

Supporting Deaf Students with Intellectual Disabilities Through a Specialized Literacy Curriculum

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The incidence of d/Deaf¹ students with intellectual disabilities in schools for the d/Deaf has increased; however, the development of curricula for this population has not kept up with this trend. A literacy curriculum was developed at St. Joseph's School for the Deaf (SJS) to address the special needs of these students using a reading and writing workshop approach. The development of this curriculum began with organizing a Special Needs (SN) literacy team. The team consisted of two teachers, the educational supervisor, and two consultants; one focusing on literacy and the other focusing on cognition and the mediated learning approach. The unique aspect of this curriculum was that it integrated literacy and cognitive domains. The teachers implemented this curriculum using the mediated learning paradigm for interaction. This proved to be an effective intervention. Results of literacy assessment and teacher reports showed an increase in reading and writing levels. These results suggest that intentionally focusing on the development of cognition while supporting students as developing readers and writers is a successful model for d/Deaf students with intellectual disabilities.

The number of d/Deaf students with additional disabilities has increased. Recent estimates show that 20-50% of d/Deaf students have an additional disability (Gallaudet Research Institute, 2005; Guardino, 2008; Laurent Clerc National Deaf Education Center, 2010). Educational programs and schools for the d/Deaf must be prepared to meet the needs of this growing population. Survey results and literature reviews reveal that despite this need,

¹ IDEA guidelines promote “person first language” when referring to students (i.e., “students with learning disabilities”); however, the field of d/Deaf Education is an exception to this practice. The terms “d/Deaf students” and “teacher of the d/Deaf” are the norm as it is a cultural identifier for the d/Deaf community. The capitalization of the “D” in Deaf represents the Deaf Culture while the lowercase “d” denotes deafness as an audiological condition.

there is very little research regarding best teaching practices for educating d/Deaf students with cognitive disabilities (Guardino, 2008; Jones & Ewing, 2000; Koors & Vervloed, 2003; Luckner & Carter, 2001). In these high stake times in education with new standards, increased teacher accountability, and high-stakes testing, schools must show evidence of alignment with the Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) and access to general education for all of their students. This creates a need for schools to develop programming that will meet the needs of even their most challenging students. Historically, this has been particularly difficult for d/Deaf students with intellectual disabilities. The need for effective teaching strategies, especially in the curricular areas of reading and writing for this population, led St. Joseph's School for the d/Deaf (SJSD) to embark on a pilot project to address the unique needs of d/Deaf students with intellectual disabilities.

Background

Professional development programs. Previous to the pilot program, teachers at SJSD had been involved in two professional development programs; a national literacy staff development organization called LitLife and a cognitive education program based on the Theory of Mediated Learning. LitLife's consulting supported teachers to develop effective literacy curriculum and foster strong literacy instruction through a workshop-based approach to the teaching of reading and writing. There were two main goals of the professional development partnership: to design a specialized K-8 reading and writing workshop curriculum for d/Deaf students and to effectively implement those units. This reading and writing workshop curriculum worked within the framework of balanced literacy (Fountas & Pinnell, 1996) and augmented the other literacy components already in place (guided reading, shared reading, read alouds, and word work). The reading and writing workshop approach allows for teacher modeling often through mini-lessons, student independent work, small-group instruction, and individual conferring with readers and writers (Calkins, 1994, 2000). Mini-lessons scaffold instruction with an emphasis on skills, strategies, procedures, and craft (Dorn & Soffos, 2001) so that there is a gradual release of responsibility (Pearson & Gallagher, 1983) for students as they gain expertise. In a workshop-based approach, students have the opportunity to read and write for a variety of purposes, have time for collaboration, and opportunities to share their meaning-making with others (Miller, 2002). In addition, processes are built up and broken down in both reading and writing (Fountas & Pinnell, 1996).

There are four components to a workshop-based approach to literacy teaching and learning delineated by Miller (2002) as teacher modeling, guided practice, independent practice, and application. The teacher models, or dem-

onstrates for students, a few strategies of great consequence in depth over time in support of student independence. The modeling in the mini-lesson provides teachers with opportunities to think aloud and demonstrate print and thinking strategies to make sense of text. Thinking aloud allows teachers to make the invisible work of reading more visible and the implicit explicit. Guided practice serves as a scaffold to invite students to apply a strategy through collaboration with peers. Independent practice is the opportunity for students to begin to apply the strategy on their own. Teacher feedback is essential for students at this time as teachers find out how students are applying what they have been taught (Miller, 2002). Application is when students apply a strategy to different types of texts or parts of the curricula.

