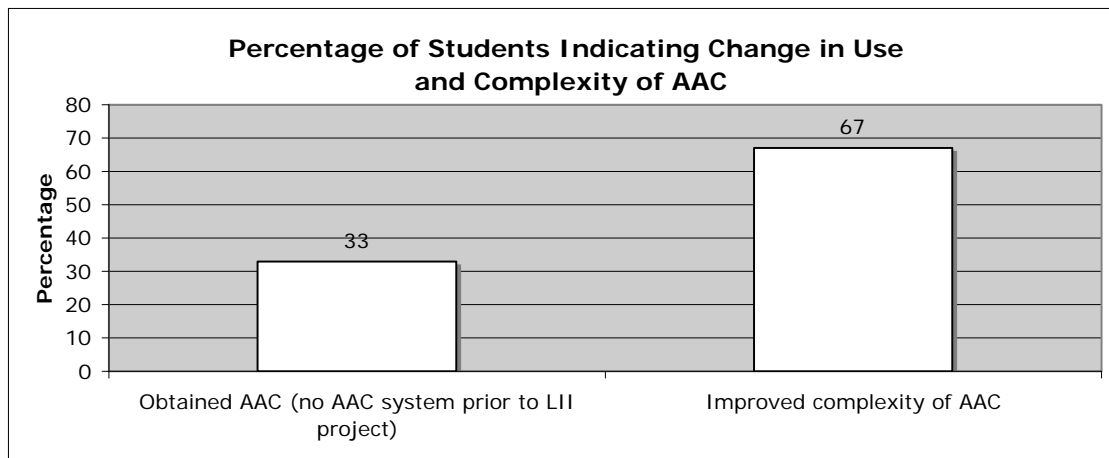
In regard to AAC, one student was already a symbolic communicator both expressively and receptively and did not require an AAC system to communicate. Of the remaining nine, 33% of students (3 out of 9) initially had no AAC system in place and obtained an AAC system during participation in the project. Therefore, 100% of students who began without AAC ended the project with AAC, and 67% of students in the project increased the complexity of the AAC system used. Two students (22%) moved up two levels of complexity of the AAC system utilized, four students moved up one level (44%) of complexity of the AAC system utilized and three students (33%) remained the same in the complexity of AAC system utilized. Notably, Students 1 and Student 3 gained two levels in AAC complexity in only twelve weeks of participation in the LII project. While Students 2, 8, and 10 remained the same in the complexity of AAC system utilized, each student moved from physical prompting to independent use of their AAC device. Unfortunately, the LCI instrument does not account for this finer shift in ability.

Table 4.4: Changes in use of AAC system in students as judged by LII staff

	%		Number of AAC systems gained
	Pre	Post	
Use of AAC	66%	100%	3

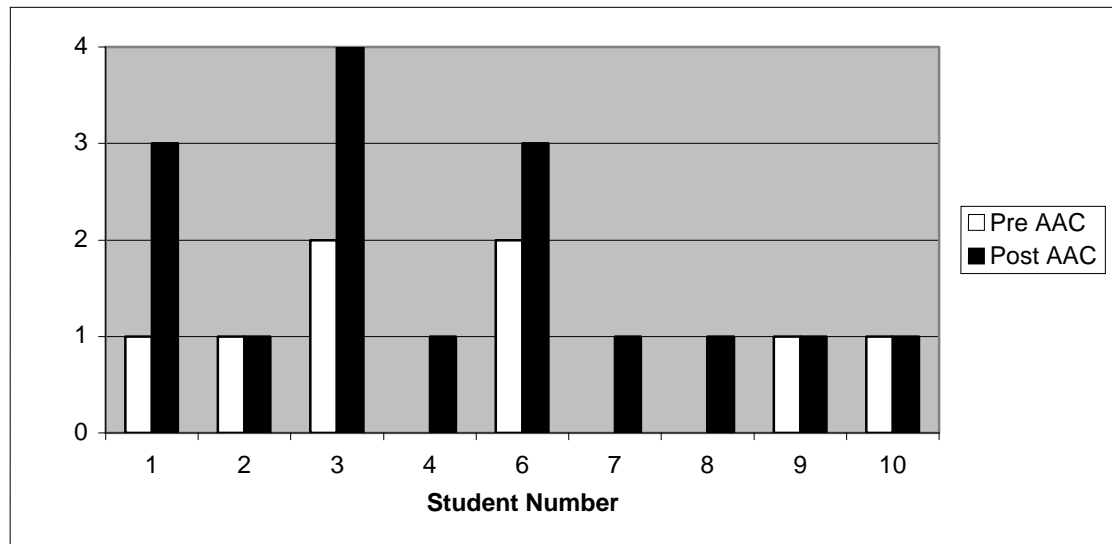
Note: Based on nine out of 10 students, as Student 5 was a symbolic communicator via oral speech and AAC was not needed for communication.

Figure 4.1: Percentage of Students Evidencing Change in Use and Complexity of AAC



Note: n = 9 for Figure 4.1, as Student 5 did not require AAC.

Figure 4.2: Changes in complexity of AAC used by students as judged by LII staff



****Note:** Student 5 did not require AAC

****Type of AAC as described by the *Learner Characteristics Inventory***

0 = No AAC system implemented

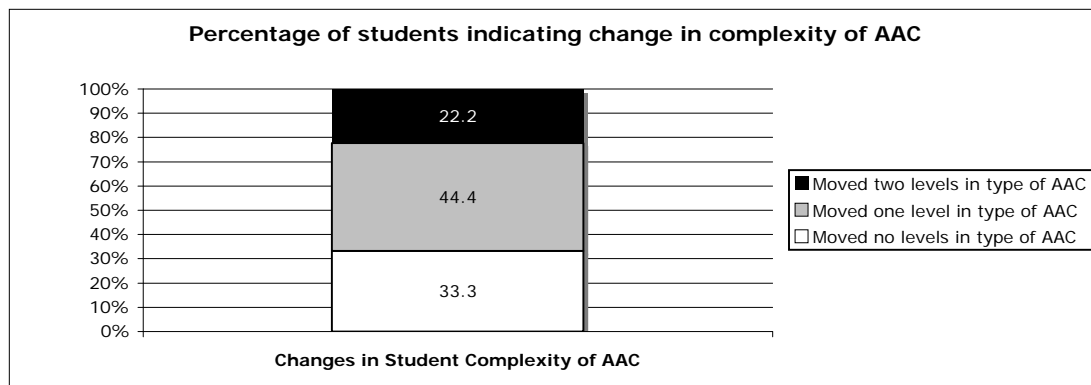
1 = Uses only one symbol or sign at a time and is able to use only a few symbols in total to express simple or early intents

2= Can combine two symbols together to express broader intents such as social content, answer simple questions, etc.

3= Uses mostly iconic symbols or signs together in sequence to express functional intents, extensive social interactions, academic content, and to respond consistently to answer questions.

4= Uses multiple abstract symbols, signs, or print in sentences or phrases on the AAC system to express a variety of academic, social, and self-initiated interactions.

Figure 4.3: Percentage of Students Evidencing Change in Complexity of AAC



Note: Based on nine out of ten students, as Student 5 did not require AAC.

Changes in Students Remaining at Emerging Level of Expressive Communication

Five students remained at the emerging-symbolic level of Expressive Communication on the LCI. However, video samples and anecdotal data indicated a positive shift in the complexity of their use of expressive communication. This indicates that the LCI may not be a fine enough instrument to reflect such smaller but important improvements. Therefore, a second instrument, the *Seven Levels of Communicative Competence* by Rowland & Schweigert (2011, 1989), was utilized to determine if these students had made gains in the complexity of their expressive communication output. As noted in the methodology section, this *Seven Levels of Communicative Competence Model* sub-divides emergent-symbolic communication usage into three more defined levels. These are: Level III: Nonconventional pre-symbolic communication; Level IV: Conventional pre-symbolic communication; and Level V: Concrete symbolic communication.

Table 4.5 displays changes in the level of Expressive Communication utilizing the Rowland and Schweigert tool (2011, 1989) for the five students who remained at the emerging-symbolic level of Expressive Communication as measured by the LCI. Of these five students, 100% demonstrated an increase in the complexity level of expressive communication within the emergent-symbolic level on the Rowland and Schweigert hierarchy of communication development. Four (80%) of these students increased to the highest level of emergent-symbolic communication, indicating they were very close to true symbolic communication. Student 8 was the only student who did not reach Level V, but that student did demonstrate gains within the emergent-symbolic level of expressive communication. This student was extremely medically fragile and missed a large portion of school during the intervention, which likely impacted her results.

Table 4.5: Changes in students remaining at emergent levels of Expressive Communication when utilizing Rowland & Schweigert's (2011, 1989) Seven-Level Analysis

Student Non-Identifiable Label	Emergent Level of Expressive Communication**	
	Pre	Post
2	4	5
4	3	5
7	3	5
8	3	4
9	3	5

**Rowland & Schweigert's (2011, 1989) Emergent Levels of Expressive Communication:

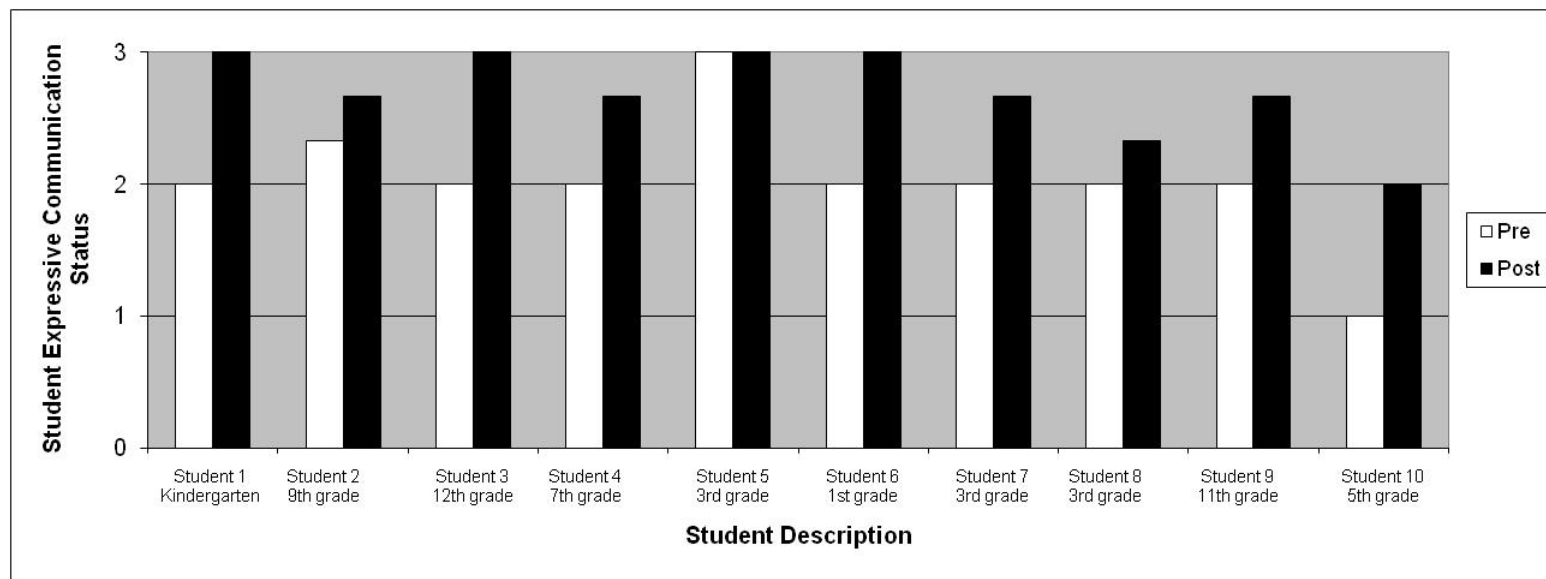
3 = Nonconventional pre-symbolic communication (e.g., whine, push away)

4 = Conventional pre-symbolic communication (e.g., alternating gaze, point, shake head)

5 = Concrete symbolic communication (e.g., natural gestures, tangible objects or pictures)

As a follow-up to Table 4.5, Figure 4.4 demonstrates changes in Expressive Communication of all students participating in the LII program. Student 5 was already at the symbolic level of expressive communication prior to the start of the LII. Of the remaining nine students, 100% demonstrated improvement in expressive levels of communication.

Figure 4.4: Changes in Expressive Communication as judged by LII-staff



Expressive Communication

3 = Symbolic

2 = Emerging

1 = Pre-symbolic

Question Two: Accuracy of School Personnel in Identifying Communication Levels

The second analysis for this study answered the question: Is the LII model effective in training teachers and school personnel to accurately identify levels of communicative functioning of students participating in the AA-AAS, as measured by the LCI? In order to analyze question two, pre- and post-LCIs scored by the school personnel and LII expert staff were compared. A percentage of agreement was determined between the school personnel and LII project staff on the pre-post LCIs scoring for each student.

