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# Writing supports for older students with significant disabilities: examining two students' journeys towards becoming writers

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WRITING SUPPORTS FOR OLDER STUDENTS WITH SIGNIFICANT  
DISABILITIES: EXAMINING TWO STUDENTS' JOURNEYS  
TOWARDS BECOMING WRITERS

An Abstract of a Thesis  
Submitted  
In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts

Emily Helen Freeman  
University of Northern Iowa  
December 2013

## ABSTRACT

This study describes the changes in linguistic and social communicative competencies that occurred when two older students with significant disabilities were provided with writing opportunities, instruction, and supports over a semester of the academic year. The goals of the study were to identify themes and patterns in the skills associated with linguistic and social communicative competence as evidenced in writing over time. A second aim of this study was to identify instruction methods and assistive technology supports being used in the classroom and describes the themes and patterns that emerged in the students' writing given the presence of these curriculum components.

Video and writing samples from the two students were collected and analyzed using a checklist of selected linguistic and social skills from the formal assessment, Augmentative and Alternative Communication Profiles. The checklist was determined to be not sensitive to the subtle changes in linguistic and social communication competence skills that were seen over time frame of this study. Themes of engagement with the writing process and access methods became evident and were explored. Instruction and opportunities in the areas of revision and writing for different audiences and purposes were identified as critical components of the writing process that were not addressed consistently for the two participants studied. Overall, the two students in this study demonstrated improvements in linguistic and social communication skills with the addition of writing instruction and support.

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has been approved as meeting the thesis requirement for the Degree of Master of Arts

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## DEDICATION

I would like to dedicate this research to all students who are striving to become writers and the educators committed to guiding them along their journey.

## ACKNOWLEDGEMENTS

I would like to thank my thesis committee, Dr. Jennifer Garrett, Dr. Evette Edmister, and Dr. Amy Petersen for their time and input into my research study and paper. Their support and guidance has help me become a more skilled and confident researcher.

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## CHAPTER 1

### INTRODUCTION

The current study was designed to describe the changes in linguistic and social competence that occur over half of an academic year in two high school students with significant disabilities that were provided with writing opportunities, instruction, and support. As described by Janice Light (1989), linguistic competence is the effective use of language elements such as words and their meaningful parts to create an understandable message. Social competence in communication is the skills to build relationships through the use of language, examples of social competence include asking social questions such as, “How are you?”, sharing information, and keeping a secret. Goals of this study included measuring the changes in writing and communication competence that occurred and identifying the elements of creating successful instructional opportunities in writing for older students with significant disabilities. Ways to assess implementation of assistive technology and writing instruction with regards to communication as a whole were also investigated.

To begin this examination of writing and its role in communication for students with significant disabilities, it is important to identify how and why writing is important in both academics and society. The next step will be to explore the relationship between writing and other communication forms particularly the augmentative and alternative communication (AAC) system of pragmatically organized dynamic displays (PODDs). Lastly, current literature regarding instruction as well as, supports and opportunities for

writing; with a focus on universal design for learning and assistive technology as they fit into the theoretical background of instruction in writing for students with disabilities.

### Why Writing?

For students with significant disabilities, reading and writing may be overlooked when creating an education plan due to low expectations from educators and caregivers (Downing, 2005; Musselwhite & King-DeBaun, 1997; Resteroff & Abery, in press). However, it is important to recognize that supports and instruction allow students with significant disabilities to meet higher expectations than would be possible otherwise (Downing, 2005; Light & McNaughton, 1993; Resteroff & Abery, in press). During the implementation of reading and writing supports, federal regulations must also be considered (Downing, 2005). The Individuals with Disabilities Education Act of 1990 (IDEA) guarantees students the right to supports and services that allows for them to gain benefit from public education (Downing, 2005; U.S. Department of Education, 2006) . The No Child Left Behind Act of 2001 (NCLB) reaffirmed this priority to education for all by creating a mandate that places responsibility for student learning on the school (Downing, 2005; Joseph & Konrad, 2009). Under the No Child Left Behind Act schools are required to report adequate yearly progress in the areas of science, literacy, and math (U.S. Department of Education, 2010). However, the focus of this portion of the legislation is on preventing illiteracy and therefore adequate reading skills are emphasized (Joseph & Konrad, 2009; U.S. Department of Education, 2010). This may cause teaching written expression and the complex skill set it requires, to be lower on the

priority list of some educators (Joseph & Konrad, 2009; Resteroff & Aberly, in press). The Common Core Standards, published by the Council of Chief State School Officers and the National Governor's Association Center for Best Practices in 2010, established benchmarks in multiple academic areas including writing for students in elementary through high school (National Governor's Association for Best Practices, 2010).

Writing is important in all areas of academics, including content areas such as history and math, as a way for students to demonstrate the knowledge and skills that they have acquired (Abler-Morgan, Hessler, & Konrad, 2007; Graham & Perin, 2007; Wollack & Koppenhaver, 2011). Writing is also a critical component to function as a member of society (Downing, 2005; Kleiwer & Landis, 1999). As technology has become more prominent in daily life with the introduction of e-mail and web-based messaging, written expression serves as an important communication modality for participation in societal interactions (Graham & Perin, 2007; Joseph & Konrad, 2009). For individuals with disabilities, writing is a communication mode that serves as a conduit for psychosocial benefits that include independence, self-determination, and self-esteem (Downing, 2005; Wollack & Koppenhaver, 2011). The ability to produce and extract meaning from written messages creates opportunities to display knowledge as well as express needs, wants and preferences in an independent way (Agran, King-Sears, Wehmeyer, & Copeland, 2003; Downing, 2005). In addition to academic and communicative functions, writing about an emotional experience can have psychological benefits (Abler-Morgan et al., 2007).