In addition to incorporating workshop-based methods, each team of teachers produced reading and writing units that included the areas of process, genre, strategy, and conventions (Allyn, 2007) as a curricular framework to compliment the workshop-based methods. Process gives the students practice in the processes shared by all successful readers and writers, at an appropriate development level. These include fluency, stamina, and independence. Genre gives the students an opportunity to identify and use various literacy containers, such as narrative, nonfiction and poetry. Strategy develops students' ability to be strategic readers and writers, practicing for example how writers make plans and how readers approach text differently depending on their needs. Conventions focus students on the grammar and punctuation in contexts that are real, practical and relevant to their reading and writing experience. Teacher workshops, study groups, demo lessons, and observations all took place with the focus on quality of instruction and the pacing of the reading and writing units. SJSD was well on its way to a spiraling literacy curriculum tailored for their students and written by teachers from grades K-8. Teachers and students had a common language with which to discuss and plan their practice.

Initially, the teachers of the older SN classes at SJSD were included in the grade team curriculum writing and development. The goals and objectives of the units, however, were inappropriate for the developmental levels and abilities of their students. Teachers constantly needed to adapt the units and lessons, but had little built-in support or collaborative opportunities to do so.

The ongoing professional development in cognitive education focused on developing understanding of cognitive development and the cognitive underpinnings of classroom tasks, as well as, the development of quality student/teacher interaction that intentionally develops cognition. In order to have a deep understanding of cognitive development and develop a strong belief system for cognitive change, each teacher was trained in the theories of Structural Cognitive Modification (SCM) and Mediated Learning as described by Feuerstein (Feuerstein, 1979; Feuerstein, Rand, & Feuerstein, 2006; Feuerstein, Feuer-

stein, & Falik, 2010). Feuerstein's theory of SCM postulates that the limits to learning cannot be known priori. All human beings, regardless of age, or severity of a genetic, physical or psychological impairment are open systems who can go through meaningful structural change throughout their entire life span. A structural change is more than just an increase in content knowledge or acquired skills. It shapes cognitive structures: ways of approaching and solving problems that can be used in totally unknown situations (Feuerstein, 1979; Feuerstein, Rand, & Feuerstein, 2006; Feuerstein, Feuerstein, & Falik, 2010). This is an optimistic view of the human's natural propensity to change and adapt to the environment.

Feuerstein (1979) describes two modalities of learning: direct learning experience and mediated learning experience (MLE). In the direct learning modality of learning, the individual learns from his/her encounters with people and objects in his/her environment. The individual's behavior is modified through the feedback he/she receives during the experience (Feuerstein, 2006). The paradigms representing the behaviorist view, such as Pavlov and Skinner, as well as, Piaget's theory of cognitive development describe direct learning experience (Santrock, 2005). Educators have been successfully shaping behavior through conditioning and by giving rewards and punishments as originally described by Pavlov and Skinner for decades. In addition, Piaget's four stages of development: sensorimotor, preoperational, concrete operational and formal operations, have long guided teacher's pedagogical decisions for their students (Furth & Wachs, 1974). Educators have relied on the four stages to inform them about the appropriate experiences to provide in their classrooms to foster cognitive development. Children learn a great deal from being directly exposed to stimuli: for example, they can learn to stay away from undesirable experiences, to strive for more pleasant experiences, and a variety of skills.

Feuerstein believed both the behaviorist's paradigms and Piaget's model were essential for a child's development. However, he believed that these experiences did not necessarily lead to higher cognitive abilities that are essential to adapt to new situations and autonomous learning. Therefore, the possible experiences available to the child are limited. These models were incomplete from Feuerstein's viewpoint. He believed that a learning experience needed more in the interaction than described in the behaviorist paradigms. In addition, he did not accept that a child having particular experiences as his/her central nervous system developed would necessarily move him/her through the four stages of cognitive development as described by Piaget. According to Feuerstein, Piaget's theory was missing a key factor, a significant other (parent, teacher, grandparent, sibling, etc.) who was more knowledgeable than the child to facilitate development (Feuerstein, 1979; Feuerstein, Rand, & Feuerstein, 2006; Feuerstein, Feuerstein, & Falik, 2010). With this idea in mind, he developed a second mo-

dality of learning, mediated learning, which expanded Piaget's paradigm to include a facilitator of learning which he called a mediator.

MLE emerges from another cognitive theory as well. Lev Vygotsky, world renowned for his understanding of learning believed that children develop cognition through social interactions (Vygotsky, ed. Kozulin, 1987). Feuerstein conceptualized this idea further by describing these social interactions and called them mediated learning experiences (MLE). Feuerstein (Feuerstein, 1979) defined MLE as the quality of the interaction in which human beings, such as parents, teachers, caregivers, as well as peers "interpose themselves between a stimulus in the environment and an individual, in order to ensure that the stimulus is perceived, grasped and integrated in a meaningful way" (p. 71). Thus guided by his/her intentions, the mediator filters and selects specific stimuli for mediation, organizes and frames the chosen stimuli in a certain context, regulates their intensity, frequency and order of appearance, establishes relationships between them, regulates the mediatee's reactions, interprets the stimuli, and attaches a meaning to them and elicits motivation and interest (Feuerstein, 1979; Feuerstein, Rand, & Feuerstein, 2006; Feuerstein, Feuerstein, & Falik, 2010). This is done with the intention to influence the cognitive structures of the individual. Mediated learning experiences can overcome the barriers that prevent development of adequate levels of cognition. In the MLE modality of learning, it is believed that thinking is not a product of natural maturation of the brain, but of sufficient mediated learning experiences (Feuerstein, 1979; Feuerstein, Rand, & Feuerstein, 2006; Feuerstein, Feuerstein, & Falik, 2010).