Analysis of School Personnel Accuracy for Identification of Receptive Language Status

Results of this analysis are displayed in table 4.6. Results indicate a 30% agreement or accuracy rate by school personnel in identifying students' level of receptive language prior to participation in the project, and a 50% agreement or accuracy rate for identifying students' level of receptive language after participation in the project. While this suggests some improvement in the ability of school personnel to accurately identify the communicative behaviors of students with significant cognitive disabilities, a discrepancy still existed between judgments made by school personnel and those made by the LII staff. As demonstrated in Table 4.6, school personnel routinely scored students lower than their actual communication level (as judged by communication experts) when discrepancies occurred. As depicted in Table 4.7 school personnel more often struggled in identifying receptive language levels than expressive communication levels.

Table 4.6: Accuracy of school personnel in identifying receptive language levels prior to and after participation in the LII project.

Student Non- Identifiable label	Receptive Language Pre		Agreement 1 = Yes 0 = No	Receptive Language Post		Agreement 1 = Yes 0 = No
	School personnel	LII Staff		School personnel	LII Staff	
1	1	2	0	2	3	0
2	2	2	1	2	2	1
3	3	3	1	3	3	1
4	1	2	0	1	2	0
5	2	3	0	3	3	1
6	2	3	0	2	3	0
7	1	2	0	1	2	0
8	2	2	1	2	2	1
9	1	2	0	2	2	1
10	0	1	0	1	2	0
			30% agreement			50% agreement

Receptive Language
3 = Symbolic
2= Emerging
1= Pre-symbolic
0 = Uncertain response to sensory stimuli

Analysis of School Personnel Accuracy for Identification of Expressive Communication Status

Results of this analysis are displayed in table 4.7. Results indicate a 50% agreement or accuracy rate for identifying student's level of expressive communication by school personnel prior to participation in the Low Incidence Initiative, and a 70% agreement or accuracy rate in identifying student's level of expressive communication after participating in the LII project. While this also suggests some improvement in the ability of school personnel to accurately identify the communicative behaviors of students with significant cognitive disabilities post-LII, a discrepancy still exists between judgments made by school personnel and those made by the LII staff. As demonstrated in Table 4.7 on every inaccurate interpretation, school personnel routinely scored students lower than their actual communication level, indicating a need for continued training on how to recognize and interpret the communicative acts of students with significant cognitive disabilities.

Table 4.7: Accuracy of school personnel in identifying expressive communication levels prior to and after participation in the LII project.

Student Non-Identifiable label	Expressive Communication Pre		Agreement 1 = Yes 0 = No	Expressive Communication Post		Agreement 1 = Yes 0 = No
	School personnel	LII Staff		School personnel	LII Staff	
1	1	2	0	3	3	1
2	1	2	0	2	2	1
3	2	2	1	3	3	1
4	1	2	0	2	2	1
5	3	3	1	3	3	1
6	2	2	1	3	3	1
7	1	2	0	1	2	0
8	2	2	1	1	2	0
9	1	2	0	1	2	0
10	1	1	1	2	2	1
			50% agreement			70% agreement

Expressive Communication
3 = Symbolic
2= Emerging
1= Pre-symbolic

Question Three: Satisfaction with the LII Process

The third analysis for this study answered the question: Were school personnel and parents satisfied with the LII process and what themes emerge within their comments regarding the LII process? Analysis for question three included responses to satisfaction surveys and other anecdotal information obtained from the LII process.

Satisfaction Surveys

School personnel and parent completed satisfaction surveys from the initial district trainings and weekly coaching calls were also analyzed. The investigator obtained percentages and/or means from Yes/No responses and Likert-scale responses. Surveys are included in Appendices E and F.

District Training Satisfaction Surveys: Quantitative Results

District training satisfaction surveys were available for District B and C. A training satisfaction for District A was not provided. A total of 19 total school personnel and/or parents responded to the district training surveys. Tables 4.8 and 4.9 and Figure 4.5 display satisfaction with the LII district trainings from District B and C. Three satisfaction survey questions were used to determine the following: 1) overall training satisfaction; 2) satisfaction related to specific aspects of the training; and 3) usefulness of the training information for school personnel. Responses for all three questions included either a five-point Likert-scale item ranging from least (1) to most (5), or a six-point Likert-scale item, ranging from very dissatisfied (1) to very satisfied (6).

Figure 4.5 indicates 63% (12 out of 19) of training participants were very satisfied with the overall training and 37% (seven out of 19) of training participants were satisfied. Detailed satisfaction related to specific aspects of the training is displayed in Table 4.8. The average rating by school personnel for District B and C combined ranged from a mean of 5.5 to 5.8 out of 6.0, indicating high satisfaction. Detailed satisfaction related to the usefulness of the training information is displayed in Table 4.9. The average rating by school personnel for District B and C combined ranged from a mean of 4.5 to 4.7 out of 5.0 for the components of this question, also indicating high satisfaction. No survey respondents indicated any level of dissatisfaction with the initial LII training.

Figure 4.5: Satisfaction data obtained from the survey question: *Overall, how satisfied are you with the training?*

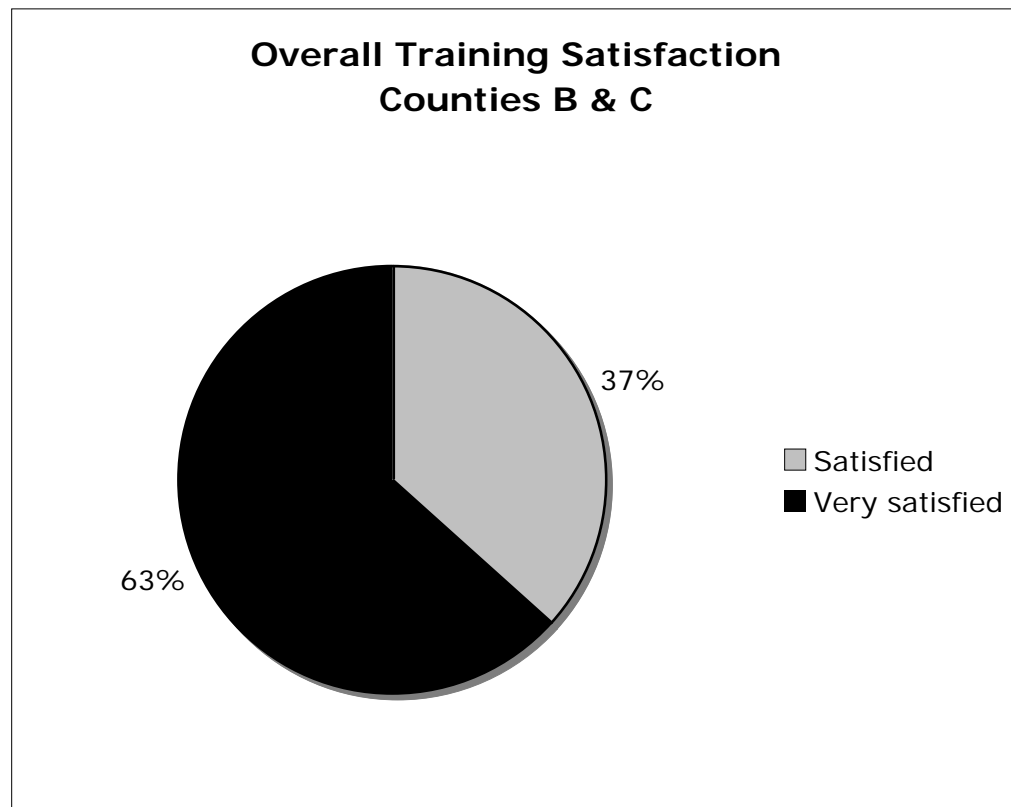


Table 4.8: Satisfaction with Specific Aspects of Training for Counties B & C

<i>Survey Question: Please rate your satisfaction with each of the following aspects of the overall training.</i>								
Answer Options	Very dissatisfied (1)	Dissatisfied (2)	Somewhat dissatisfied (3)	Somewhat satisfied (4)	Satisfied (5)	Very satisfied (6)	<i>n</i>	Mean
Quality of the information you received	0	0	0	1	6	12	19	5.6
Relevance of the information to your work	0	0	0	0	4	15	19	5.8
Organization of training/workshop day	0	0	0	0	5	13	18	5.7
Sensitivity of the trainer(s) to the participants	0	0	0	0	9	10	19	5.5
Opportunity for questions/discussion	0	0	0	2	5	12	19	5.5
Handouts or training materials	0	0	0	1	7	11	19	5.5

Note: This survey question is based on a 6-point Likert scale, ranging from very dissatisfied (1) to very satisfied (6).

Table 4.9: Usefulness of Training for Counties B & C

<i>Survey Question: How would you rate the primary features of the training in terms of usefulness for your work?</i>							
Answer Options	Least 1	2	3	4	Most 5	<i>n</i>	Mean
Definitions of symbolic language with video examples	0	0	0	6	13	19	4.7
Tools for blending communication and content	0	0	2	6	11	19	4.5
Analysis of local student tapes	0	0	1	5	12	18	4.6

Note: This survey question is based on a 5-point Likert scale, ranging from least (1) to most (5).

Coaching Call and LII-Process Satisfaction Surveys: Quantitative Results

Coaching call and LII process satisfaction surveys were available from Districts A, B, and C. A total of 16 total surveys were provided with five surveys from District A, six surveys from District B, and five surveys from District C over the course of the LII project in each district. Satisfaction surveys after each coaching call were used to determine if school personnel perceived benefits from the coaching calls, and if school personnel were utilizing training elements from the LII process. Figure 4.6 indicates 97% of responders (36 out of 37 responses) perceived benefits to the coaching calls. In regard to the implementation and utilization of strategies and suggestions provided throughout the LII process, Figure 4.7 indicates 92% of responders (31 out of 34 responses) utilized LII training elements. A detailed descriptive analysis of satisfaction is further provided via the analysis of themes obtained from the LII process qualitative data in the next section of this chapter.

Figure 4.6: Coaching Call Satisfaction Data obtained from the question: “Are you benefiting from coaching calls?”

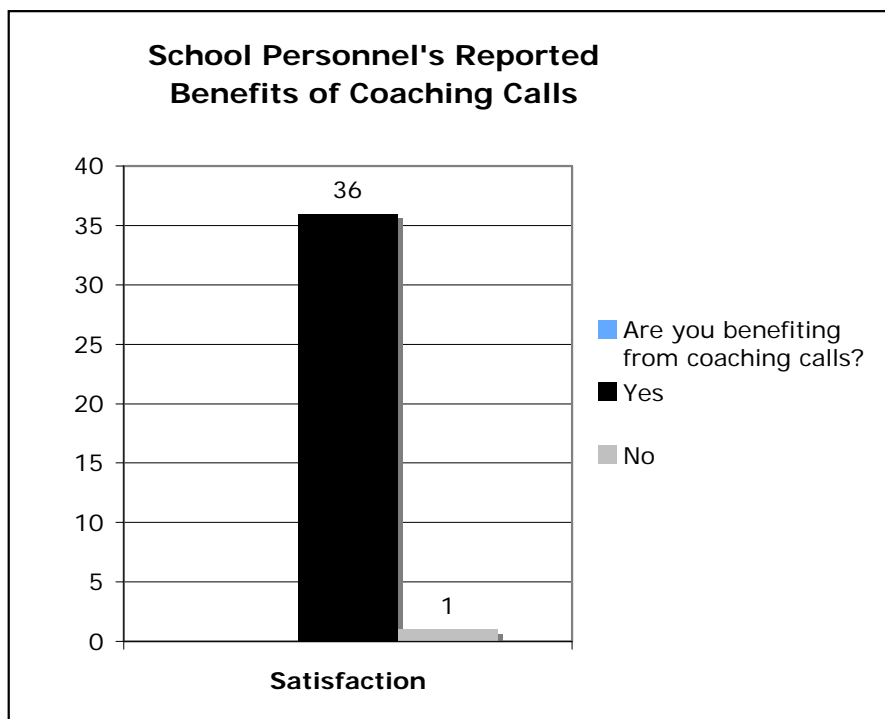
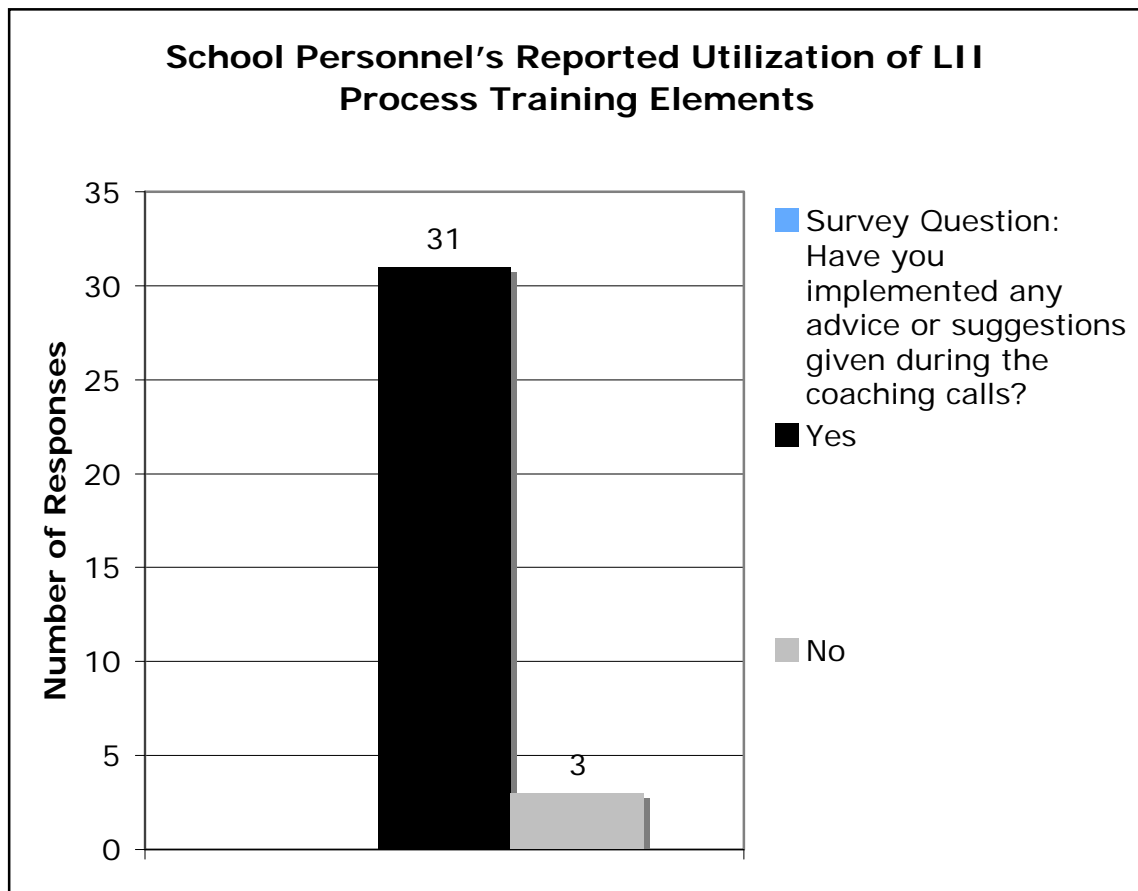