Writing and reading are deeply interconnected, particularly for children with disabilities (Erickson & Koppenhaver, 2007). Development of new writing skills can also bolster reading, speech, language and problem solving (Erickson & Koppenhaver, 2007; Cunningham, Hall, & Sigmon, 1999). The Four-Blocks Literacy Framework was designed to create a plan for daily classroom instruction that responds to the heterogeneous distribution of learning preference and needs present in a large group of students. The framework has also been adapted to support students with disabilities (Cunningham et al., 1999; Erickson & Koppenhaver, 2007). This approach addresses the areas of guided reading, working with words, writing, and structured reading. The guided reading and writing blocks provide models and opportunities to explore language meaning and structure (Erickson & Koppenhaver, 2007). The working with words block provides opportunities to manipulate morphemes and create subtle distinctions in language that are critical for increased sophistication in expression (Erickson & Koppenhaver, 2007). The Four Blocks approach targets each of these areas of literacy concurrently and in multiple ways creating an environment where each activity builds on the others to support students in becoming successful readers and writers (Erickson & Koppenhaver, 2007). Providing reading and writing supports creates a language rich environment, which has been shown to benefit expression and understanding along with cognitive skills such as problem solving (Cunningham et al., 1999; Erickson & Koppenhaver, 2007).

Writing and its importance as a communication modality has become increasingly recognized in both the field of education and society as a whole. Therefore, instruction

and supports in writing have increased worth as part of the goal of providing students with significant disabilities with the skills they need to reach their full potential.

### The Connection between Writing and Other Communication Modes

The similar foundations for success, interrelated nature and parallel developmental trajectory of oral and written communication add depth to the discussion of language development for students with significant disabilities. The unique characteristics of writing in addition to its importance in society and academics create a demand for writing to be supported and evaluated in the context of communication as a whole.

Writing, like all human communication, is built on skills needed to interact with others which begins at birth (Musselwhite & Hanser, 2003; Koppenhaver, Coleman, Kalman, & Yoder, 1991). The concurrent development and interrelated nature of written and oral communication has been observed in informal activities such as story telling as well as formal early writing activities (Musselwhite, 2012; Koppenhaver et al., 1991). Writing develops through emersion in an environment where opportunities, models, and supports are in place (Koppenhaver et al., 1991). The language structures of narratives such as, recounts of familiar and unfamiliar events, and creation of fictional stories are critical stepping stones to literacy due to their extended nature and distance from the event it is referencing (Musselwhite & King-DeBaun, 1997). When storytelling and narratives are practiced in group settings; opportunities to develop social turn-taking

skills arise and in turn, create a platform for writing instruction (Musselwhite & King-DeBaun, 1997).

An effective communication system is important for a student with significant communication needs to engage in literacy activities. This communication system can be made up of a device as well as gestures, facial expressions, and other vocalizations (Musselwhite & Hanser, 2003; Soto & Zangari, 2009). Consistent use of the communication system should include engaging in joint attention on pertinent information (Musselwhite & Hanser, 2003). Not only are writing and speaking both facilitated by interactions with others, they are also both mediated by language (Musselwhite & Hanser, 2003; Soto & Zangari, 2009). This allows writing and speaking to mutually support each other through learning language (Musselwhite & Hanser, 2003, Soto & Zangari, 2009).

Written and oral communication modalities have similar developmental trajectories and require the presence of opportunities and supports for skills to emerge. The incorporation of augmentative and alternative communication systems (AAC) has also been shown to support development in all communication modalities.

#### Pragmatic Organization Dynamic Display (PODD)

PODDs are one form of AAC use to supplement or support communication. While most PODDs are a paper-based communication book, the vocabulary organization including the use of pragmatic branch starters has also been applied to high tech devices. PODDs are organized in a way that promotes a creation of a range of messages about a

variety of topics in multiple environments. They can be accessed through partner assisted scanning or direct selection (Spectronics Inclusive Learning Technologies, 2012).

The first pages of PODDs contain phrases that are relevant across contexts and a link to pragmatic branches (Porter & Cafiero, 2009). Pragmatic branches or starters provide contextual information which can be very beneficial for individuals on the autism spectrum experiencing difficulty coordinating body language and symbol use to produce an understandable message (Porter & Cafiero, 2009). Porter and Cafiero (2009) also assert that PODDs are effective for managing behavior difficulties in children with autism when paired with instruction on symbol use through aided input.

#### Applications of Universal Design for Learning and Assistive Technology in Writing Instruction

Providing instruction for students with disabilities requires a comprehensive plan to address how the environment and instruction techniques can best facilitate their academic success. Incorporating the principles of universal design for learning (UDL) and assistive technology, including the use of AAC systems have been shown to facilitate maintenance and acquisition of writing skills. The integration of these perspectives on education has been asserted to be the most effective.

The theory of universal design is based on creating an environment in which individuals of a variety of ability levels function effectively (Edyburn, 2005). The term was originally coined by architect and educator, Ronald L. Mace, who also became the founder of The Center for Universal Design at North Carolina State University, which



continues to be a national hub for research and information regarding accessibility and universal design today. Within the principles of universal design, the environment is made suitable for the individual through the use of multiple methods of presentation, expression, and engagement, rather than the individual needing to make accommodations to function within their environment (Edyburn, 2005). An example of the principles of universal design in practice in the field of architecture is creating spaces that are readily accessible for individuals with mobility challenges (Edyburn, 2005). With regards to education, the application of the principles of universal design involves creating a curriculum that is conducive to each student using their skill set to learn new information and display their knowledge (Edyburn, 2005).

Assistive technology is defined as individualized technology used in the growth or sustainment of skills for individuals with disabilities by creating opportunities for independence and reducing obstacles within the environment (Rose, Hasselbring, Stahl, & Zabala 2005). As Broun (2009) describes, the writing of students with disabilities increases in the complexity of content when the physical challenges involved with the writing process are reduced. Supports such as alternative pencils, word prediction software, graphic organizers, and collaborative writing are ways that these barriers to expressing thoughts through writing can be mitigated. Hertzoni and Schrieber (2004) conducted a study that looked at the conditions of paper and pencil compared to computer aided writing for three students with learning disabilities. The writing products were evaluated for spelling, number of words, as well as organization and structure. In all three students, the computer aided condition resulted in significant improvements in text

organization and structure (Hertozoni & Schrieber, 2004). The authors attributed these findings to the fact that the tool (the computer) is very easy to use.