Feuerstein (1979) formulated criteria for a MLE that serves as a guide for the mediator and differentiates the interaction from teaching. Most teaching is a direct learning experience because the teacher is not consciously trying to influence specific cognitive structures of the students. Teachers are mainly concerned with the content being taught. There is an underlying assumption that the cognition will automatically develop as the child engages in the content experiences. When a teacher is imparting content and has the goal to effect the cognitive structures of the student simultaneously, the teacher is creating a mediated learning experience. The teacher also needs to include the essential criteria of intentionality/reciprocity, meaning and transcendence in the interaction. Feuerstein (Feuerstein, 1979; Feuerstein, Rand, & Feuerstein, 2006; Feuerstein, Feuerstein, & Falik, 2010) describes intentionality and reciprocity as making the stimuli and student compatible by selecting and modifying the stimuli so the students' cognitive system changes. This also involves strategies to ensure the mediatee is engaged in what the mediator wants to offer as a learning experience. Transcendence is going beyond the present task and enlarging the learning field. This is done by bridging, making a connection, to other experiences in the past or future. Meaning refers to adding an extra affective, social,

or cultural value to a word, object, or event and to explicitly impart a benefit to the thinking required by the task (Feuerstein, 1979; Feuerstein, Rand, & Feuerstein, 2006; Feuerstein, Feuerstein, & Falik, 2010). Each teacher at SJSD was involved in a professional development program that focused on learning these criteria for a MLE and practiced the planning and implementation of MLEs in the classroom. In addition, as part of the professional development program, each teacher was observed during a MLE, coached, and given feedback monthly.

It became clear that tailoring each professional development program for these students with SN separately would not be as effective as combining the work as one integrated program. In his study investigating organizations that made the leap from “good to great,” Collins (2001) found that transformation is the result of a “cumulative process, step by step, action by action, decision by decision” (p. 165). In response to the challenges facing teachers of students with SN in planning meaningful literacy instruction, the first step was to create a SN literacy team that intentionally integrated the merits of both professional development programs. The goal for this pilot program was to develop literacy abilities by targeting the underlying cognitive structures simultaneously. In order to reach this goal, it was vital for the special needs curriculum team to work together as a professional learning community. This would develop a shared mission for teaching and learning based upon common ideals (Collins, 2001; Wepner, et al, 2016). In addition, using a collaborative professional development model would create capacity within the teachers to view themselves as instructional leaders engaged in shared decision-making when it came to the creation and revision of their curriculum. Stoll, Bolam, McMahon, Wallace, and Thomas (2006) define capacity as “a complex blend of motivation, skill, positive learning, organizational conditions and culture, and infrastructure of support” (p. 221). Working together created a shared commitment to the curriculum as well as to methods of instruction that bridged cognitive and literacy learning.

METHOD

Participants

Students. The students in the project ranged in age from seven to twelve. They were in Special Needs (SN) classes and most of them met the New York state’s criteria for alternate assessment. In addition to d/Deafness, they were intellectually disabled and some had been diagnosed with Autism or CHARGE syndrome. CHARGE refers to coloboma, heart defect, atresia, retarded growth and development, genital abnormality, and ear abnormality. Many of the students come from families that speak a language other than English in the home. Prior to the implementation of the pilot literacy curriculum, the students were at Pre-Kindergarten to Kindergarten levels in both reading and writing. The students were essentially non-readers with a few who could read sight words

from one text. Sight words were not generalized to other texts or contexts. In addition, students did not demonstrate reading comprehension abilities or basic understanding of elements of a story. Finally, most of the students' writing consisted of scribbles and circles. Characters were not included in their drawings and the students were unable to label their pictures.

The students needed significant cognitive support and were unable to deal with the cognitive requirements of tasks typical in classrooms for the d/Deaf, and were therefore unable to academically benefit from classroom experiences through the existing school curriculum. Even when given hands-on activities, students struggled to find meaning in the learning experiences. They experienced the world in an impulsive manner, which made it difficult to make connections between events, objects and ideas; therefore they did not establish cause and effect or other types of relationships. In addition, they had difficulty considering multiple sources of information simultaneously, so they were unable to compare objects, events, or ideas spontaneously. These students did not recognize and identify a problem when presented with one. They viewed all stimuli as equal in value so were unable to select relevant data and ignore irrelevant data, nor could they classify data in appropriate groups. Most concepts were not internalized nor stored in memory so the retrieval process of information was almost non-existent. Higher levels of thinking such as inference, representation, and generalization were not available to these students.