Figure 4.7: School Personnel's Reported Utilization of LII Process Training Elements



Qualitative Analysis of Comments Compiled During the LII project

Open-ended survey comments and other anecdotal information provided from the first year of LII implementation were reviewed and categorized into coding labels or themes as explained in the methodology chapter of this paper. As a result of the first year of implementing the Low Incidence Initiative, school personnel and parent participations provided 227 qualitative comments or statements. All descriptions were categorized into one of eight themes. Any discrepancies between themes were discussed. A final agreement of theme categorization was made for 100% inter-rater reliability between the author and second reviewer. Themes and exemplar comments are provided in Table 4.10.

Table 4.10: Theme distribution and example comments

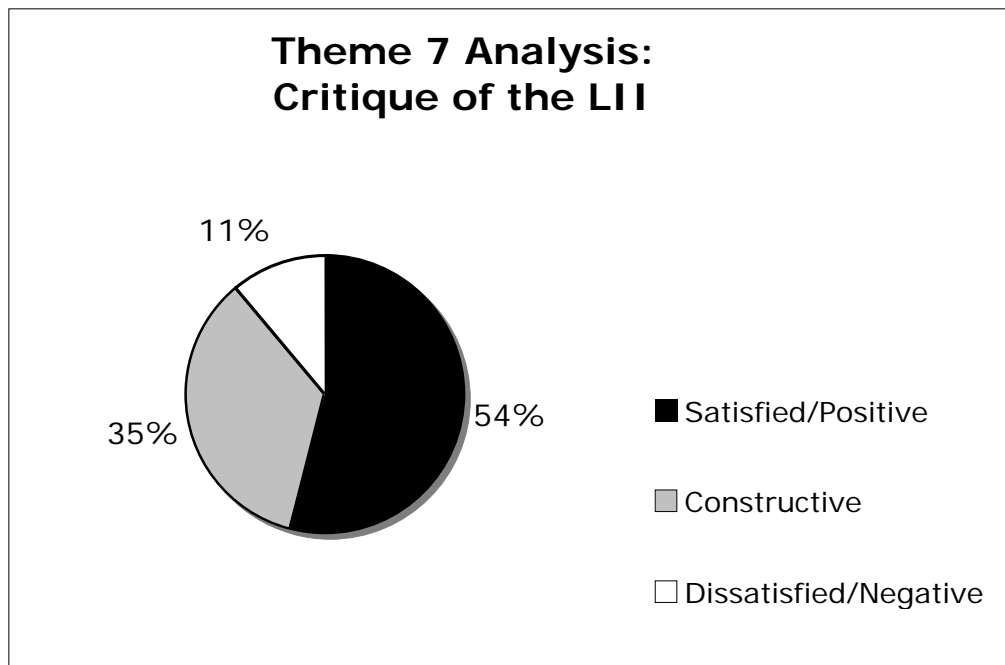
Theme	Exemplar Comments	n	%
Behavior Changes: increased interaction, alertness, positive affect, and improved behavior of student	<p>“Student 1 is much more interactive with peers and adults and overall just a happier child.”</p> <p>“Student 1 has a friend. The friend said the other day that Student 1 was “her best friend.”</p>	29	12.8
Parental Involvement: importance of parental and/or guardian involvement	<p>“Coaching calls helps me keep in touch & learn about what/how my child is being taught”</p> <p>“Student 5’s mom suggested having objects when reading (object box)”</p>	5	2.2
Communication Outcomes: Increased sophistication in communicative output of student and increase or improvement in supports for communication in place	<p>“Student 3 is using the device more and knows that it can get him what he wants”</p> <p>“Student 4 is differentiating switches, and she is moving closer toward multiple options.”</p> <p>“Student 1 is also using a picture schedule. Pulling the picture off and then after activity is completed putting it in finished box.”</p>	32	14.1
Evidence of Adult Participant’s Knowledge of Communication: increased ability to read student’s communication, increased opportunity to communicate, acknowledgement and responsiveness of communication by school personnel	<p>“We have learned not to give up so quickly and repeat activities, to give the student more opportunities to be successful.”</p> <p>“Student 8 has been vocalizing more. The more we affirm her vocalizations, eye gazes, etc., the more she communicates.”</p>	12	5.2
Inclusion in General Curriculum: access to general curriculum, membership and participation in the regular classroom with same-aged peers	<p>“We have implemented ways to have my non-verbal student more involved in classroom activities”</p> <p>“Trying to get Student 6 assigned to general classroom”</p>	28	12.3

Table 4.10 Continued

Theme	Exemplar Comments	<i>n</i>	%
<i>Evidence of Adult Utilization of Training Elements:</i> improved instructional skills and increased team interaction, collaboration, and data monitoring	<p>“Coaching calls help me in regard to direction of AAC with appropriate increments of increasing skill level.”</p> <p>“The coaching calls embed accountability. These calls force that actions are taken so plans are followed through.”</p>	35	15.4
<i>Critique of the LII Process:</i> suggestions for change and positive/negative satisfaction	<p>“Coaching calls motivates us to move forward and to see the progress is helpful as well.”</p> <p>“The time commitment is a little overwhelming”</p> <p>“Thank you for this opportunity--it has encouraged me to continue with high expectations from my child, but also from the school staff.”</p> <p>“We saw progress with everyone, including several other students in the classroom who were not part of the project”</p>	72	31.8
<i>Barriers to Implementation:</i> barriers to implementation of LII suggestions and LII process	<p>Challenges to implementing suggestions: “As a team, we feel the assignments have been above the student's abilities, both cognitively and physically.”</p> <p>“The student works best in the resource room.”</p> <p>“Student 8 has been absent this week due to health issues”</p>	14	6.2
Total		227	100

Theme Seven Analysis. Theme Seven “Critique of the LII Process,” identified in the qualitative analysis portion of the LII data set, yielded 72 comments. These comments were further analyzed to determine the following: (1) the percentage of negative comments or dissatisfaction with the LII process; (2) the percentage of positive comments or satisfaction with the LII process; and (3) the percentage of constructive comments regarding the LII process. Any discrepancies between sub-categorization were discussed. A final agreement of categorization was made for 100% inter-rater reliability between the author and second reviewer. Figure 4.8 displays the percentage of satisfaction, dissatisfaction and constructive comments provided by school personnel and parent LII participants regarding the LII process. Overall, 54% of comments (39 out of 72) indicated satisfaction and positive feedback regarding the LII process; 35% of comments (25 out of 72) provided constructive feedback regarding the LII process; and 11% of comments (8 out of 72) indicated dissatisfaction or negative feedback regarding the LII process.

Figure 4.8: Theme Seven Analysis, Critique of the LII Process



CHAPTER FIVE: DISCUSSION

This study was conducted for three primary purposes: (1) to determine if the use of the LII model facilitates student progress toward symbolic communication in students with significant cognitive disabilities; (2) to investigate if the LII model is effective in training school personnel to accurately identify levels of communication of students with significant cognitive disabilities; and (3) to determine if school personnel and parents were satisfied with the LII process.

Changes in Student Communication Status

Receptive Language and Expressive Communication

When analyzing changes in receptive language status *solely* utilizing the Learner Characteristic's Inventory, 20% of students improved by at least one level of complexity. Although this number may seem small, 30% of students began the LII process at the highest level of receptive communication (symbolic), and could subsequently not demonstrate improvement in this area when using the LCI as a measurement tool. These results are encouraging regarding the possible benefits of the LII model for developing receptive communicative competence in students with significant cognitive disabilities.

When analyzing changes in expressive communication status *solely* utilizing the Learner Characteristic's Inventory, 40% of students demonstrated improvement in expressive communication. This demonstrates that the LII program may represent a promising practice. While five of the students remained at the emergent level of expressive communication throughout the LII process, they also demonstrated anecdotal changes as noted by LII staff that were not readily observable using only the LCI. For example, in the descriptive comments accompanying the LII staff scored LCI, Student 9 demonstrated the following improvements: (1) Pre-LII, Student 9 was judged to communicate intentionally via pointing to preferred choices, pushing non-preferred items away, and hissing to express refusal; and (2) Post-LII, Student 9 was judged to communicate intentionally by activating a switch to request preferred items, indicate refusal and rejection, as well as make choices using pictures. Thus, while this student demonstrated changes toward more complex and standard forms of expressive communication, the LCI was not sensitive enough to depict Student 9's change in expressive output. Indeed, the authors of the LCI explain, "the LCI is a teacher report

instrument used solely to enhance the description of the student population. The instrument is also a gross categorization of abilities on a continuum of skills...As a result, this gross categorization may not be as sensitive to students' ability levels when compared with other measures," such as a direct observation instrument (Kearns et al., in press).

As a result of the need for a more finely graded instrument to demonstrate student progress of the five students remaining at the emergent level expressively, Rowland and Schweigert's (2011, 1989) seven level model of communicative competence was utilized. It should be noted that Rowland and Schweigert's description of the development of communication from pre-symbolic to symbolic is different than that used by Bates (1976, 1979), on which the LCI was based. Rowland and Schweigert's use of the term "pre-symbolic" in levels III and IV is not synonymous with Bates' use of the term pre-symbolic communication to mean lacking communicative intent. Instead, Rowland and Schweigert use Nonconventional Presymbolic Communication for Level III and Conventional Presymbolic Communication for Level IV, but indicate behavior "used with intent of affecting observer's behavior," and thus reflect a finer analysis of emerging, intentional symbolic communication as described by Bates (Rowland & Schweigert, 1989, p. 228; Bates, 1976). This example is one of many, as there are numerous descriptions of communication development in the literature that utilize similar terms but do not correspond in meaning. This suggests the need for research focused on the "standardization of terms and improved mutual understanding of communication development," so school personnel can effectively facilitate communication growth in students with significant cognitive disabilities (Kearns et al., in press).

When utilizing levels III through V of Rowland and Schweigert's model, 100% (5/5) of the students demonstrated improvement in the level of expressive communication. Furthermore, 80% of the students improved to the highest level of emerging expressive communication (level V) as described by Rowland and Schweigert (2011, 1989), with the exception of one student that was extremely medically fragile and missed a large portion of school days due to health-concerns, which likely impacted results. Since Student 5 began the LII process at the highest level of expressive communication, and four students progressed from either pre-symbolic to emerging-

symbolic or emerging-symbolic to true symbolic communication, overall, 100 % of students participating in the LII program model demonstrated improvements in expressive communication. These findings are consistent with the findings of other studies that demonstrate individuals with severe disabilities can develop increased communication competence across the lifespan (Iacono et al., 1998; McLean et al., 1996; Ronski et al., 1988; Snell et al., 2010). This is particularly important in light of the recent research by Kearns et al. (in press) indicating little change in communicative competence across the grade-spans. These results support the provision of communication intervention via programs such as the LII model to increase communicative competence for all students with significant cognitive disabilities.