Exploring the relationship between UDL and assistive technology is also important (Edyburn, 2005; Rose et al., 2005). While both UDL and assistive technology have similar goals of expanding participation opportunities for students with disabilities, UDL seeks to create a curriculum that is effective for students with a wide range of learning needs whereas assistive technology is added to a traditionally designed curriculum to increase its effectiveness for an individual student with disabilities (Rose et al., 2005). With regards to integrating these two practices, when universal UDL is in place less retrofitted assistive technology is needed. Additionally, as described in Rose et al. (2005), UDL also enhances the effectiveness of assistive technology.

Applications of the principles of UDL in writing instruction specifically, allow for students who use AAC systems, a form of assistive technology, to access the writing curriculum in meaningful ways. Burkhart and Porter (2010) discuss that for communication, such as writing, to be accessible there need to be individuals in the environment that understand the AAC form and can model and scaffold its use during the acquisition period. This is the beginning of the development of a community with whom the AAC user can interact (Burkhart & Porter, 2010). The communication partners must also allow the AAC user to navigate their own message by having their AAC system available and providing the time necessary for autonomous communication (Burkhart & Porter, 2010). In augmentative and alternative communication systems it is important

that development of cognitive schemas, such as the writing process, is emphasized over splinter skills, like spelling and writing mechanics.

Instruction methodologies based on the principles of universal design for learning create an environment in which assistive technology such AAC systems can be the most effective at enabling the maintenance and acquisition of academic skills including writing. Assistive technology and UDL create an access point from which the academic curriculum can be taught.

### Supports for Students with Significant Disabilities

Before supports can be implemented, a process of determining individual needs within the instruction plans and goals needs to be completed. To begin this process it is critical to distinguish between compensatory strategies and accommodations, particularly scaffolding and modeling. This fits within Vygotsky's theory of the zone of proximal development and research supports the assertion that providing students with proper instruction and support facilitates the growth of new skills.

The process of determining appropriate writing supports for students with communication disorders consists of two parts, developing a student profile and examining options for assistive technology (Soto & Zangari 2009). Developing a student profile requires the compilation of information from the student's individualized education plan (IEP), involved professionals, and family to create a picture of the student's current skill level (Soto & Zangari 2009). When considering assistive technology options for a student, it is important to provide access to general messages

about writing such as “I don’t know what to write about next.” (Soto & Zangari 2009). Keeping records of how a student responds to an activity or approach during a trialing process is another way of obtaining useful information to look back at when prepared to make a decision.

In discussing supports for students with disabilities it is important to distinguish between accommodations and compensatory strategies (Mather, Wendling, & Roberts, 2009). Accommodations are adjustments made to the curricular expectations that allow for success and are not intended to replace interventions (Mather et al., 2009). Compensatory strategies are techniques that a student uses independently to guide themselves through performing a task (Mather et al., 2009).

Both types of supports are put in place so that the student is able to work within their “zone of proximal development” (Mather et al., 2009). This term was originally developed by Vygotsky, who conceptualized learning and development as active and interrelated with experience as a primary factor (Wink & Putney, 2002). As described by Vygotsky, the “zone of proximal development” is the range between the student’s current performance and the level of their potential performance when instruction is provided by a more knowledgeable individual (Mather et al., 2009; Wink & Putney, 2002). It is asserted that when a student is challenged to perform beyond their current level, but not so much so that they cannot experience success, the greatest amount of learning occurs (Mather et al., 2009). An example of a type of accommodation that can be provided is instructional scaffolding. Instructional scaffolding is a set of supports being provided for

tasks that the student cannot perform independently (Musselwhite & Hanser, 2003). Scaffolding is important for beginning writers and should increase expectations of independence as the student develops new skills (Musselwhite & Hanser, 2003).

Joseph and Konrad (2009) conducted a review of nine studies examining writing instruction for students with intellectual disabilities. They found that strategy instruction, which is providing opportunities and direction in mental processes to organize and put thoughts into language, specifically self-regulating strategy development, is the most widely used approach with students with intellectual disabilities (Joseph & Konrad, 2009). Self-regulating strategy development is an approach based on the understanding that students with intellectual or developmental disabilities can have difficulties self-regulating when organizing to tackle a strategic task (Erickson, Hanser, Hatch & Sanders, 2009; Harris, Graham & Mason, 2003). The principles of this approach are based on a combination of individualization and explicit instruction (Erickson et al., 2009; Harris et al., 2003). Of the types of instruction studied (e.g. modified cognitive strategy instruction, computer-based instruction, the Four Blocks literacy approach, and one-on-one instruction) strategy instruction resulted in the greatest performance outcomes measured by correct word sequences, number of words written, and use of planning during the writing process (Joseph & Konrad, 2009).

The instruction in the writing process provided to students with disabilities can consist of accommodations and/or compensatory strategies that provide them with needed guidance as they gain new skills. These strategies allow students to experience a balance

of assistance and independence that facilitates the development of new skills as the student is ready.

### Supports for Writing Production

The writing process can be broken down into the areas of composition, organization, and presentation (Harris et al., 2003). For students with disabilities, providing instruction and supports in the writing production process facilitates more complex and sophisticated writing (Broun, 2009; Harris et al., 2003). More specifically, instruction surrounding metacognitive skills enables the development of organization skills necessary to create a written product that is readily understood by others.