One of the strengths of the students recognized by the teachers were the strong teacher-student relationships. Building on that foundation was essential as the cognitive and literacy curriculum was developed to engage the students and meet their cognitive and literacy needs.

Professionals. As with all endeavors, some preliminary steps needed to take place before the actual teamwork could begin. These included administrative support, consultant collaboration, scheduling, and teacher buy-in. The initiator of this idea, the educational supervisor, proposed the idea of a SN Literacy team that integrated literacy development and cognitive goals to SJSD's executive director. Once approval was granted, the two consultants (MLE and LitLife) were asked if they would be willing to partner in this unique endeavor. After both consultants were on-board, the biggest hurdle was scheduling meeting times that were convenient for all the participants. Team members included the SN teachers and educational supervisor from SJSD and the LitLife and MLE consultants. One classroom teacher was starting her first year of teaching and the other was new to SJSD, so neither had been in the existing professional development programs. Both teachers learned about MLE and LitLife for the first time as the collaborative work progressed. Teachers and the educational supervisor met separately with the MLE and LiteLife consultants once a month. Each month the work accomplished with each consultant was shared with the other

consultant to insure the integration of the work. A full team work session was scheduled five times a year for either a full day or half day session.

Collaborative Work

Curriculum writing. The root of the word curriculum is “currere” translated from Latin as “to run the course.” The Special Needs curriculum team considered curriculum as both the precise consideration of *what* is being taught as well as the *process* of experiencing and learning what is taught. Additionally, curriculum was defined by the team as a set of beliefs “about how people learn, and the classroom contexts that best support learning” (Short & Burke, 1991, p. 6). The curriculum development process required collaboration through negotiation (Bintz & Dillard, 2007) with the understanding that curriculum is the result of shared decision-making of instructional leaders and teachers to motivate students and personalize learning (Wepner, et al., 2016). With the knowledge that previous reading and writing workshop units of study were not meeting the needs of the students at SJSD with intellectual disabilities, new unit plans were needed. Curriculum documents were viewed by the team as living, changing plans that require ongoing reflection and revision. The goal of the unit plan construction was that the plans provide roadmaps to make teaching decisions more purposeful and reading, writing, and cognitive skill development more aligned with students’ needs.

With the LitLife consultant, the team created reading and writing units that were developmentally appropriate for d/Deaf students with intellectual disabilities. The MLE consultant guided the team in identifying cognitive requirements for the literacy goals of each unit. Together they engaged in a process that used that data as a starting point for developing teaching strategies and activities. This required going beyond writing a literacy curriculum but also included focusing on the quality of instruction. We believed this was crucial for the success of this program. The team engaged in deep discussion around instruction, which included task analysis, teaching strategies, and targets for cognitive development for each reading and writing lesson. Careful analysis of the students’ current levels of academic functioning fueled the conversations and guided the team while writing goals, differentiating objectives, and developing strategies for the literacy units.

Curriculum implementation. With the written units in hand, implementation became the focus for the team. The team recognized that the students’ severe cognitive challenges acted as a barrier to learning. Addressing these cognitive challenges became the main goal for these students as there are many cognitive actions that readers need to develop to be successful readers. Beginning readers are sorting out the concepts related to using print, such as, left to right directionality, sign/voice to print match and the relationship between a visual

language and a written language. At the same time they need to focus on the meaning of the text and engage in cognitive processes, such as identifying the important information in the text and what is the writer's message. A successful reader must simultaneously employ a wide range of strategic actions while processing print. These include, word identification strategies, making predictions, integrating information, making connections, inferring and analyzing.

The nature of the student/teacher interaction was determined as a key ingredient for cognitive change for these students. In the implementation of the units, the teachers followed the criteria for a MLE as described by Feuerstein. The team believed that this would enhance the student/teacher interactions which in turn would change the course of the students' cognitive development, as well as, their performance in reading and writing.

To facilitate meaning in learning experiences for these students, the intensity and frequency of the MLEs were greatly increased during the literacy lessons. Also, the inner structure of the MLE was carefully designed to include mediated strategies that address the severity of the cognitive needs of these students. These included, but were not limited to, comparing using different parameters, sorting relevant data from irrelevant data, labeling experiences, modeling strategies for planning behavior, and interpreting stimuli through visualization to formulate concepts specific to the students' needs. The focus of the mediation was to make thinking explicitly part of the learning experience through strategies that increase successful task completion.

The literacy units were presented in stages moving from immersion, identification, guided practice to commitment (Allyn, 2007). This predictable progression gives students opportunities to build background knowledge, understand the context for what they're learning, practice the key skills and strategies, and commit to these new understandings. Each unit gives students multiple opportunities to learn through different methods of instruction. Each unit is a flexible framework that gives guidance for what students' need to know, while the daily lessons may be differentiated to meet individual student needs. In addition, at the core of the SJSD's literacy curriculum are the tenets of maintaining a classroom culture that fosters motivation to engage in literacy activities, teaching reading as an authentic activity, providing scaffold instruction in all areas of a balanced literacy program, providing time to read and write using multiple texts that link and expand vocabulary, concepts and develop background knowledge.