Impact of the LII Project on Students with the Most Significant Disabilities

Student participants in the LII program ranged from kindergarten to 12th grade. While the exact number of years of previous intervention were not provided in the LII data set, elementary participants had previously experienced at least one year of communication programming, and middle and high school participants had likely received many years of communication programming. However, little changes or gains in communication skills were demonstrated as indicated by the fact that pre-LII, 70% of students fell in the pre-symbolic and emerging symbolic categories of receptive language and 90% of students fell in the pre-symbolic and emerging symbolic categories of expressive communication. All students demonstrated improvement in communication skills, indicating the ability to develop improved communicative competence at any age. One would not expect changes such as these considering the short duration of the LII program (11 to 13 weeks depending on the district) and the projection of students' communication status prior to participation in the LII program. This finding highlights the need for future research efforts designed to validate the effectiveness of intervention programs such as the LII.

Notably, Student 10 was the only student to begin the LII process at a pre-symbolic level of receptive language and expressive communication. This student demonstrated significant gains toward symbolic communication by moving to the emergent level of both receptive language and expressive communication post-LII. This student had multiple disabilities and exhibited a visual impairment along with severe

communication needs and other health issues. Of particular interest is that this student was placed on “consultative” status for speech-language intervention and was not receiving direct services in the school at the time of the LII program. While it is unknown why this student was not receiving direct services, one possible reason is that Student 10 was dropped from speech-language services due to a lack of demonstration of progress. The NJC (2003a, 2003b) explains the tendency for state and local education agencies to implement restrictive eligibility policies for speech-language services, including the exclusion of students from communication services due to lack of progress from past-services. Kentucky still considers release from speech-language services acceptable when “Specially Designed Instruction (SDI) no longer results in measurable benefits, despite documented use of a variety of appropriate approaches and/or strategies” (Kentucky Department of Education, 2009, p. 16). Further, the NJC (2003b) explains that many factors contribute to an individual’s perceived failure to benefit from previous communication supports, and “previous experiences should be examined in order to determine ways in which communication services and supports could be better tailored to meet the individual’s unique communication needs” (p. 77). The student progress in the LII project over a relatively short period of time brings in to question the practice of “dropping” students from speech-language caseloads due to “lack of progress.”

While students with significant cognitive disabilities and complex communication disorders are sometimes unable to transition to symbolic communication or develop speech even after extensive intervention, this challenge should not preclude intervention. Rather, support and development of communicative acts in whatever mode or level they may take should be considered, with the vision that enhancing pre-symbolic communicative competence will serve as the foundation for the acquisition of higher levels of symbolic communication. Best practice suggests it is imperative to build on what students with significant cognitive disabilities can do and to provide them with alternative, more recognizable, means to engage in various communicative behaviors. (Bates, 1979; Carter & Iacono, 2002; Downing, 2005; Reinhartsen, 2000; Ronski & Sevcik, 1997; Rowland & Schweigert, 1989, 1993, 2000). Student 10’s progress in the LII is an example of the importance of developing communication services and supports designed to meet each student’s unique needs. Indeed, in 13 weeks, this student moved

from alerting to sensory input from others and requiring physical assistance to following directions to only requiring additional cues to follow directions, and from communicating through cries, facial expressions, and change in muscle tone, to using intentional communication via modes such as gestures, pictures, objects, and points to express a variety of intentions (Kearns et al., 2006). Student 10's progress demonstrates the usefulness of the LII program in facilitating communication development for students with the most significant disabilities in an extremely limited amount of time.

Augmentative and Alternative Communication

When changes in the use and complexity of AAC were analyzed using the LCI, 100% of students without AAC gained systems (three out of three students) during the project. Overall, 67% of students in this study demonstrated improvement in complexity of AAC utilized, as 22.2% of students moved up two levels of complexity and 44.4% of students moved one level of complexity. While 33.3% of students remained the same in the complexity of AAC used, descriptive comments on LII-staff scored Learner Characteristic Inventory indicate each of these three students moved from being largely prompt dependent to more independent use of AAC. Again, this indicates the need for a more finely graded instrument to demonstrate smaller, yet clinically important changes, in student progress.

While all students demonstrated improvement in use of AAC, two students (Student 1 and Student 3) increased two levels in complexity of AAC. Student 3, a 12th grade student, shifted from using two symbols to express broader intents such as social content and answering simple questions, to using mostly abstract symbols or signs in phrases or sentences on the AAC system to express a variety of academic, social, and self-initiated interactions. This student began the LII process as an emergent expressive communicator and with symbolic language comprehension. While this student also moved from emergent expressive communication to symbolic expressive communication post-LII, it is possible that he was in fact a symbolic communicator, but simply did not have the AAC system needed to express symbolic communication (Kearns et al., in press). Qualitative data from Student 3's team indicate the need to move to the use of the iPad as a communication device toward the end of the LII program, as his other devices were limited in needed vocabulary. Of additional importance is the fact that both students

who increased two levels in complexity of AAC were from the same district, District A. Thus, another possible factor for the improvement seen in Students 1 and 3 is the relationship between the motivation, skill level, and implementation of the LII process of school personnel in District A and student progress.

Students with significant cognitive disabilities reliant on AAC to expressively communicate must be provided AAC from the beginning of their school experience. Beukelman and Mirenda (2005) explain, “when students with complex communication needs enter elementary school without communication systems that permit them to participate in typical curricular activities, their educational experiences are quite different from those of their peers” (2005, p. 392). Student 4, Student 7, and Student 8 began the LII program without AAC systems implemented. Two of these students were in third grade and one student was in seventh grade. Thus, for many years, these students remained passive learners with no way to participate in classroom activities. These results are of extreme importance, considering research linking academic competence to communicative competence, and the use of AAC to provide access to the general curriculum (Beukelman & Mirenda, 2005; Calculator & Black, 2009; McSheehan et al., 2006; Ronski & Sevcik, 1997). Indeed, as academic content is symbolic by definition, increasing communicative competence provides increased opportunities for meaningful access to general-education curriculum, and indicates a need to teach both academic and communicative skills in tandem (Kearns et al., in press; Towles-Reeves et al., 2009). The overwhelming increase in use and complexity of AAC by students participating in the LII program implies promising benefits of the LII model for students with significant cognitive disabilities.

Indeed, McSheehan et al. (2006) explain, “holding high expectations for students learning of the GE curriculum, having time to evaluate and reflect on current team practices and their influence on student learning, and high-quality professional development through workshops and on-site coaching may work together to influence team-members’ practices” (p. 284). The need for a trans-disciplinary team model of service delivery designed to increase academic and communicative competence when working with students cannot be underestimated (Calculator & Black, 2009; Downing,

2005; Hunt et al., 2002; Kearns et al., in press; Kearns et al., 2009; Rainforth et al., 1992; Towles-Reeves et al., 2009).

Importance of coaching and follow-up to face-to-face training

One of the most unique components of the LII process was the consistent coaching via distance technology of the all team members involved with the targeted students. Multiple anecdotal statements by participants stressed the value of this important element of the LII project. Participants noted that coaching calls held the team accountable, taught them to maintain weekly data, and allowed for team collaboration, which is often absent in the public school settings. A full list of these comments can be found in Appendix G. Indeed, McSheehan et al. (2006) state, “high quality professional development through workshops and on-site coaching may work together to influence team members’ practices” (p. 284). While on-site coaching might be considered optimal, it may well not be practical in most situations. The advent of multiple forms of distance technology is more easily accessible.

School Personnel Identification of Student Communication Levels

With regard to the accuracy of school personnel identification of communication levels of students, agreement between school personnel and LII staff increased from 30% pre-LII to 50% post-LII for receptive language status and from 50% pre-LII to 70% post-LII for expressive communication status. While these results demonstrate some improvement in identifying students’ communication levels after participation in the LII, the continued discrepancy between LII staff and school personnel indicates a need for additional training on how to recognize and interpret the communicative behaviors of students with significant cognitive disabilities, to further build on the communication skills students currently possess. Furthermore, 100% of inaccurate judgments made by school personnel scored students lower than their actual communication level (or under-assigned intentional communicative behaviors) as judged by LII staff. Even after 11 to 13 weeks of participation in the LII program, some participants still struggled to accurately identify communication levels in some students. This indicates a need for continued training on how to recognize and interpret the communicative acts of students with significant cognitive disabilities.

These findings are consistent with recent research that suggests school personnel lack the skills and abilities to accurately identify the communicative levels of students with significant cognitive disabilities (Carter & Iacono, 2002; Iacono, Carter, & Hook, 1998). In addition, data from American Speech-Language-Hearing Association (ASHA, 2010b, 2010c) obtained regularly from 1999 to 2011 from SLPs working in the public schools, continually indicates up to 28% of SLPs cite a lack of information regarding low incidence populations as a major barrier to successful intervention. Similarly, the NJC reported a shortage of trained personnel to serve individuals with severe communication impairments, and indicated a lack of personnel preparation programs designed to address the communication needs of persons with severe disabilities (NJC, 1992; NJC 2003b). The NJC states, “Professionals in many disciplines today still receive no preparation at all in the area of communication, and other receive instruction that fails to reflect current knowledge and practice regarding the forms and functions of communication, particularly in nonlinguistic modes” (1992, p. 5). It is very possible that school personnel participating in the LII were not skilled in the evaluation of communication development, and further practice is needed in this area. This raises additional concerns about proper goal selection and intervention strategies of school personnel, as a lack of understanding of communication levels may lead to inappropriate communication programming. It is critical that school personnel understand what students are able to do and where students fall in the communication hierarchy before they are able to successfully move them toward more symbolic forms of communication.

Downing (2005) explains that a barrier often faced by older students with severe disabilities in acquiring communication skills is lowered expectations for developing communicative competence. Downing further addresses the importance of having high expectations, employing active listening, and viewing all behavior as communicative in order to assist students with significant cognitive disabilities find effective ways to communicate (2005). It would be of interest to determine the impact of attitudinal barriers and issues on the accuracy of judgments of students’ communication abilities. In light of these findings, continued professional development training designed to assist the school based team in identifying communicative behaviors and addressing the communication levels of students with significant cognitive disabilities, as well as

ensuring these students have access to grade-level curriculum, is critical for developing the communicative and academic competence of students in this population (Downing, 2005; Kearns et al., in press; McSheehan et al., 2006; Siegel et al., 2010; Towles-Reeves, et al., 2009).

Satisfaction with the LII Process

District Training Satisfaction

District training satisfaction surveys were provided for Counties B and C only. In terms of school personnel and parents' satisfaction with the initial LII training, close to two-thirds of respondents indicated feeling the highest level of satisfaction (very satisfied) and a little over one-third of participants indicated feeling satisfied with the training. One participant stated, "This was one of the best PD's I have ever been to. Thank you!" In regard to satisfaction with specific aspects of the training, the overwhelming majority of respondents were satisfied or very satisfied with the various aspects of the training. Similarly, respondents perceived the training as useful in regard to school-based practice. No respondents reported any level of dissatisfaction with the overall training. These findings suggest that the school personnel who chose to respond to the survey were indeed satisfied with the training. Since district training surveys were provided for only County B and County C, and the completion of surveys from the LII trainings were anonymous and voluntary, it is possible that satisfaction with the LII training may not be reflected across all participants involved.

LII Process Satisfaction

In terms of school personnel and parents' satisfaction with the LII process, coaching call surveys revealed that 97% of respondents reported benefits of coaching calls and 92% of respondents reported implementing LII training elements. These findings suggest that the school personnel and parents who chose to respond to the surveys and participate in coaching calls were indeed satisfied with the LII process and implemented elements of the LII training. Again, it is possible that mainly those participants who thought the LII program to be beneficial responded. Thus, the satisfaction of all participants may not be accurately reflected.

Themes

Behavior changes. Almost 13% (29 out of 227) of comments reported behavioral changes of student participants in the LII. Common elements found in these comments include increased interaction of students, increased alertness, positive affect, and improved behavior of student. For example one comment stated, “Student 10 stayed awake and alert during story book reading with stretches/movement,” and another comment stated, “Student 5 demonstrated so much less inappropriate behavior with other kids.” Results indicate that as the LII program targets increased communicative and academic competence via the use of AAC, positive behavioral changes may result. These findings are consistent with those of other studies, which suggest that when students are able to influence others’ actions and communicate in more easily understood ways, socially unacceptable or idiosyncratic behaviors can be replaced and reduced; further, the development of communicative competence extends to social interactions, allowing increased interactions with family, peers, and school personnel (ASHA, 2004; Calculator & Black, 2009; Downing, 2005; Johnston et al., 2004; Light, 1997; Ronski & Sevcik, 1997, 2005).