There are a variety of supports that can be put in place for writing in the composition stages including the use of alternate pencils, keyboards, and slanted writing surfaces among others (Erickson & Koppenhaver, 2007). Broun (2009) asserts that when the handwriting process is extremely labor intensive, the student will have difficulty devoting the necessary mental energy to creating a response with high quality content. A highly demanding physical component to the writing process can cause students to become accustomed to simplifying their thought process to strike a balance with the physical writing process (Broun, 2009).

In regards to supports for the organization aspect of writing, students with disabilities may also need supports in developing the metacognitive and metalinguistic skills necessary to be effective writers (Mather et al., 2009). Self-questioning and self-talk strategies allow beginning writers to effectively translate thoughts into writing by

maintaining the topic and using organization to guide the reader through their thought process (Mather et al., 2009). As described in Veenman, Van Hoult-Wolters and Afflerbach (2006), time and effort are necessary for the acquisition of metacognitive skills (Veenman et al., 2006). It is important to keep in mind that while a large majority of students are able pick up metacognitive skills spontaneously, these skills may not be adequate for the tasks they are required to perform (Veenman et al., 2006). Deficiencies in metacognitive skills can be divided into two categories, availability deficiency and production deficiency (Veenman, et al., 2006). An availability deficiency is characterized by inadequate metacognitive knowledge and skills while, a production deficiency is characterized by difficulty using available metacognitive knowledge due to anxiety, difficulty of task, or inability to see appropriateness of the use of metacognitive knowledge and skills (Veenman et al., 2006). Whether in the composition or organization areas, providing supports for writing leads to more sophisticated content and building new skills (Mather et al., 2009; Veenman et al., 2006).

While metacognitive skills are important, physical barriers to the writing process need to be recognized so that students can produce the best written products possible. Incorporating these considerations into writing instruction is part of creating an academic environment that is the most effective for students with disabilities.

### Supports for Writing Revision

While providing supports and instruction in writing production can enhance the content and sophistication of products in students with disabilities, including supports for

the revision aspects of writing adds a component of presentation which completes the writing process (Mather et al., 2009). Instruction and supports in the writing process focuses the student's attention on how the reader will process their product and provides opportunities for collaboration with peers.

For students with unique learning needs, the process of revision and self-correction is a difficult and ongoing one (Flower & Hayes, 1981; Mather et al., 2009). Recognizing errors and making appropriate changes is a critical part of presenting a product that is able to effectively communicate an idea (Mather et al., 2009). Supports during the editing process include providing suggestions of words that may be added to make the message of the story more clear (Mather et al., 2009). During the revising process it is important the student focuses on the meaning of the text rather than errors in basic writing skills (Mather et al., 2009). Revision conferences are a way to provide positive feedback and ask questions that can give direction (Mather et al., 2009). Another opportunity for students to engage in the revision process is to have groups of students collaborate on planning, drafting, and edit their writing (Erickson et al., 2009; Graham & Perin, 2007).

### Summary

Writing is a communication medium that can be particularly powerful for students with disabilities in both academics and society as a whole. For students with significant disabilities, emergent literacy is a process that needs to be guided by a structure of supports with instruction and opportunities. An interrelationship between universal



design for learning and assistive technology, including augmentative and alternative communication, creates an environment in which the opportunity for writing content and putting thoughts into words are possible. The interrelationship and developmental course of writing and other communication modalities are similar. This has led to the assertion that an environment utilizing the principles of universal design for learning and assistive technology would be beneficial not only to writing, but language skills over all. The communicative power of literacy cannot be overstated and determining appropriate supports for students with significant disabilities requires careful consideration and implementation.

The goals of this study were: (1) to describe the changes in linguistic and social communicative competence skills seen over time in two older students with significant disabilities and (2) describe the instruction methodologies and assistive technology supports being used to facilitate the writing process and their effectiveness.

## CHAPTER 2

### METHODS

The inspiration for this study came from the need for educators to determine how to best support communication as a whole process so that their students can develop into competent communicators at all levels. Marshall and Rossman (1999) describe four distinct purposes for research; exploratory, explanatory, descriptive, and emancipatory. Based on the authors' descriptions, this study would be considered to have a mix of explanatory and descriptive purposes as it intends not only to identify the connections between instruction, assistive technology and communicative competencies, but describe the process of developing writing skills in older students with significant disabilities.

This study is based in qualitative methodology described in Marshall and Rossman (1999) focusing on examining the categories and themes that arise during data collection and analysis of writing products and video tapes of the writing process. The matrix and table in Appendices A and B were created to provide benchmarks for describing the levels of linguistic and social communicative competence that could be observed. The instruction and supports observed were described in the context of scaffolding, other accommodations, and compensatory strategies. The overall goal of this study is to describe the changes in linguistic and social communicative competencies that occur over time when writing instruction and supports are part of the curriculum for older students with significant disabilities.

### Participants

The two student participants in this study were part of a self-contained special education class in a high-school in rural district in the Midwest. The high school had approximately 500 students and was located in a town of approximately 8,000 individuals. Students in the special education program came from multiple surrounding home districts. There were a total of 6 students in the class with 1 certified teacher and 3 para-educators. This classroom was part of a literacy project which was funded by the state Department of Education to provide special educators with the tools and training to support literacy in students with significant disabilities. During her first year of participation in the program, the teacher in this classroom began implementing a communication-rich instruction day compared to previous years in which life-skills was the primary focus of instruction. At the time of this study, a typical day would include 90 minutes of literacy instruction with 30 minutes dedicated to writing, 30 minutes of word level work including spelling activities ( from the *Working with Words Block* of the Four Blocks approach to teaching literacy), and 30 minutes of guided reading. Following a lunch period, the students would participate in music, adapted P.E., or art depending on the day of the week. The final portion of the day was a math, science, or social studies lesson in which literacy was also incorporated. The following discussion of two students in this classroom uses pseudonyms to protect their identities.