Teachers planned each lesson in the unit as a MLE. In planning, they differentiated between the literacy objective and the characteristics of a MLE. As an example of this work, in the unit *Drawing Characters* (see Figure 1) the mediation centered on goal setting and goal achieving. The concept of a checklist was introduced as a tool to help develop the cognitive structures of selecting relevant data, planning behavior and to help develop the schema of a person. The teachers used the checklist as a planning tool for the students and to reinforce comparative behavior. The students were required to check their drawing against their plan to see if they left out any parts. Other cognitive structures that were intentionally developed through the literacy experiences in this unit were comparative behavior, spatial relationships and systematic exploration of data. The labels of each facial feature and expression were emphasized so each student could talk about his/her work. In the lessons, the intention was addressed by designing the lesson around these cognitive anchors. This included choosing appropriate material to create a shared focus that helped develop the cognitive intentions and by shaping the questions to foster that kind of thinking. For example, in the first mini-lesson, selecting relevant cues, and comparison was developed by the teacher by having kid drawings and photos that had different sizes and colors of eyes, noses, mouths, hair and skin. The lesson may start with the students being asked what they notice in the pictures. After getting all students responses, the teacher would say, "I want you to be able to draw a picture of a person also" (Mediation of Goal Setting). The teacher would than ask questions specifically about what a face must have and give the labels for those features leading toward questions such as, "What is important on each face (eyes, nose and mouth) and what is not important (size, color, freckles, etc.)." Through questions such as these the teacher was consciously developing the cognitive function of selecting relevant information. In addition, to develop the cognitive function of comparison, the teacher would say, "Let's compare this picture with this picture. When you compare you want to know what are the same attributes and what attributes are not the same. What is the same in these two pictures? What is different?" "Is this a face, why or why not?" "What is missing?" These kinds of questions would continue over time focusing on the individual needs of each child. By keeping the challenge of the questions manageable, the students become intrinsically motivated to engage further in the MLE.

RESULTS

After two years of collaborative work, the SN Literacy team developed eight reading and eight writing units for the yearlong calendar (see Figure 2). Each unit's objectives and strategies were differentiated and the units themselves were labeled SN- Class A and SN- Class B, to note the different classroom levels. All units were written with the understanding that students will move from

Class A to Class B as they grow, so objectives and key understandings for Class B units build upon those from Class A units.

Figure 1. Unit plan focused on drawing characters. This figure details the unit of study developed by the SN team for d/Deaf students with intellectual disabilities that incorporated literacy skill development with mediated learning.

LitLife St. Joseph's

Unit Title: Drawing Characters (2/15/11) **Length of Time:** 4 weeks **Grade Level:** Class A

Unit Goals:
Students will:

- o Use checklists as a strategy to monitor the accuracy of their drawings.
- o Draw pictures that include details about their character(s):
 - o Include accurate facial features,
 - o Include accurate body features (differentiated for each class and student),
 - o Include details that signify various emotions:
 - Class A: happy, sad, angry
 - Class B: happy, sad, angry, surprised, scared, sleepy

Anchor Texts:

- o Sophie Gets Angry
- o My Face - Reading A to Z
- o My Body - Reading A to Z (two different books available at different levels)
- o Emotions - Reading A to Z (mini books section)
- o Feelings - Reading A to Z (mini books section)

Notes:

A: Timing of illustrations units go along nicely with Science during December/January.

WEEK ONE - FOCUS ON: FACIAL FEATURES

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Week 1 Immersion/ Identification	Day One	Day Two	Day Three	Day Four	Day Five
	<p>ML:</p> <p>Share kid drawings of people that include facial details.</p> <p>Model drawing a quick face that includes details (eyes, nose, mouth).</p> <p>Spend time looking at different photographs of faces, discussing the things that all faces have.</p> <p>IP:</p> <p>Students independently go through the parts of a face on a photograph, marking each feature with a sticky note (and labeling).</p> <p>Students draw faces based on the discussion (using pieces to construct a face OR using a photograph as a model)..</p>	<p>ML:</p> <p>Identify the features of faces (eyes, nose, mouth or more complex features).</p> <p>Introduce (and create) checklist of facial features we include in our drawings.</p> <p>IP:</p> <p>Students use the checklist on photographs to reinforce the features that all faces have..</p>	<p>ML:</p> <p>Model how we use the checklist to do drawings of our faces.</p> <p>IP:</p> <p>Students use their checklists to create a drawing of their face.</p>	<p>ML:</p> <p>Model how we use the checklist to do drawings of our faces.</p> <p>O: introduce how to create a plan for each of the features, extending the decisions students are making. Show students options for each of the items on their plan (eye color, happy/sad mouth, hair type).</p> <p>IP:</p> <p>Model using the plan and drawing your face.</p>	<p>ML:</p> <p>Model examining a picture to find the missing feature on a face and filling it in (cut-out or drawing). This can be differentiated depending on the students' levels.</p> <p>O: Reinforce how to create a plan for each of the features.</p> <p>IP:</p> <p>Model using the plan to draw another person's face.</p>

WEEK ONE NOTES:

- o B: Checklist/plan sheet might be introduced in stages, first as a checklist (as stated in the unit) and then introduce the "plan" focused on making deliberate color choices, rather than introducing emotion/hair type/etc.