Parental involvement. 2.2% (five out of 227) of comments demonstrated the importance of parental involvement in the LII process. In one instance, school personnel reported that Student 4 was not interested in “anything.” Input from her mother revealed that the student enjoyed playing board games, was able to choose what pieces she wanted to play, and enjoyed playing Clue and Monopoly at home. One parent reported, “Coaching calls helps me keep in touch & learn about what/how my child is being taught.” Another parent stated, “Thank you for your assistance throughout this past school year for Student 7. I will use the Hip Talk during the summer months.” These results demonstrate invaluable information parents can provide on the unique strengths of their child, as well as a desire to carry-over what was learned in the LII program at home. While the number of parental responses and comments were small, the power and influence of parental involvement in working with students with significant cognitive disabilities cannot be underestimated. The opportunity for family involvement and collaboration should be offered to all families of students with significant disabilities. Indeed, these findings are consistent with research that indicates effective communication

programming for students with significant disabilities requires active family involvement (ASHA, 2005; Calculator, 1988; Calculator & Black, 2009; Ronski & Sevcik, 2005). Information regarding parent-school relationships was not provided by the LII. It would be of interest to determine the impact of parental involvement and prior parent-school relationships on success of the communication programming of students participating in the LII.

Communication outcomes. A total of 14.1% (33 out of 227) of the qualitative comments indicated increased sophistication in the communicative output of students or an increase in communicative supports as a result of the LII program. Student 4's team reported, "We have noticed an overall increase in independent use of switches for requesting." Another team reported, "Student 3's vocabulary needs were so high for what he wanted to say that more times than not the picture he needed was not on the device. We have recently moved him to the iPad with Proloqu2go and he already has surpassed where he was with the Auggie." Indeed, the qualitative descriptions of increased communication sophistication indicate growth and improvement in all nine out of ten student participants, as Student 10 was a symbolic communicator from the start. These findings are further corroborated by the increased communicative competence of all students participating in the LII as demonstrated in the quantitative portion of this paper. These results are consistent with the findings of Snell et al. (2010), in their review of twenty-years of literature examining communication interventions in students with significant cognitive disabilities. These researchers found that 96% of reviewed studies reported positive changes in communication status of students. Rowland and Schweigert (2000) found that students with the most significant sensory and multiple disabilities were able to learn new communication skills in six months. Similarly, a study by McSheehan et al. (2006) indicated improved student communication and learning of academic content as a result of a six-month professional development program designed to train the school-based team to promote the learning of general curriculum by students with severe disabilities. The findings in the current study are encouraging regarding the possible impact of the LII model on increased communicative competence of students with significant disabilities.

Evidence of adult participant's knowledge of communication. Over 5% (12 out of 227) of comments demonstrated an increased understanding of adult participants' knowledge of communication, increased ability to read the student's communication, increased opportunity to communicate and increased responsiveness to communication of students by school personnel. Student 8's team reported, "the more we affirm her vocalizations, eye gazes, etc., the more she communicates," and Student 3's team reported, "Determining what motivates him to communicate has increased his number of responses. He is now able to independently request preferred items." These findings suggest that as teachers acknowledged communication and embedded opportunities for communication throughout the day, the student's communication (in a variety of modes) increased. These findings also suggest that the LII was successful in training some school personnel to identify, interpret, and shape students' level of communication and provide increased opportunities for practice.

The results of this study are consistent with research that shows increasing the responsiveness and awareness of the communication partner and increasing the opportunity for meaningful communication exchanges can assist students' transition up the communication hierarchy (Bruce & Vargas, 2007; Downing, 2001; Iacono, Carter, & Hook, 1998; Rowland & Schweigert, 1993; Yoder & Warren, 1998). While there were only a limited number of comments provided in this theme, and not all students represented, it would be interesting to compare the relationship between the qualitative descriptions of knowledge of communication analysis and the discrepancy between school-personnel scored LCIs and LII-staff scored LCIs.

Inclusion in general curriculum. Over 12% (28 of the 227) of the comments acknowledged increased access to the general curriculum, membership and participation in the regular classroom, and participation with same-aged peers. Some descriptive examples include, "Student 3 now has a pretty high Spanish vocabulary," "Student 6 has been weather journaling," and "Student 4 used her switch to participate in group literacy activity (repetitive line on her switch during book reading)." Of the 28 examples provided, students gained access to literacy, mathematics, foreign language, and science curriculum, and demonstrated increased participation in the classroom via interaction with peers, having a specific role during group literacy activities, and other whole-group

activities. This would indicate that participation in the LII may result in increased participation in the general education curriculum for some students.

The results of the current study are in agreement with other research which demonstrates that intervention should take place in natural, interactive contexts with meaningful communication opportunities. In this way, communicative behaviors can impact the actions of others, allowing for the learning of standardized communication forms and functions (Calculator & Black, 2090; Downing, 2005; Halle, 1984, 1987; Reichle, 1997; Rowland & Schweigert, 1993). These findings are also consistent with recent research that suggests facilitating communication development promotes access to grade level curriculum and, in turn, increases academic competence. Thus, for students at pre-symbolic and emerging symbolic levels of communication, educators should simultaneously teach the development of communication via grade-level content (Beukelman & Mirenda, 2005; Kearns et al., in press; Kleinert et al., 2010; McSheehan, 2006; Towles-Reeves et al., 2009).

While recent research suggests that children who utilize AAC have fewer opportunities to interact with literacy materials (Koppenhaver, Hendrix, & Williams, 2007; Light, McNaughton, Weyer, & Karg, 2008; Myers, 2007), the results provided from the LII indicate an increase in access to and participation in literacy activities as an impact of this intervention. Of the 28 comments categorized in this theme, 10 specifically described the use of literacy activities within the general educational curriculum, including activities such as weather journaling, whole group shared story reading, personal narratives, and poetry. The literacy activities suggested for implementation by the LII are evidence-based strategies used frequently in regular education classrooms (Sturm et al., 2006). Buekleman and Mirenda (2005) discuss the critical nature of literacy development in students who utilize AAC, stating “for people who rely on AAC, literacy skills facilitate successful participation at multiple levels across a variety of environments—home, work, school, and social settings” (p. 351). Indeed, the significance of literacy skills cannot be underestimated for students with significant cognitive disabilities who require AAC for communication (Light et al., 2008). As 9 out of 10 student participants in the LII used AAC, the results of this study indicate a need to teach AAC skills and literacy development simultaneously. Although not provided in the

LII data set, the relationship between teacher perceptions of student competence, the degree of inclusive values, and access/participation in the general education curriculum would be interesting to consider.

Evidence of adult utilization of training elements. A full 35 of the 227 (15.4%) comments indicated evidence of the utilization of LII training elements, including improvement in specific instructional skills, increased team interaction and collaboration, and data monitoring. School personnel and parent participants also expressed sentiments of increased accountability among team members, increased skill level, consistency among all team members, and specific implementation of strategies for individual students. These findings indicate that the LII program may increase collaborative teaming and skill-set of school personnel participants. The importance of collaboration among team members when working with students with significant disabilities has been stressed repeatedly in the literature (Beukelman & Mirenda, 2005; Calculator & Black, 2009; Kearns et al., in press; Rainforth et al., 1992). McSheehan et al. (2006) state, “professional development to enhance teaming practices may be a necessary first step in order to proceed with professional development related to enhancing knowledge and skills” (p. 286). Although not provided in the LII data set, perhaps a further analysis of the correlation between the collaborative nature of each student participant’s team and student success is warranted.

Critique of the LII process. In regard to the critique of the LII process, 72 out of 227 (31.8%) comments provided suggestions for change, and demonstrated satisfaction or dissatisfaction with the LII process. Positive feedback included comments such as, “Great advice on next steps to take and I love the activities (literacy, personal narrative) makes us think!” Constructive feedback included comments such as, “I know it's more efficient to have all the teams from the county on one conference call, but I think since the students are so different and some of the parents are involved in the calls, it might be better to have one call for each school.” Negative feedback included comments such as, “The hour long after school call is a bummer.” The fact that 89% of respondents provided either positive or constructive feedback implies that school personnel and parents were satisfied with the LII process and wanted to provide information to LII staff on how to make the LII program more effective for future

participants. Of the eight negative comments, all comments related to time constraints felt by school personnel participants. While only 11% of respondents provided negative feedback regarding the LII process, these comments are critical for any changes or redesigning of the LII program in the future.

Barriers to implementation. When coding qualitative data, 14 out of 227 (6.2%) qualitative comments were identified as barriers to the implementation of the LII process. These comments reveal such barriers as student health concerns, student attention issues (i.e. “Student 10’s sleep schedule”), low expectations of students, a lack of inclusive values by team members resulting in restricted access to the general curriculum, time constraints, and a lack of openness to LII suggestions. These results are consistent with other studies that suggest similar barriers, such as restricting access to the general curriculum, difficulty in collaborative teaming, attitudinal barriers of school personnel, and a lack of time and appropriate supports/resources which ultimately restrict the development of communicative and academic competence (Calculator & Black, 2009; Downing, 2005). These barriers to implementation suggest a need to foster positive expectations about student learning and the benefits of collaborative teaming among school personnel.

Limitations of the Study

Several limitations exist within the current study that may have impacted results. As this study was a retrospective analysis of data obtained from the LII training grant, the data could not be manipulated or controlled by the investigator. The small number of student participants, and heterogeneous nature of this population of students limits generalization of results. Furthermore, this study analyzed data from schools within only three counties in the state of Kentucky, and data obtained in this study may not be representative of all other counties in Kentucky or other geographical areas.

Differences in school personnel experience, school personnel skill level, implementation of the LII-model, and attitudes of team members regarding expectations and perceived abilities of students may have impacted the level of improvement of student participants in the LII model. Additionally, other factors that may have impacted changes in the communication status of student participants, but were unavailable for use in this study, include: motivation of team members, administrative support, resources

available for each student, effective collaborative teaming, parental involvement, and school-family relationships.

Identification of whether an individual team member or the team as a whole completed the LCI was not provided in the LII data set. While LII staff encouraged team-collaboration for the judgments made on the LCI, the author is not aware of whether the school-completed LCI was done by a team of individuals or one individual. It could be assumed that SLPs would demonstrate more competence than teachers in identifying the communication levels of students with significant cognitive disabilities. Therefore, a possible factor in lack of agreement between school personnel and LII experts may have been the specific individual completing the LCI. Thus, it is difficult to determine if the analysis comparing LII staff and LII school personnel scored LCIs represent all school personnel involved or individual members of the team.

While there was a discrepancy between school personnel and LII staff on judgments of both receptive language and expressive communication, there appears to be more confusion surrounding the receptive language item on the LCI, as only 50% of school personnel agreed with LII staff on post-LII judgments for receptive language, as opposed to the 70% agreement with expressive communication. This could suggest that the LII program focused primarily on highlighting and developing expressive communication, with less attention to the understanding of what constitutes receptive communication. Similarly, the receptive communication status of students may be more difficult for school personnel to distinguish than expressive communication status. These results may also suggest confusion caused by the description options provided in the LCI for the receptive communication status.

Data for District A's satisfaction regarding the initial district training was unavailable. Therefore, satisfaction of the training can only be considered from the perspectives of District B and C. Furthermore, the completion of surveys from the LII trainings and coaching calls were voluntary, and included only those school personnel who chose to participate. Thus, it is possible that satisfaction with the LII process may not be reflected across all participants involved. It is also possible that those participants who responded to surveys and participated in coaching calls were only those school personnel and parents perceiving benefits from the LII process.

Placing each qualitative comment and description provided from the LII process into categories for analysis resulted in initial agreement among trained raters, as some comments were complex in nature. Although the initial disagreement was resolved through discussion, this process may have impacted the placement of qualitative data into the themes and impacted the total number of comments in each theme.

Future Research

More research is needed on developing communicative and academic competence for students with significant cognitive disabilities. While this study showed the LII model to be promising in regard to positive student and teacher outcomes, more research is needed to validate models such as the Low Incidence Initiative as effective interventions resulting in improved school personnel skill-level and increased academic and communicative competence for students with significant cognitive disabilities.

Specifically, future research is needed in the following areas:

- Finer assessment instruments designed to measure the communication changes of students with significant cognitive disabilities.
- The use of standardized or operationally defined terms for communication development.
- Professional development to enhance collaborative teaming and involvement of all members of the trans-disciplinary team in communication programming for students with significant cognitive disabilities.
- Professional development and coaching on simultaneously targeting the facilitation of communication and academic competence via access to the general education curriculum.
- Professional development designed to enhance knowledge, skills, and competencies needed to provide AAC for students.
- Professional development designed to provide general education teachers with the skills needed to effectively teach and include students with significant cognitive disabilities in the regular curriculum.
- Overall, data provided by the LII on receptive language, expressive communication, and AAC status, did not include information on a variety of factors that likely impacted student performance, including: school personnel

experience, skill level, attitudes, implementation of the LII process, parental involvement, effective collaborative teaming, administrative support, and family-school relationships. Since the LII model was a training grant and not a research study, it would be of interest to determine the impact of these factors on student progress.