Suki was a 15 year old girl and primarily a verbal communicator. During writing activities, Suki would use a two page flipbook PODD with 15 symbols per page to assist with incorporating new vocabulary as well as spelling. She enjoyed the activities and

opportunities to work with the other students. Suki's writing process was initiated by being provided with either a visual (e.g. selecting a picture from a magazine) or verbal prompt (e.g. "Let's write about what we did this weekend."). When Suki indicated that she had finished writing the portion that she was working on, instructors would provide prompts to continue that consisted of asking leading questions to encourage expansion (e.g. " You wrote parade and Santa Claus. What else did you see at the parade?") or a more general question asking for confirmation that she had finished (e.g. " Is there anything else you want to write about?"). In some cases, Suki was also provided with a model emphasizing appropriate sentence structure and communicating a complete thought.

Hayley was a 15 year old girl that communicates primarily by accessing a PODD through auditory and visual partner assisted scanning. Her PODD was designed with high contrast symbols for individuals with vision difficulties with 12 symbols per page organized into columns of four that can be pulled off and manipulated by the user. Hayley also frequently uses switches with recorded messages of yes and no to make choices. Hayley's writing process would begin similar to Suki's with either a visual or verbal prompt.

She either used an alternative pencil accessed with visual or auditory partner-assisted scanning or the IntelliKeys computer software. The keyboard was adapted to provide additional tactile input and compensate for Hayley's visual deficits. This adapted keyboard was used to provide Hayley with exploratory opportunities with writing and the

alphabet through tactile and auditory feedback when items were selected. The alternative pencil consisted of a suspended flipchart with five letters available at a time as well as symbols indicating moving on to the next page and that she was finished writing. This was used in combination with Hayley's PODD to respond to writing prompts and directed writing activities as well as means through which instructors could provide models of grammatically and semantically appropriate responses to the task presented.

### Procedures

#### Data Collection

The writing and communication of these students was evaluated using both video recordings and writing samples from an assessment conducted at the end of the 2011-2012 school year and two observations during the first half of the 2012-2013 school year. The writing samples were selected from photographs of student journals in which they select a picture or have another prompt and write about it. The investigator observed the students and instructors in the classroom on three different occasions for approximately three to four hours each visit totaling ten hours of observations of writing, working with words, guided reading, as well as social studies and science activities. Additionally, a total of 30 minutes of video samples from other observations were also reviewed for each student.

## Data Analysis

A microanalysis of the writing products and video recordings of the writing process was conducted to describe the writing instruction and supports being provided and patterns in linguistic and social competency skills. The goal of this analysis was to describe the connections between the instruction and supports provided and the linguistic and social communication skills the students displayed.

The quantity and technique of the writing are described using a writing rubric adapted from Sulzby (1985). This places the individual's writing at a particular level based on particular characteristics. This was completed for three writing samples from each time point to obtain information about their overall writing experience.

Because this rubric did not address the relationship between writing and communication competencies, a checklist of selected items from The Augmentative and Alternative Communication Profile (Kovach, 2009) was created to assess the communication skills of participants. The checklist focused on the areas of linguistic and social skills (as described in Appendices 1 and 2) through identification in a binary fashion as well as space to add additional notes about the supports and instruction that were provided. The linguistic skills assessed by the checklist focused on content and meanings of the language used. These skills included use of "core vocabulary," general words and phrases that can be used across contexts such as "this," "for," and "might," use of multiple meaning words, and evidence of monitoring of language production. Core and multiple meaning words were chosen to be studied because of their use being

indicative of a level of vocabulary knowledge beyond concrete and observable referents. The social skills assessed by the checklist included practice of discourse strategies, use of multimodal communication, and demonstrating perspective taking of the audience. It was completed during the viewing of the video with additional notes added regarding the supports and instruction provided. These particular social skills were chosen because of their ability to reduce the cognitive load required by the reader to understand the intended message when effectively utilized.

### Interrater Reliability

. Agreement was determined for two raters for assigning category codes from approximately 20% of the video samples. The second rater was the thesis adviser for this project, a professor in the department of communication sciences and disorders and certified speech language pathologist. The second rater was trained on use of the checklist and one of the video samples was randomly selected to be used for the researcher and second rater to complete together as part of the training. Following training, 20% of the video samples excluding the sample used for training were selected for the second rater to code independently. The online software program GraphPad was used to calculate interrater reliability using Cohen's Kappa. For this 20% of samples,  $k=0.92$  which according to Landis and Koch (1977), meets the requirement of above 0.71 to be satisfactory.

## CHAPTER 3

### RESULTS

#### Suki's Writing

##### Suki's Assessment (May 2012)

From a linguistic perspective, Suki's writing did not contain between 10 and 20 core words as described in Augmentative and Alternative Communication Profiles. It instead focused on primarily on nouns. She demonstrated use of natural behavior in context to communicate about the immediate environment. During the assessment, Suki wrote a list of the items she observed in the picture she selected. No prepositions, pronouns, or other parts of speech were included. She did however; look over her previous writing before making the choice to be done without being prompted to do so. Writing samples from this same time show that Suki was using grammatically correct sentences when provided with a model. These sentences also included punctuation in a portion of samples. This use of grammaticality is an important observation to be making because it takes the cognitive load off of the reader/communication partner since they do not need to infer the connections between items on a list.

Looking at social competencies in Suki's writing she demonstrated natural behaviors towards her communication partner and communicated purposefully. She did not practice discourse strategies or demonstrate perspective taking of the audience. It is



important to note that incorporating discourse strategies and audience perspective into writing was not part of the instruction that Suki received.

### Suki's Classroom Writing (October 2012)

The writing instruction that Suki received consisted of instructional scaffolding through modeling and verbal prompting. Models focused on expansions by adding appropriate grammatical morphemes and content. Suki's writing process required leading questions to determine what she wanted to write about the prompt. When Suki had content that she wanted to write, but was unsure the best word or how to spell what she was looking for, she was directed to her PODD, which she then used with minimal prompting. Following her writing Suki was provided with a model of a more complex sentence both grammatically and in regards to content. Suki would then use the model to expand her previously written sentence into a novel and more complete thought.