- o A: If students have motor challenges, teachers may provide features (or starter features) to glue onto faces (e.g. different size circles for faces, different size eyes, mouths).
- o A/B: In year one, did not do day five, rather focused on drawing skills.
- o A: For students who imitate or are frustrated by a model, teacher may continue to model, but not expect student to copy or complete the same task.

WEEK TWO - FOCUS ON: BODY FEATURES

	Day Six	Day Seven	Day Eight	Day Nine	Day Ten
Week 2	ML:	ML:	ML:	ML:	ML:
	<p>Share a PowerPoint of body features, using a checklist to determine things that all bodies have. Students may also highlight or circle each feature as they check them off the list.</p> <p>Model drawing bodies for students, using the checklist.</p> <p>IP:</p> <p>Students use the checklist to draw a body (pre-assessment/baseline).</p>	<p>Reintroduce the checklist used in day six.</p> <p>Model drawing a body using the checklist.</p> <p>IP:</p> <p>Students use the checklist on photographs to reinforce the features that all bodies have.</p> <p>Students read a book about body parts to reinforce understandings and definitions.</p> <p>Students draw a body using the simplified checklist.</p>	<p>Model how we use the checklist to do drawings of our bodies.</p> <p>Model gluing body parts on an outline, selecting specific features to fit the frame (Teacher can choose how to scaffold the body parts, breaking down the body into smaller pieces).</p> <p>IP:</p> <p>Students use their checklists to create a drawing of their bodies.</p>	<p>Model how we use the checklist to do drawings of our bodies.</p> <p>B: Introduce how to create a plan for each of their features, extending the decisions students are making. Students think options for each of the items on their plan (color choice).</p> <p>Model gluing body parts on a paper with a template. Or students color the outline of their body to match the colors of their clothes.</p> <p>IP:</p> <p>B: Students use their checklists to create a</p>	<p>B: Model drawing a picture of another person in the room, using a plan and the checklist.</p> <p>IP:</p> <p>B: Students draw another student in the class using their plan and a checklist. Students share in pairs their drawing and their "model."</p>

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Figure 2. Yearlong calendar of reading and writing units of study. This figure maps the complete literacy curriculum across a calendar year for d/Deaf students with intellectual disabilities.

Reading			Writing	
Class A	Class B		Class A	Class B
		September		
What Does it Mean to be a Reader? Asking Questions * Focus on "who" *	Making Connections	October	What Does It Mean to be a Writer?	Making Connections: Writing
Main Character Exploring Characters in Books	Character Study	November	Drawing Characters	Drawing Pictures to Describe Characters

Sequencing	Making Predictions Using Texts Making Predictions by Activating Prior Knowledge	December January	Sequencing Making Predictions Using Texts: Writing	Making Predictions Using Texts Making Predictions by Activating Prior Knowledge
School Signs Environmental Signs	Reading Around My Community	February	School Signs Environmental Signs	Environmental Signs and Notes
Reading Around My Community		March	Writing Around My Community	Letters
Connecting Setting to Action Verbs (reading)	Connecting Setting to Action Verbs Through Questioning	April	Connecting Setting to Action Verbs (writing)	Connecting Setting to Action Verbs Through Questioning
Reading Reflection		May		
		June	Writing Reflection	

All units included work on specific cognitive structures that related to the literacy goals. The integration of literacy and cognitive goals was a natural one as it is clear that cognition is fundamental to reading and writing. The results of the pilot program supported our notion that literacy and cognition have a reciprocal relationship. Our goal of developing literacy abilities was attained, as there was a clear effect of the implementation of the literacy curriculum on the students' reading and writing abilities. Students' reading abilities were assessed by their teachers using the Developmental Reading Assessment®, 2nd Edition (DRA2) (Beaver, 1997). The DRA2 measures readers' development over time. The scores represent the students' independent reading levels. The DRA2 leveled numbers are defined by accuracy, fluency, and comprehension criteria. The students' DRA2 scores moved from a range of A-6 with a mean of 1.30 (Kinder-

garten level) to a range of A- 18 with a mean of 3.40 (Kindergarten/First Grade level). Previously, the students could not answer any reading comprehension questions. They would either respond incorrectly or not respond at all. After the implementation of the literacy curriculum, the students' accurately answered many reading comprehension questions, particularly questions about story elements including character, setting and plot. Teacher observation supported this increase in literacy skills as they reported that including strategies for cognitive development during literacy work impacted the student reading and writing in all subject areas.