- Comparison of the effectiveness of face-to-face consultation versus distance technology (conference calls) in changing student and school personnel behaviors.

Implications and Conclusion

This study has shown the benefits of using the LII model to facilitate student progress toward symbolic communication, as all student participants demonstrated progress in expressive communication and complexity of AAC used. While there were some improvements noted in school personnel identification of communication levels of students, the need for continued training in communication development is highlighted. Overall, school personnel participants were satisfied with the LII process and the great majority of participants perceived benefits to participation in the LII training grant. Qualitative analysis revealed improved behavior, increased sophistication of communication, and increased access to the general curriculum for student participants. Qualitative analysis also revealed the need for continued training designed to foster inclusive values, collaborative teaming practices, and high expectations of students with significant cognitive disabilities. Since the LII program model was part of a State Personnel Development Grant and not an actual research grant, this study could serve as an initial pilot, from which future research is designed to create statewide professional-development plans to facilitate the communicative and academic competence of students with significant cognitive disabilities.

Appendix A: Learners Characteristic Inventory

Learner Characteristics Inventory for Alternate Assessments on Alternate Achievement Standards

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Citation: Kearns, J., Kleinert, H., Kleinert, J., & Towles-Reeves, E. (2006). Learner characteristics inventory. Lexington, KY: University of Kentucky, National Alternate Assessment Center.

Purpose: This inventory will be used to assist states in describing the population of students who take alternate assessments based on alternate achievement standards. These students represent less than 1% of the total student population and come from a variety of disability categories but represent students with the “most significant cognitive disabilities”.

Student ID number: _____

Student’s Grade-Level (choose one):

- ☐ 3rd
- ☐ 4th
- ☐ 5th
- ☐ 6th
- ☐ 7th
- ☐ 8th
- ☐ 9th
- ☐ 10th
- ☐ 11th
- ☐ 12th

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Student's IDEA disability label (choose only the student's primary handicapping condition):

- ☐ Mental Retardation (includes Mild, Moderate, and Profound)
- ☐ Multiple Disabilities
- ☐ Autism
- ☐ Speech/Language Impairment
- ☐ Hearing Impairment
- ☐ Visual Impairment
- ☐ Traumatic Brain Injury
- ☐ Emotional Disability
- ☐ Deafblind
- ☐ Other Health Impairment
- ☐ Orthopedic
- ☐ Other

Is your student an English Language Learner (i.e., speaks a language other than English primarily at home-Spanish, French, Russian)?

- ☐ Yes
- ☐ No

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Classroom Setting (check the best description)

- ☐ Special school
- ☐ Regular school, self contained classroom for almost all activities
- ☐ Regular school self contained classroom except for homeroom, lunch, and “specials”
- ☐ Self contained (children go to some general education academic classes but return to special education (61% or more of school day in special education classes)
- ☐ Resource room (e.g. children come for services and then go back to their general education classroom (at least 40% of the school day in general education classes)
- ☐ Inclusive/Collaborative – students based in general education classes, special education services delivered in the general education class (at least 80% of the school day in general education classes)

Augmentative Communication System (check the best description)

Does your student use an augmentative communication system in addition to or in place of oral speech?

- ☐ Yes
- ☐ No

For students using augmentative communication systems:

(Check the best description of the student’s use of the augmentative communication system)

- ☐ Uses only one symbol or sign at a time and is able to use only a few symbols in total to express simple or early intents (e.g., drink, eat, toilet, greeting, preferred activity, refusal).
- ☐ Can combine two symbols together to express broader intents such as social content, answer simple questions, etc. (e.g., expresses greetings, peer names, social exchanges, personal interests).
- ☐ Uses mostly iconic symbols (clear representations) or signs together in sequence to express functional intents, extensive social interactions, academic content, and to respond consistently to answer questions.
- ☐ Uses multiple abstract symbols, signs, or print in sentences or phrases on the augmentative communication system to express a variety of academic, social, and self-initiated interactions.

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Speech Language as a Related Service (check the best description of the extent to which the student is receiving speech/language as a related service)

- ☐ Direct services for communication/language therapy (pull-out)
- ☐ Direct services integrated into student's routine/classroom-collaboration
- ☐ Consultation services only
- ☐ Student does not currently receive speech language as a related service

Expressive Communication (check one answer that best describes your student)

- ☐ Uses symbolic language to communicate: Student uses verbal or written words, signs, Braille, or language-based augmentative systems to request, initiate, and respond to questions, describe things or events, and express refusal.
- ☐ Uses intentional communication, but not at a symbolic language level: Student uses understandable communication through such modes as gestures, pictures, objects/textures, points, etc., to clearly express a variety of intentions.
- ☐ Student communicates primarily through cries, facial expressions, change in muscle tone, etc., but no clear use of objects/textures, regularized gestures, pictures, signs, etc., to communicate.

Receptive Language (check the best description)

- ☐ Independently follows 1-2 step directions presented through words (e.g. words may be spoken, signed, printed, or any combination) and does NOT need additional cues.
- ☐ Requires additional cues (e.g., gestures, pictures, objects, or demonstrations/models) to follow 1-2 step directions.
- ☐ Alerts to sensory input from another person (auditory, visual, touch, movement) BUT requires actual physical assistance to follow simple directions.
- ☐ Uncertain response to sensory stimuli (e.g., sound/voice; sight/gesture; touch; movement; smell).

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Vision (check the best description)

- ☐ Vision within normal limits.
- ☐ Corrected vision within normal limits.
- ☐ Low vision; uses vision for some activities of daily living.
- ☐ No functional use of vision for activities of daily living, or unable to determine functional use of vision.

Hearing (check the best description)

- ☐ Hearing within normal limits.
- ☐ Corrected hearing loss within normal limits.
- ☐ Hearing loss aided, but still with a significant loss.
- ☐ Profound loss, even with aids.
- ☐ Unable to determine functional use of hearing.

Motor (check the best description)

- ☐ No significant motor dysfunction that requires adaptations.
- ☐ Requires adaptations to support motor functioning (e.g., walker, adapted utensils, and/or keyboard).
- ☐ Uses wheelchair, positioning equipment, and/or assistive devices for most activities.
- ☐ Needs personal assistance for most/all motor activities.

Engagement (check the best description)

- ☐ Initiates and sustains social interactions.
- ☐ Responds with social interaction, but does not initiate or sustain social interactions.
- ☐ Alerts to others.
- ☐ Does not alert to others.

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Health Issues/Attendance (check the best description)

- ☐ Attends at least 90% of school days.
- ☐ Attends approximately 75% of school days; absences primarily due to health issues.
- ☐ Attends approximately 50% or less of school days; absences primarily due to health issues.
- ☐ Receives Homebound Instruction due to health issues.
- ☐ Highly irregular attendance or homebound instruction due to issues other than health.

Reading (check the best description)

- ☐ Reads fluently with critical understanding in print or Braille (e.g., to differentiate fact/opinion, point of view, emotional response, etc). (OPTIONAL FOR STATES)
- ☐ Reads fluently with basic (literal) understanding from paragraphs/short passages with narrative/informational texts in print or Braille.
- ☐ Reads basic sight words, simple sentences, directions, bullets, and/or lists in print or Braille.
- ☐ Aware of text/Braille, follows directionality, makes letter distinctions, or tells a story from the pictures that is not linked to the text.
- ☐ No observable awareness of print or Braille.

Mathematics (check the best description)

- ☐ Applies computational procedures to solve real-life or routine word problems from a variety of contexts.
- ☐ Does computational procedures with or without a calculator.
- ☐ Counts with 1:1 correspondence to at least 10, and/or makes numbered sets of items.
- ☐ Counts by rote to 5.
- ☐ No observable awareness or use of numbers.

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Teacher Comments: Please share any additional information you would like for us to know about the learning characteristics of this student. Thank you for your time and honest answers.

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Appendix B: Videotape Collection Protocol

Low Incidence Initiative- TAALC Kentucky Department of Education Video Tape Collection Protocol	
<p>Please follow these suggestions in collecting video samples of your student's academic and communication programming to be reviewed by the Low Incidence Initiative. The students should be in a low incidence category and in the alternate assessment.</p> <ol style="list-style-type: none">1. Select 3 students for whom you need input for their academic and communication programming.2. Select activities that represent the student's typical behaviors in school programming3. Select activities that represent the student's typical school programming4. It may help to manipulate or sabotage the learning environment to collect the initial video clip5. Tape the student participating in his/her activity with a teacher, para-educator, SLP or peers.6. The tape segments should be no longer than 5-10 minutes and provide a clear example of the student's typical performance	
Include the following information in narrative form on the form below.	
<u>Student Information</u>	
Student's Name: _____ Age: _____ Grade Level: _____	
Parental Permission Obtained: Yes _____ No _____	
<u>Type of major classroom placement:</u>	<u>Teacher:</u>
<u>Type of services received (please check all that apply):</u> Communication intervention _____; OT _____; PT _____; Vision services _____; Hearing services _____; Adaptive PE _____; Other _____	
Where are services provided to this student?	
Student's primary means of communication:	
Student's Academic Goals:	
Extent of time student is in regular classes:	
LCI Results	
<u>LCI Summary:</u> <ul style="list-style-type: none">▪ Expressive Communication:▪ Receptive Language:▪ Engagement:▪ Vision:▪ Hearing:▪ Motor:	

<ul style="list-style-type: none"> ▪ Health Issues/Attendance: ▪ Reading: ▪ Mathematics: ▪ Use of Augmentative Communication Systems: ▪ Type of Augmentative Communication Used: ▪ Form of SLP service delivery (pullout, collaborative, consultative): 	
<i>Provide any other narrative information about the student that you feel would be helpful:</i>	
Communication Abilities	
Cognitive Abilities	
Motor Abilities	
Social Skills	
Student Interests and Preferences	
<u>Information Specific to the Tape Sample:</u>	
<u>Indicate the activity:</u>	<u>What is the goal of the activity?</u>
<u>Level of Curriculum this tape represents:</u>	
<u>Your Major Concerns:</u>	
<u>Suggestions and needs:</u>	

Appendix C: IRB Exemption Certification Approval



Office of Research Integrity
IRB, IACUC, RDRC
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Lexington, KY 40506-0057
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EXEMPTION CERTIFICATION

MEMO: April Holman
2304 Woodfield Circle
Lexington, KY
PI phone #: (859)327-7259

FROM: Institutional Review Board
c/o Office of Research Integrity

SUBJECT: Exemption Certification for Protocol No. 10-0488-X3B

DATE: August 9, 2010

On August 3, 2010, it was determined that your project entitled, *Analysis of student & teacher outcomes from pre-existing data obtained through the "Low Incidence Initiative" project*, meets federal criteria to qualify as an exempt study.

Because the study has been certified as exempt, you will not be required to complete continuation or final review reports. However, it is your responsibility to notify the IRB prior to making any changes to the study. Please note that changes made to an exempt protocol may disqualify it from exempt status and may require an expedited or full review.

The Office of Research Integrity will hold your exemption application for six years. Before the end of the sixth year, you will be notified that your file will be closed and the application destroyed. If your project is still ongoing, you will need to contact the Office of Research Integrity upon receipt of that letter and follow the instructions for completing a new exemption application. It is, therefore, important that you keep your address current with the Office of Research Integrity.

For information describing investigator responsibilities after obtaining IRB approval, download and read the document "PI Guidance to Responsibilities, Qualifications, Records and Documentation of Human Subjects Research" from the Office of Research Integrity's Guidance and Policy Documents web page [<http://www.research.uky.edu/ori/human/guidance/htm#PIresp>]. Additional information regarding IRB review, federal regulations, and institutional policies may be found through ORI's web site [<http://www.research.uky.edu/ori/>]. If you have questions, need additional information, or would like a paper copy of the above mentioned document, contact the Office of Research Integrity at (859) 257-9428.