The supports that Suki was provided with in addition to the PODD included a classroom word wall that consisted of common sight words and core vocabulary words that had been reviewed as a class. While Suki needed prompting to utilize these supports, she did so effectively.

When looking at the areas of linguistic competence, Suki's writing continued to lack core words, but rather focused on nouns and adjectives. She also continues to demonstrate an effective use of natural behaviors to communicate about the environment and current topic. Suki's writing at this time was characterized by utilization of the

sentence frames “I like...” and “I see...” Suki did not use multiple meaning words or synonyms and antonyms in her writing.

Regarding development of social communication competencies, Suki continued to focus on her own perspective, rather than integrating the perspective of her potential audience. There was also an absence of social wh-questions and practice discourse strategies in Suki’s writing. In spoken conversation, she demonstrates appropriate use of social discourse including social wh-questions, but has not had explicit instruction on integrating these communication skills into the written modality. This set of observations was the first time that Suki was observed to independently integrate communication modalities to create a complete message.

#### Suki’s Classroom Writing (December 2012)

At the beginning of the writing activity, Suki was provided with a topic and model by a para-educator. Suki independently used her PODD to select the word she wanted to write. The para-educator and investigator asked Suki clarifying questions during writing to determine the connection between the words in the list (eg. “You wrote parade. Now you picked Santa Claus. Did you see Santa at the parade?”) Suki’s list in this writing excerpt differed from earlier ones in the fact that she was intentional about grouping concepts together by putting them on the same line. For example, she confirmed that “tree” and “snow” were on the same line because the tree was covered in snow when asked (See Figure 2). Suki was able to execute the task of writing about past

events, but the message lacked the vocabulary necessary to create context and connections between the content discussed.

Suki continued to use the PODD and word wall supports effectively and demonstrated increased proficiency in linguistic competence through fewer errors and increased speed. The modeling and instruction in the use of this assistive technology proved to be effective at facilitating the development of skills required for their use.

Suki's writing at this time continued to be characterized by list-making with limited use of core words. She communicated about things within context to the paraprofessional using her speech, gestures, and facial expressions. Suki used her voice, PODD, and facial expressions to communicate about past events. She did not use antonyms, synonyms or multiple meaning words and did not demonstrate monitoring of her own language production. Her linguistic skills are growing, but she would not be considered to be proficient in demonstrating linguistic competence when compared to typical age-matched peers.

Suki used natural behaviors to communicate both about the immediate environment and past events. Although Suki did not use a large number of words, she effectively expressed opinions and intentions through multimodal communication using speech, gestures, and her AAC device. The effective use of multimodal communication can be seen as evidence that Suki has had extensive experience at making herself understood through the use of gestures and facial expressions supporting her language. The writing samples from this time frame did not include social wh-questions or evidence

of practicing discourse strategies. Overall, Suki's writing did not show evidence of perspective taking with a potential or intended audience.

### Summary of Suki's Writing

The instruction that Suki received during this semester was focus on utilizing scaffolding and modeling to support her use of grammatically and semantically correct sentences. Explicit instruction in the rules of grammar and semantics occurred during production of models in direct, concise language.

The assistive technology supports that Suki used, her PODD and the classroom word wall, assisted her word retrieval and deepened her semantic knowledge. She was able to express the word she wanted quicker and began to demonstrate understanding of synonyms and antonyms, but not using them expressively yet. The use of the PODD in particular provided Suki with a framework of organization for language that allowed her to build relationships between concepts and deepen her understanding of language as a symbolic system as evidenced by her use of sentence frames and list organization.

Suki's linguistic communicative competence skills were observed to fall within a range of success depending on the task and the instruction provided as well as psychological and environmental factors. Suki was consistently successful at using her natural behaviors to communicate about her immediate environment and with context. She referenced actions, objects, people and events that were not present effectively. With instruction and prompting, Suki used core words and reviewed her writing after she had indicated that she was finished. The use of antonyms, synonyms, and multiple was not

observed in Suki's writing. Instruction in the use of these kinds of language was also not observed. Overall, Suki's linguistic competence would be described as emerging with a solid foundation to build on due to her basic word knowledge with difficulty in the reviewing and monitoring process.

Social communicative competence is area in which Suki has demonstrated moderate proficiency. Suki consistently used directed natural behaviors to communicate purposefully about the immediate environment. She used multi-modal communication to effectively express opinions and intentions. She did not use discourse strategies or perspective taking in her writing and instruction did not explicitly include information on incorporating these skills into her written products. Providing Suki with instruction on how to effectively utilize discourse strategies and perspective taking to create a product that the reader will understand teaches her about how communication serves a purpose and ultimately helps her become a competent and well-rounded communicator.

### Hayley's Writing

#### Hayley's Assessment (May 2012)

As this writing task was designed to assess Hayley's independent writing, she did not receive instruction or feedback on the content or mechanics of her writing. To provide Hayley with supplemental auditory input, her instructor for this assessment repeated the prompting question and the letters and words Hayley had written. Examination of Hayley's journal entries from this time period showed that each entry

consisted of Hayley's writing and an "interpretation" from her communication partner which also served as a model of a syntactically and grammatically suitable sentence.

In addition to the alternative pencil and switches with prerecorded negative and affirmative messages, Haley also had access to her PODD and the classroom word wall. Haley used the two switches and partner-assisted scanning to access the alternative pencil and respond to the writing prompt. There was frequently a delay between the presentation of the item in scanning and Hayley's selection of the switch. During this assessment, Haley did not use her PODD to support her writing, focusing instead on creating a message with the alternative pencil.

From a linguistic communicative competence perspective, Hayley used natural behaviors to express her feelings about the immediate environment during the assessment. She did not use between ten and 20 core words on her AAC device or antonyms, synonyms, or multiple meaning words. Hayley did not refer to objects, people, or events nor demonstrate monitoring of her own language production. While Hayley did not demonstrate the linguistic communication skills examined in this study, she may demonstrate linguistic competence in other environments, with other tasks, or in subtle ways that are difficult to observe and describe.