The most remarkable improvement identified was the students' writing (see Figure 3). Prior to the writing workshop units, the students only drew scribbles and circles. After the writing units, the students drew characters with details and added settings and actions to their pictures. The students demonstrated story elements through their drawings. One teacher on the SN team reported, "Our students progressed from scribbling on paper to drawing people with emotions and performing actions." These results were so dramatic that we no longer consider this a pilot project. The work has continued and in fact, SJSD is in the process of beginning a similar collaboration with all the other literacy teams.

In a focus group discussion at the end of the two-year pilot program, teachers also reported that "because of the scaffolding of the units, the students were able to easily see their own growth and development. Their growth not only helped them academically, but also helped boost their self-esteem. The students felt successful when completing these units and knew exactly what was expected of them, which helped reduce impulsive behavior. These units most importantly helped the students' development of schemas, networks of information, which they greatly lacked and were so important for comprehension. In addition, it was incredible to see crossover not only of the literacy skills, but also of the thinking skills in other areas."

As observed and reported by teachers, the use of mediated interaction integrated with the reading and writing workshop format had a positive effect on literacy skills, self-esteem and thinking. We believe that the use of the mediated interaction created structural change within the students' cognitive systems which in turn created the ability to learn the skills necessary for reading and writing. This functional relationship is an important one to recognize because this construct can be applied to other learning for this population and others.

Lastly, the apparent effects of the literacy curriculum also brought an additional correlated benefit. The SN teachers felt supported in their instruction. SJSD now has a thriving SN literacy team that specifically addresses the unique needs of d/Deaf students with intellectual disabilities. One of the teachers reported "seeing how MLE and LitLife could work hand-in-hand to have such a successful outcome was fulfilling to us as educators."

Figure 3. Pre- and post-writing samples. This figure illustrates the writing development of d/Deaf students with intellectual disabilities over a period of two years.