An Equal Opportunity University

Appendix D: Rowland & Schweigert's (2011, 1989) Seven Levels of Communicative Competence

Level	Salient Behavior	Examples
I. Preintentional Behavior	Preintentional or reflexive behavior that expresses state of subject. State (e.g., hungry, wet) interpreted by observer.	Cry, coo Facial expression Postural change
II. Intentional Behavior (not intentionally communicative)	Behavior is intentional, but is not intentionally communicative. Behavior functions to affect observer's behavior since observer infers intent.	Fuss Regard object Reach toward
III. Nonconventional Presymbolic Communication	Nonconventional gestures are used with <i>intent</i> of affecting observer's behavior.	Whine Tug Push away
IV. Conventional Presymbolic Communication	Conventional gestures are used with intent of affective observer's behavior.	Alternating gaze Extend object Point/wave Nod/shake head
V. Concrete Symbolic Communication	Limited use of concrete (iconic) symbols to represent environmental entities. 1:1 correspondence between symbol & referent	"Natural" gestures Depictive sounds Tangible symbols (objects or pictures)
VI. Abstract Symbolic Communication	Limited use of abstract (arbitrary) symbols to represent environmental entities. Symbols are used singly.	Spoken words Manual signs Blissymbols Printed words Brailled words
VII. Formal Symbolic Communication (Language)	Rule-bound use of arbitrary symbol system. Ordered combinations of two or more symbols according to syntactic rules.	Combinations of above abstract symbols

Rowland, C. (2011). *Seven levels of communication*. Retrieved from <http://www.communicationmatrix.org/sevenlevels.aspx>.

Rowland, C., & Schweigert, P. (1989). Tangible symbols: Symbolic communication for individuals with multisensory impairments. *Augmentative and Alternative Communication*, 5(4), 226-234.

Appendix E: Sample District Training Survey

LII-TAALC District Training Evaluation

1: Please rate your satisfaction with each of the following aspects of the overall training.

Answer options	Very dissatisfied	Dissatisfied	Somewhat dissatisfied	Somewhat satisfied	Satisfied	Very Satisfied
Quality of the information you received						
Relevance of the information to your work						
Organization of training/workshop day						
Sensitivity of the trainer(s) to the participants						
Opportunity for questions/discussion						
Handouts or training materials						
Comments						

2: How would you rate the primary features of the training in terms of usefulness for your work?

Answer options	Least 1	2	3	4	Most 5
Definitions of symbolic language with video examples					
Tools for blending communication and content					
Analysis of local student tapes					

3: In what areas do you feel you may need follow-up training or additional clarification?

4: Please provide any specific information that may help us to plan follow-up training.

5: Overall, how satisfied are you with the training?

Very dissatisfied	Dissatisfied	Somewhat dissatisfied	Somewhat satisfied	Satisfied	Very Satisfied
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6: Please write in any additional comments or suggestions that you may have.

Appendix F: Sample Coaching Call Survey

December 9 Coaching Call Survey

- 1. Are you benefiting from coaching calls?**
 - a. Yes
 - b. No
- 2. Describe the benefits of the coaching calls.**
- 3. Have you implemented any advice or suggestions given during the coaching calls?**
 - a. Yes
 - b. No
- 4. Please list any advice or suggestions you have used from the coaching calls.**
- 5. Where were the approaches (learned through the calls) implemented?**
 - a. Regular Education Classroom
 - b. Special Education Classroom
 - c. Both

Please explain your decision for location of implementation:

- 6. Please share any comments or suggestions for the coaching calls.**

Appendix G: Compiled List of Comments from The Low Incidence Initiative: TAALC Project 2009-2010

Behavior Changes

1. Student 1's eye contact with communication partner is greatly improved.
2. Student 1 is much more interactive with peers and adults and overall just a happier child.
3. Student 1 is smiling more.
4. Student 3: Behavior has improved via reduced frustration and head smacking.
5. Student 2 initiated wanting to be with her friends. Used her Cheap Talk and there was a picture of a group and when she hit the location it said "I want to be with my friends". Only needed 1 model.
6. Student 1 seems to be more interactive and wanting to engage with peers/increasing initiation and responses with peers.
7. Student 4: She has had more vocalizations, is understanding that the switch is getting other's attention.
8. Student 2 is becoming more attentive in class overall.
9. Student 2 is increasing her receptive language TOO!!! She is responding more quickly to verbal directions!
10. Student 1 has a friend. The friend said the other day that Student 1 was "her best friend."
11. Student 1 is choosing music instead of food.
12. Teacher reports his behavior is much better and Student 3 is a much more active communicator.
13. Student 2's attitude has changed in other areas as a result of this program.
14. Student 5 initiated greeting to another student
15. Teacher reports Student 5 has better interacting with students and high 5 instead of touching lips. So much less inappropriate behavior with other kids.
16. Teacher explained Student 6 is doing well with the "If" and "Then" sentence strip, and he understands if he does X and Y he will get a break.
17. Student 5 has been working on greetings and utilizing social stories before she leaves the room. Today, there were times in which she was spoken to in the hall in which she could respond appropriately.
18. Student 5 does enjoy using picture schedules.
19. Student 7 He is not running around or getting mad—this is WONDERFUL!
20. Student 8: "Huge difference in communication so much more aware and alert."
21. Student 8: SLP says she participates more with peers. Throughout the day, across the settings, power of communication, she loves peers, communication circle broader, peers so excited she could talk and participate, social interactions.
22. Student 10 stayed awake and alert during story book reading with stretches/movement.
23. Student 10 enjoys conversation and likes to have kids talk to him.
24. Student 10 responded the most when other kids were reading to him, but he didn't show much emotion when they stopped reading.
25. Student 8's team explains they are seeing a lot more requests from her (smiles and eye gazing) and improvement in her mood in general.
26. She is eye gazing toward friends and vocalizing to be near them.
27. Student 10: He "perks up" when the other students speak to him and then the teachers affirm this as well.
28. Teacher has seen huge improvements with Student 10 since he has had increased interactions with students. Student 10 seems to understand much more than was realized.
29. Student 10: He has started to anticipate what is coming next, and gets really excited when it is time for exercise.

Parental Involvement

30. Student 4: Meeting with mom next week to give her switches and some ideas of ways to increase communication in the home.

31. Student 4: Mom reports play games with her during down time at home (monopoly, clue, etc.). She can choose what she wears every day and what pieces she wants to play with.
32. Coaching calls helps me keep in touch & learn about what/how my child is being taught.
33. Student 5's mom suggested having objects when reading (object box).
34. Thank you for your assistance throughout this past school year for student 7. I will use the Hip Talk during the summer months. (Parent).

Communication Outcomes

35. Suggestion used from coaching call: "We are getting ready to make my student a book with questions hoping it will hold her interest better than the computer."
36. Student 4: Used the switch to check out her books in library.
37. Student 4 Independently pushed the button a dozen times in a 25 min. period. If I was unable to respond, I acknowledged that I had heard her push it and would be there in a minute.
38. Student 4 We have noticed an overall increase in independent use of switches for requesting.
39. Student 2 She is now performing faster and more accurate than what is shown on video. Less physical assistance.
40. Student 2 is using Boardmaker Mobile Activity Player to activate a fake You tube site. She chooses her video, then goes to the next page turning on you tube screen to watch video.
41. Student 3 is using an Auggie. Uploading home page, going to main board, asking "I want" then "drink" and then going drink choice link page and saying "Pepsi".
42. Student 3's vocabulary needs were so high for what he wanted to say that more times than not the picture he needed was not on the device. We have recently moved him to the iPad with proloqu2go and he already has surpassed where he was with the Auggie.
43. Student 1 is using a modified PECS on the video. She is up to about 4 pictures at a time.
44. Student 1 also uses a Cheap talk 8 with again about 4 pictures.
45. Student 1 is also using a picture schedule. Pulling the picture off and then after activity is completed putting it in finished box.
46. Student 2: Using the cheap talk during cooking activity, was able to choose between preferred and non-preferred item.
47. Student 4 initiated many, many times to ask to play with people's hands.
48. Student 4 used the switch to select a book that she wanted to read.
49. Student 3 is using the device more and knows that it can get him what he wants.
50. Student 2 using the switch to activate radio, located at points all over the room.
51. Student 2 has mastered her Cheap Talk and can use it independently, but still doesn't always differentiate items.
52. Student 3 is using his device independently. Student 3 is able to launch the main board and get to his break board (He is able to select "I want" and ___ at the break).
53. Student 4 is consistent in her choices during meal time with eye gaze.
54. Student 4 understands that the switch serves a purpose/knew that she was participating in the game.
55. Student 4 is differentiating switches, and she is moving closer toward multiple options.
56. Student 6 Independent initiations using a food menu.
57. Student 7 Mom reported he used the switch with the word "more" + "oatmeal" = TWO WORD COMBINATIONS.
58. Student 6: Teacher and SLP worked on writing task on the computer, in one day he went from requiring verbal and pointing prompts to just pointing.
59. They have seen huge changes in: cause and effect and switch use
60. Student 9 is figuring out that switches serve a function = get what you want
61. Student 9 is routinely using switch to indicate preference/request.
62. Student 8 has been activating the switch, purposefully.
63. Student 8 has made choices: movie of choice, the movie stopped, they asked if she wanted more and she made a vocalization so they turned it back on.
64. Student 9 has mastered the switches to ask for applesauce, leave the room, visit the closet. She has not done well with the switches when working & taking breaks within one area.
65. Student 8's eye gaze has become very consistent and deliberate in choice making.

66. Student 10 is able to activate the switch with verbal cues. He is getting more consistent responding, it appears he likes the reading when there is movement involved.

Evidence of Adult Participant's Knowledge of Communication

67. We have learned not to give up so quickly and repeat activities, to give the student more opportunities to be successful.
68. We have used suggestions for increasing opportunities for com. throughout the day.
69. Student 1: Being able to notice her natural gestures has increased her responses.
70. Student 3: Determining what motivates him to communicate has increased his # of responses. He is now able to independently request preferred items.
71. Student 2: We picked up on the fact that when she does reading and writing with symbols she doesn't always engage, but with this she was really focused. There were many responses, vocalizations, clapping and eye contact. She would follow along with the picture icons.
72. Teacher sees difference with Student 8 and themselves as well. They now know how to interact with her, and they now know that what she is doing is purposeful and communicative.
73. Student 8 They have the guidance and light for how they need to interact with her to communicate more and show that she was purposeful.
74. Student 8 is independently vocalizing displeasure. Team is acknowledging her when she is vocalizing displeasure "Oh Student 8, you are telling me that you are unhappy/don't want to do this. I'm sorry, but we need to do this anyway.
75. Student 9: She slaps her thigh when she is done, and this is her "go-to" means for refusal.
76. Student 8 has been vocalizing more. The more we affirm her vocalizations, eye gazes, etc., the more she communicates.
77. Student 8: She is realizing that her communication is being recognized.
78. Student 10: Teacher reports he is most alert in the morning.

Inclusion in General Curriculum

79. "We have implemented ways to have my non-verbal student more involved in classroom activities".
80. "We have used suggested strategies using peers"
81. Including friends in use of device
82. We were doing a group activity with in the special education setting this week, but have implemented activities in other locations through the coaching calls.
83. Student 3 now has a pretty high Spanish vocabulary.
84. Student 1's interests are expanding.
85. Peers are stepping up and interacting with Student 1.
86. Student 2 can utilize her device during reading and language arts activities.
87. Student 2 used her switch to participate in poetry activity reading Thriller as a poem. Students 2's part was the "chorus"à the kids could cue her as to when to turn the Big Mac on.
88. Student 2 used Cheap talk for math matching one-to-one activity.
89. Student 3 literacy activity "News to you" had to listen and answer questions. He answered three questions correct out of 6 first time.
90. Student 3 did a writing activity using his communication device. Peer read question and he had three choices on his device that he could pick from.
91. Student 1 has been using a switch with peers when looking at the personal narrative book/ppt. She is using the switch with another student's voice.
92. Student 1's team would like to see her more involved in reading.
93. Student 4 used her switch to participate in group literacy activity (repetitive line on her switch during book reading). Repetition helped her understand that the switch is meaningful.
94. Student 6 is more comfortable in my room.
95. Student 6 has been weather journaling.
96. Student's 6 team wants to work with a science job (sorting) so it can be peer oriented and with voice output device.
97. Student 7 likes stories and we can build on his switch usage.

98. Student 5: her time in the regular education room is becoming more successful.
99. Trying to get Student 6 assigned to general classroom.....
100. The student is in both settings and the targets can be worked on and beneficial to the student in both areas.
101. Student needs can be serviced in both regular and special ed classes.
102. Student 10 needs these strategies implemented in both settings to gain mastery of them (general and special ed settings).
103. They now want to put more academics into what they've learned.
104. Student 8's team wants to infuse what they've learned into her academics.
105. Student's 8's team wants to pair eye gaze with the switch so they can affirm choices and allow partial participation in all classroom settings.
106. Student 8's SLP explained they are working on measuring in mathematics, and in a recent lesson, the SLP had peers record the answer on the switch for her. They would ask her how long is ____ or _____. She had to activate the switch when asked by her peers. She really enjoyed this.