In regards to social communicative competence skills, Hayley effectively used natural behaviors directed towards her communication partner to communicate about the immediate environment. Her communication was deemed to be purposeful, but could not be determined to be expressing opinions and intentions and was not considered

multimodal. Hayley did not demonstrate perspective taking of the potential audience or use of social wh-questions in her writing at this time. Although Hayley demonstrated few of the social communicative competence skills examined for this study in her writing, her consistent use of appropriate natural behaviors when interacting with others in her environment indicate that she has a foundation of social skills for communication that can be built upon to expand her language in both spoken and written modalities.

#### Hayley's Writing (October 2012)

During this writing opportunity when Hayley was given a picture to write about and access to the alternative pencil, she selected letters to create a message. This type of writing activity is practicing the process of creating a writing message from independent thought. Hayley's instructor and communication partner provided Hayley with a model following her independently created message by selecting selects a letter or letter combination that was frequently used and creates their own semantically and grammatically complete message utilizing those letters or combinations. This type of support shows Hayley the intentionality behind writing and how the letters and words are symbols for creating a message.

For this writing activity, Hayley had access to her adapted PODD, flipchart alternative pencil, switches with prerecorded affirmative and negative messages as well as the classroom word wall. Hayley used only the alternative pencil to create her message through partner assisted scanning and switches. Hayley's position as partner-dependent

communicator requires her communication partner to provide her with choices and be sensitive to subtle communication attempts.

During this writing activity Hayley demonstrated linguistic competence by effectively using natural behavior to communicate about the immediate environment. She did not use between 10 and 20 core words on her AAC device or refer to absent people, objects, or actions. She also did not use antonyms, synonyms or words with multiple meanings and did not demonstrate monitoring of her own language production. These results were found to be consistent across the writing samples selected from this time period.

Where social communicative competencies were concerned, Hayley demonstrated effective use of directed natural behaviors to communicate purposefully. She did not practice discourse strategies or demonstrate perspective taking of the potential audience. Hayley's communication was also not determined to be multimodal.

#### Hayley's writing (December 2012)

This writing task was to describe an event from the past which Hayley was able to do with support. This type of activity gave Hayley the opportunity to practice the process of evaluating past experiences and selecting appropriate language and syntax to share those experiences with a communication partner. Hayley selected what to write and attempted to spell a word using the alternative pencil following modeling of the beginning of the message she had selected (See Figure 1). Hayley demonstrated more behaviors indicating being interested and attentive (i.e. more time spent looking at the



letters and paper) during modeling of use of the alternative pencil. The modeling incorporated within this activity allowed Hayley to have exposure to the letter and sound combinations and is beneficial to her understanding of the writing process as a whole.

The linguistic and social communication checklist revealed that Hayley did not use between ten and twenty core words in her message. Compared to her assessment at the middle of previous academic year, Hayley was using natural behaviors in combination with switch use to communicate about her immediate environment, rather than having a long delay between the two. Hayley did not use antonyms, synonyms, or multiple meaning words. Overall, Hayley's independent demonstrations of linguistic competence were restricted to the use of natural behaviors. However, she was being provided with models that are complete and sophisticated from a semantic and grammatical perspective and scaffolded instruction expanding her current productions.

From a social communicative competence perspective, Hayley did not demonstrate perspective taking of her audience or a use of the social skill of using discourse strategies. Her communication was through directed natural behaviors and was determined to be purposeful. She used multimodal communication by combining her natural behaviors with switch use.

### Summary of Hayley's Writing

The writing instruction that Hayley received this semester focused on utilizing modeling and instructional scaffolding to teach the process of putting thought into written language. Providing Hayley with opportunities to write independently and explore the

alphabet gives her a variety of experiences creating written products, which in turn builds language skills as experiences are integrated. Instruction in the writing process did not include explicit descriptions and identification of social communication skills.

For Hayley, access is a primary concern in the implementation of the use of assistive technology. Instructors provided her with models of use of the switches, PODD, and alternative pencil as well as scaffolded instruction in the writing process. As the semester progressed, Hayley used the switches with increased consistency and produced a wider variety language. While Hayley's difficulty with accessing her environment cannot be eliminated, her instructors continue to find ways to engage her in the writing process with meaningful opportunities and instruction.

Hayley's linguistic competence skills remained consistent throughout the semester. Her challenges accessing her AAC system made it difficult to determine her understanding, however based on knowledge of her previous experiences and effective use of natural behaviors, it could be asserted that she likely has a basic understanding of the ways in which words and phrases are composed. The decreased delay between presentation of the options and switch selection potentially indicates that she has developed additional and strengthened understanding of the semantic and grammatical concepts that govern language use.

Social communicative competence skills were difficult to assess in Hayley's writing, but determined to present within her use of directed natural behaviors to communicate purposely regarding her opinions of the immediate environment and current

topic. Hayley's difficulties with the other social communicative competence skills assessed in this study align with the instruction she received, which focused on the linguistic aspects of the writing process and product.

## CHAPTER 4

### DISCUSSION

When considering future writing opportunities for the students profiled in this study it is important to begin by reviewing their literacy journeys so far. As described in Soto and Zangari (2009), students with disabilities benefit from frequent engagement in authentic writing experiences. The goal of this study was to describe the changes in linguistic and social communicative competence in two students with significant disabilities following the introduction of writing opportunities and instruction with assistive technology supports into the curriculum. How the results relate to current research and implications for educators considering adding writing to their current curriculum is the topic of discussion for this chapter.