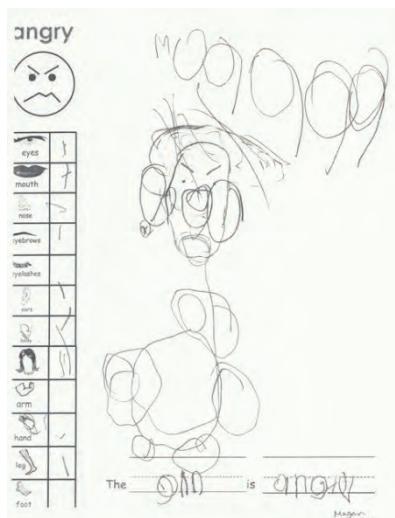
Student A – December 2009



Student A – April 2011



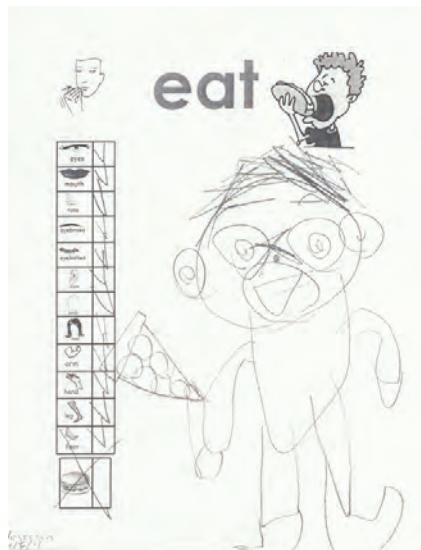
Student B – January 2010



Student B-March 2011



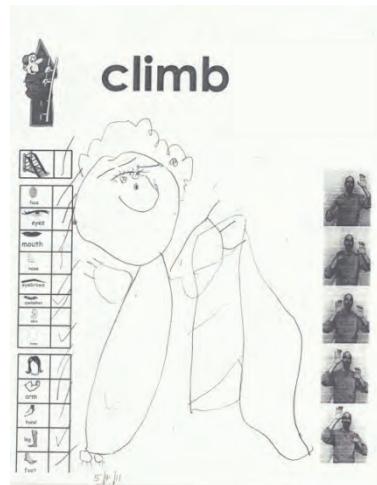
Student C – January 2010



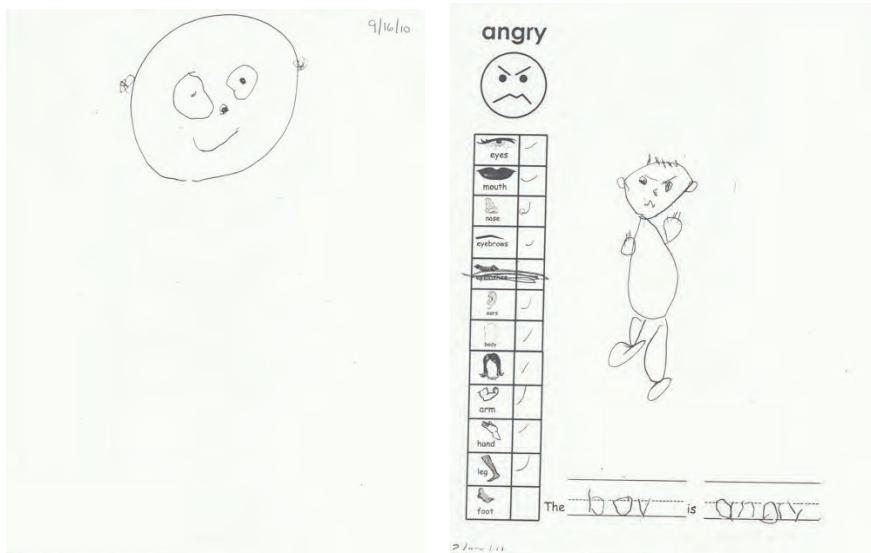
Student C-April 2010



Student D – February 2011

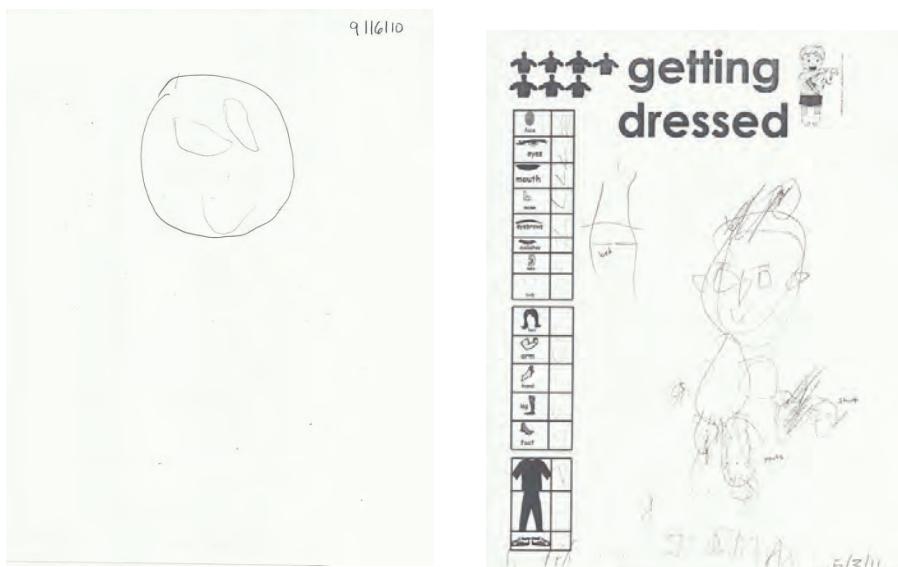


Student D-May 2011



Student E – September 2010

Student E-February 2011



Student F – September 2010

Student F-June 2011

DISCUSSION

There was a clear need for effective academic intervention for d/Deaf students with cognitive disabilities. With little research or published curricula on the market, SJSD created their own program. This unique program was successful due to the integration of outside consultants with expertise in literacy and cognition, the motivation of dedicated teachers, and the support and guidance of administration.

The vision for the professional development initiative SJSD undertook to create a curriculum to support their d/D students with intellectual disabilities to grow cognitively as well as in their reading and writing abilities is best summarized by Billings (2014) who stated, "Children are the priority. Change is the reality. Collaboration is the strategy." In developing a curriculum to meet the needs of students, collaboration was essential amongst all stakeholders to transform the curriculum, instructional practices, and student learning. This collaborative program was employed to meet the needs of this population because it would target the severe and limited cognitive literacy profiles exhibited by these students, which impinged on their learning in all areas. In order to meet the needs of this challenging population in schools who served/D students, SJSD created a solution that gave the necessary educational support to the teachers, who in turn brought about effective learning for its students.

As a pilot study, results from this study are limited and both the processes of collaboration and instruments for determining effectiveness continue to evolve. Some limitations of this study include the frequency of all stakeholders collaborating, limited measures for determining outcomes for d/Deaf students with intellectual disabilities, and responses from teachers themselves. The pilot study was being developed and implemented simultaneously. Further research will be conducted with the teachers to determine the ways the collaborative process shifted their practices and what outcomes they see in student performance. Moving forward, as new students enter the program, a complete yearlong reading and writing workshop curriculum will be in place as an intervention. Despite limitations, initial results reveal that it is a worthwhile endeavor for schools that support d/Deaf students with intellectual disabilities to consider collaborative possibilities between teachers, supervisors, and consultants to bridge literacy and cognitive learning with purpose. In addition, initial results reveal that when teachers are positioned as curriculum creators and when they are supported to drive their own program, they are more purposeful in their methods and student learning is heightened.

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