Evidence of Adult Utilization of Training Elements

107. Increase in Monitoring data.
108. Coaching calls help me to consistently think of the next step to continue being successful.
109. Coaching calls help me in regard to direction of AAC with appropriate increments of increasing skill level.
110. We have used suggestions for equipment, skill level hierarchy.
111. From SLP in email: Student 1 is working on looking at speaker and looking at person saying her name at school in the resource room. This is an ABA approach. I do not agree with the way these goals are being targeted or these goals in general. I have found as communication exchange increases these areas also increase. Student 1 has beautiful eye contact when engaged in an activity. Student 1 is doing some great things which I can't wait to share but I feel these objectives are interfering with our communication. I want to give her best services.
112. Student 1 reached for a preferred object—how do we give her a way to ask for that?
113. Student 4 was working on a PowerPoint this week. Caption was put on each slide and a student recorded caption on each slide. Student 4 did OK when activating the switch; biggest problem was technology.
114. SLP and Teacher started using a touch screen computer with Student 2. She takes her hand to go toward the switch, but she stops just short of it and pulls back. It takes more modeling and verbal prompting.
115. SLP hopes by this time next year Student 4 will be using a Cheap Talk.
116. Actually we have used several suggestions from the 6-hour training, like the system of least prompts (verbal through physical) and voice output devices and ways to integrate peers. These things have been reinforced through the conference calls.
117. Implementation suggestions for Student 7 have been helpful. Using the switch in various settings and on a consistent basis is also helping him.
118. I learned more strategies for modifying grade level activities and how to promote more interaction with peers to learn concepts.
119. The coaching calls embed accountability. These calls force that actions are taken so plans are followed through.
120. Accountability, team problem solving
121. The coaching calls hold everyone accountable. These calls also provide ongoing guidance and support.
122. I think this has helped our teams to think about when our students have opportunities to communicate, and how to build more opportunities into the day.
123. I have used assistive technology suggestions.
124. I have tried to use all suggestions that have been given during coaching calls.
125. Training: Analysis of local student videotapes my fav. part!!!
126. Advice or suggestions used from calls: Since I do not "implement" I have not necessarily implemented anything. However, I do believe my active role in the process will help with follow through.

127. Suggestions implemented in regular and special education classroom: because literacy occurs in any classroom.
128. Student 6's team wants to move on to allowing interaction with peers (for lunch-period and for the reading content in the classroom).
129. Student 6's OT is using schedules during all transitions and specials.
130. I have benefited from social stories suggestion.
131. At this point, we are anxious to get started with our student. I am looking forward to having the weekly support through the phone calls.
132. I really liked the video segments of our students and think this will be a most valuable tool for facilitating communication and language along the way. Thank you!
133. We have used suggestions regarding: Switch placement. More movement. Vocabulary/language used with the student, so that it is the same for everyone.
134. SLP has written this into IEP for student 8: wants to give her as many opportunities across the day/across the settings to see the purpose of the switch. SLP wants to allow her to use the switch to learn social language.
135. Student 10's team: They are using a tactile schedule throughout the day.
136. Student 10 made progress at the beginning as far as him staying alert, but now his alertness is down. They aren't sure what output he is giving other than "holding his head up" and opening his eyes.
137. Student 9's SLP: She will not find the switch if it's not visible, it doesn't seem that she has integrated this.
138. Student 10: the SLP and paraeducators all phrase communication interactions the same way.
139. Student 10: Switch has been used in conjunction with his tactile schedule: they have him "feel" his schedule.
140. Student 10: Are there other times to use the switch across settings? They use the switch for greetings (peers wait for response and help him hit the switch).
141. One of the best things I heard this week was that everyone on the team was now watching for and acknowledging communicative attempts of students and attaching meaning to these behaviors. This is half the battle won!!!!

Critique of LII Process

142. Coaching calls are going great Seem to be just getting into the pace of how calls are set up.
143. I have found the calls very helpful.
144. How coaching calls could better meet needs of team: "Sometime team is not together, therefore difficult to plan goal/plan for following week. Therefore, if we could have some time to plan together we could problem solve and be creative as a group".
145. Coaching call suggestion: to be a little more specific I guess in direction as it applies to specific communication goals; to provide more examples for generalization than just to comment on what we have already done.
146. Coaching call suggestion: All calls extremely positive and motivating! Maybe give us an idea to brainstorm about, try, problem-solve ourselves and then present/discuss.
147. I look forward to coaching calls. Always positive. Makes you feel great about accomplishments, no matter how small.
148. Suggestions used from coaching call: Great advice on next steps to take and I love the activities (literacy, personal narrative) makes us think!
149. We saw progress with everyone, including several other students in the classroom who were not part of the project.
150. I am so proud of all of our students and staff and their work in LII
151. Have so enjoyed learning from all of you this past year and hope we can continue in the Fall.
152. SLP explained that the coaching calls were going well; forces us to brainstorm and not wait to problem solve.
153. Summary of what was said was very beneficial after coaching calls
154. Coaching calls motivates us to move forward and to see the progress is helpful as well.
155. The additional tech support was useful.
156. The difference in Student 4 between the beginning of the year and now is amazing.

157. The summary of notes was very beneficial. We can look at what we discussed and see where to go from there.
158. Conference calls keep us motivated and allow us to get together to talk about what each student needs.
159. This was my first coaching call, so I haven't had a chance to implement suggestions or advice. I am excited about the opportunity to do that in the coming weeks.
160. I know it's more efficient to have all the teams from the county on one conference call, but I think since the students are so different and some of the parents are involved in the calls, it might be better to have one call for each school.
161. Currently I am pleased with the coaching calls.
162. I would suggest asking the teachers if approach was implemented in regular ed. or special ed. classroom...and why? How many times was approach implemented?
163. Today, I felt like my needs were well met. I felt supported and I felt the discussion was beneficial.
164. It's not as helpful to hear from the other school, since each of our students seems to have different needs. Each team is rightly focused on their student(s)' specific communication/learning needs
165. A short written account of the call would be helpful.
166. The hour long after school call is a bummer.
167. It's good to have the support of experts, and the calls help us really focus on how to help our students.
168. I like to get personalized suggestions.
169. Benefits of coaching calls: problem-solving issues that come up, new ideas.
170. Good ideas, hearing what others are doing is a good use of my time. Input from the UK folks is great!!!
171. Nice to hear that you are doing what the initiative was looking for...bouncing ideas is good for me.
172. I think it serves as a good time for reflection, pulls the team together and I like that different teams, get to hear what the other teams are doing and what they may be having success with or struggling with. I also like that it keeps the teams focus on short term goals for each week.
173. Changing coaching calls to meet team members needs "Maybe spaced out every 2 weeks"
174. Change time; decrease length of calls
175. The time commitment is a little overwhelming.
176. I haven't implemented any suggestions from the call because I don't think there were any suggestions for my team role.
177. I appreciate the time all of you take to help us with our objectives. I think the extended time between the coaching calls will really give us a chance to provide more opportunities for practice and increased chances of success.
178. Nice to have someone to bounce ideas off of and get ideas from.
179. The calls are fine, but I especially feel like we all benefited from our face to face meeting. It is easier to talk and share ideas face to face.
180. After school and for an hour on a weekly basis is way too much. Monthly calls would be better.
181. Training: Great Information! I can't wait to put things in place and see results. The 1:00 conference call is difficult for special ed. and gen. ed teachers whose schedules are pretty determined.
182. Training: Thank you for this opportunity--it has encouraged me to continue with high expectations from my child, but also from the school staff.
183. Training: very good, learned a lot
184. Training: Areas for additional follow-up training: "Not sure yet, probably aug. com. Questions"
185. Suggestions for future trainings: Sensitive to time constraints of individual schedules.
186. Suggestions for future trainings: Keep short as possible but efficient.
187. Training: Areas for additional follow-up training: More alternative approaches that may be needed during implementation of communication when behavior is involved.
188. Training: Areas for additional follow-up training: My role as the school based SLP and relaying this info to all of the team members.
189. Training: Areas for additional follow-up training: Management of new initiatives in gen.ed classroom.
190. Coaching call suggestions: Receiving copies of articles discussed, possibly ahead of time.

191. Coaching call suggestions: At this point I think the structure of the call worked very well.
192. Coaching call benefits: Hearing ideas and suggestions from others. Also knowing what the parents are doing at home.
193. Student 6: SLP reports difficulty getting data in such a short period of time, the short period of time often makes it feel as if it is artificial instead of in the natural flow of activities.
194. Training: Areas for additional follow-up training: In teaching the student how to use the appropriate switch or communication device.
195. Training: areas for additional follow-up training: At this point, we are anxious to get started with our student. I am looking forward to having the weekly support through the phone calls.
196. Training: areas for additional follow-up training: The data sheets seem a little complicated. Maybe they will get easier as we get into it. Also, additional training may be needed as the students go from one level of communication to the next and from one piece of equipment to the next.
197. Training: areas for additional follow-up training: More time discussing the student's needs.
198. Training: suggestions for follow up trainings: Have more pieces of equipment on hand to actually get a feel for what is available.
199. Comments for coaching calls: Love them! Great to talk through challenges, thanks so much.
200. Suggestions for coaching call: So far everything has been helpful.
201. Training: areas for additional follow-up training: I feel that everything was presented in a very clear way that I do not feel the need for additional clarification.
202. Training: I think we could benefit most from on-site visits where project staff could work directly with the teacher and student on communication competence, various forms of technology, etc. More specifically, help us identify and shape the student's communication attempts through discussion modeling, etc. Possible do some more videotaping to use for reflection after visits.
203. Training: The videos were very powerful!!
204. Training: Great job! A wonderful course. Very helpful. Thanks so much.
205. Training: It would be helpful for the instructors to actually visit with the students before the training. The video tapes didn't seem to show the whole picture.
206. Training: This was one of the best PDs I have ever been to. Thank you!
207. It would be best if the teams could all be together at one location, so they could discuss the suggestions together and then ask further questions during the call. I was not with my team and didn't feel like a team member as much. Today I was able to discuss with my team and it helped, but it would have been best to be with them Wednesday during the call.
208. Its nice to have a sounding board to relate problems to and have some feedback on what to try next.
209. Feedback from teachers indicates that the coaching calls are helpful and that suggested strategies are working or at least helping them begin to think about how to increase their student ability to communicate in a meaningful and reliable way. What has impressed me, is the manner in which strategies and ideas are relayed to the grant participants. You guys know how to get folks to try new things and reinforce them for their efforts! Always positive, realistic and yet challenge us to keep trying until we hit the right mark. Thanks so much!
210. Coaching calls: Have them earlier in the day, and on days when the entire team is together. It is difficult to participate in calls when you are not in the same location as the rest of your team. I think it would be best to have a separate call for each individual student. I am not really learning from anything from hearing the info on the calls from the other students, because I'm not familiar enough with these students.
211. I wish each school had separate calls. There is a time crunch during this time of year and I don't think it is helpful to listen to the other schools when each student is so different.
212. Unfortunately coaching calls occur at an inopportune time for me- I have been unable to participate in them.
213. Student 10's team: Thank you so much for all the help you all have given!!!

Barriers to Implementation

214. Approaches learned in coaching call implemented in special ed classroom because: Activities have been done in a classroom group activity or with a peer tutor who has come to the special education classroom.

215. Approaches learned in coaching call implemented in special ed classroom because "primary location for education"
216. Approaches learned in coaching call implemented in special ed classroom because: " More one on one time to observe the students reactions to the material and watch her vision."
217. Challenges to implementing suggestions: time with alternate assessment wrap ups
218. Approaches from coaching calls implemented in Special ed classroom: This area is the one with the least distractors. Student 8 is very distracted in her surroundings- so a quiet room free of distractions help.
219. Approaches from coaching calls implemented in Special ed classroom: "This is where he resides for most of the day"
220. We are working hard on using the approaches in the resource room and feel that he is too distracted by the other students and teachers in the regular education classroom.
221. Challenges to implementing suggestions: As a team, we feel the assignments have been above the student's abilities, both cognitively and physically.
222. Challenges to implementing suggestions: Since I only see her once a week, it was difficult to find enough time to try to use a variety of communication tools. I worked with vocalizations and switches.
223. The student works best in the resource room. She becomes very distracted and loud when she is frustrated in regular education settings. This is a distraction to other students.
224. I am the speech therapist. The main challenges are getting enough time with the student during the day.
225. Student 8 has been absent this week due to health issues.
226. Challenges to implementing suggestions: Student 10's sleep schedule.
227. Teacher of Student 9: I feel like we seem like we are being very pessimistic about these activities. I am very interested in increasing Student 9's communication skills, but I, as well as her parents, do not see these activities as meaningful to Student 9. Some of these suggested activities have reduced her willingness and interest in activities that were previously meaningful to her. When we look at developmental levels, her preferred activities are developmentally appropriate. I know that age appropriateness is highly encouraged, but at what point does our goal of age appropriateness become inappropriate due the restriction of preferred activities that would not be restricted if Student 9 did not have a disability? The participation assurances in the District packets mention six weeks of coaching calls after the training. How many more weeks remaining in the LII?

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