#### Themes

##### Linguistic Growth Through Instructional Scaffolding

Both Suki and Hayley demonstrated growth in linguistic skills needed to convey a message to an audience through their writing. Suki received instruction on the use of her AAC device to assist with word retrieval and demonstrated increasingly sophisticated language understanding as seen in her moving through the categories on the PODD. Over the course of the semester Suki demonstrated increased independence in the use of the PODD to support word retrieval making it closer to becoming an effective compensatory strategy as described in Mather et al. (2009). During exploratory and formal writing activities Hayley progressively used more valid letter combinations

indicating that she may have taken this information from models and begun to apply it to her own writing. This is a small, but important step in Hayley's process of learning to create a written message that is accessible to readers. The growth in linguistic skills seen in these students supports Musselwhite and Hanser (2003)'s assertions that AAC systems can be used to facilitate learning of the process of transforming ideas into print and that writing enables students to reach a deeper understanding of the language system on their device.

#### Revising as Evidence of Metalinguistic Skill

Suki's primary difficulties with writing, word retrieval and organization, could be part of a larger deficit in metacognition that would benefit from being targeted through explicit instruction. Veenman et al. (2006) describes how metacognitive skills such as self-talk strategies allow a writer to maintain a topic and guide their reader through the thought process they used to address it. While these metacognitive skills are typically addressed during the production portion of the writing process, observing Suki's writing process made it clear how important they are for engaging in the revision process. When prompted with questions regarding her completion of the writing activity she needed to use self-talk strategies to determine if she was satisfied with what she had produced or wanted to make changes. Over the course of semester of observation, Suki learned to add content during the revision process, but did not engage in editing of previously produced content. This has the potential to be attributed to a lack of instruction on the metacognitive skills needed to identify errors and analyze possible alternatives.

Metacognitive skills play an important role in writing during the entire process of production and revision to create a product that demonstrates linguistic and social communicative competencies.

### Access and Engagement as Precursors to Other Written Communication Skills

Hayley's visual and physical difficulties created barriers to her using writing as a communication modality. By mitigating these obstructions and providing Hayley with accessible forms of language she was able to engage with the instruction she was provided with as described in Broun (2009). At the beginning of instruction Hayley demonstrated limited engagement with the switches used to direct the partner-assisted scanning process, frequently pushing them away or ignoring them despite modeling and multiple requests for communication. As opportunities and instruction increased Hayley could be seen using the switches with increased frequency and immediacy following prompts from her communication partner. Creating access points and providing Hayley with a variety of writing opportunities gave her beginning experiences with writing. As described by Soto and Zangari (2009), emergent literacy is not based on age, cognition, or skills, but the amount of experience. Utilizing the principles of UDL is one way to create an environment that supports access and engagement and thereby creating writing opportunities that can be most effective at facilitating the development of new communication skills. Hertzoni and Schrieber (2004)'s study provides evidence that students with learning disabilities organized their writing in a more effective way when using with assistive technology. The current study expands this idea to provide evidence

that including instruction along with assistive technology to facilitate writing as a communication modality.

### Incorporating Social Communication into Writing Instruction

Both Suki and Hayley demonstrated limited social competence in their writing which brings up the question of whether additional vocabulary or explicit instruction is needed in this area of communication. The instruction that these students received did not address social consideration during the production portion of the writing process, which creates additional burdens during the revision process because the student must recognize areas in which changes need to be made and determine appropriate alternatives. Incorporating social communication competency skills into the production of writing provides instruction in the communicative functions that can be accomplished by writing and how content can be adjusted to create mutual understanding. As described in Downing (2005) and Agran et al. (2003), for individuals with disabilities writing can be a form of self-expression that allows them to readily engage with members of their community in ways they would be unable to otherwise. Musselwhite and King-DeBaun (1997) recommend that writing instruction for students with disabilities include demonstration of purposes for writing. This practice builds social communication into the writing process throughout the production, revision and presentation portions. For writing to become an effective language form for students with disabilities all areas of communication need to be considered including, social aspects.

### Summary of Relevant Themes

This study revealed that instructional scaffolding is effective at developing written communication skills in students with significant disabilities. Additionally, metalinguistic and revision skills were found to be interrelated, which corroborates previous research regarding the relationship between language produced through augmentative and alternative communication systems and written language. Examination of the writing instruction and processes of these two students also brought out the importance of access and engagement in writing process for the continued development of communication skills. Finally, the importance of including social communication skills in writing instruction became apparent. Overall, the use of instruction to enhance access and engagement and thereby create opportunities to develop new communication skills in spoken and written modalities was seen to be successful for students with significant disabilities.

### Limitations

This study could be improved by increasing the length of time for which the students' writing was studied to obtain information about an overall trend and improvements seen. Incorporation of communication into daily activities before implementation of literacy instruction would also provide more substantiating information about the changes caused by their implementation. The use of a more detailed and comprehensive checklist would also be important for tailoring examinations towards specific areas. A larger scale study with more classrooms and students from a



wide variety of socioeconomic backgrounds would provide a stronger evidence base for the claim that providing appropriate supports can lead to gains in the literacy and communication skills of students with significant disabilities.

### Implications

The results of current study indicate that older students with disabilities receive benefits from the inclusion of writing instruction in the areas of linguistic and social competence. This supports the assertion that educators should continue to strive to provide older students with significant disabilities with instruction and opportunities in both spoken and written communication modalities ( Musselwhite & Hanser, 2003; Resterhoff & Abery, in press). Educators need to continue to strive to find access and instruction techniques that facilitate communication competencies in AAC users at all levels of language development. Assessment tools that are sensitive and specific to assessing communicative competence in the written modality are important for educators to be able to effectively analyze the success of their instruction and use of supports at helping students reach their communication goals. Educators of students with significant disabilities have a balancing act to perform with requirements of showing adequate progress towards general curriculum goals and daily living skills promoting independence. Providing writing opportunities and instruction can serve both of these goals when needed assistive technology supports are also in place. Instilling communicative competence provides skills to be an effective communicator across

settings, content, and communication partners, which bolsters academic and community engagement.

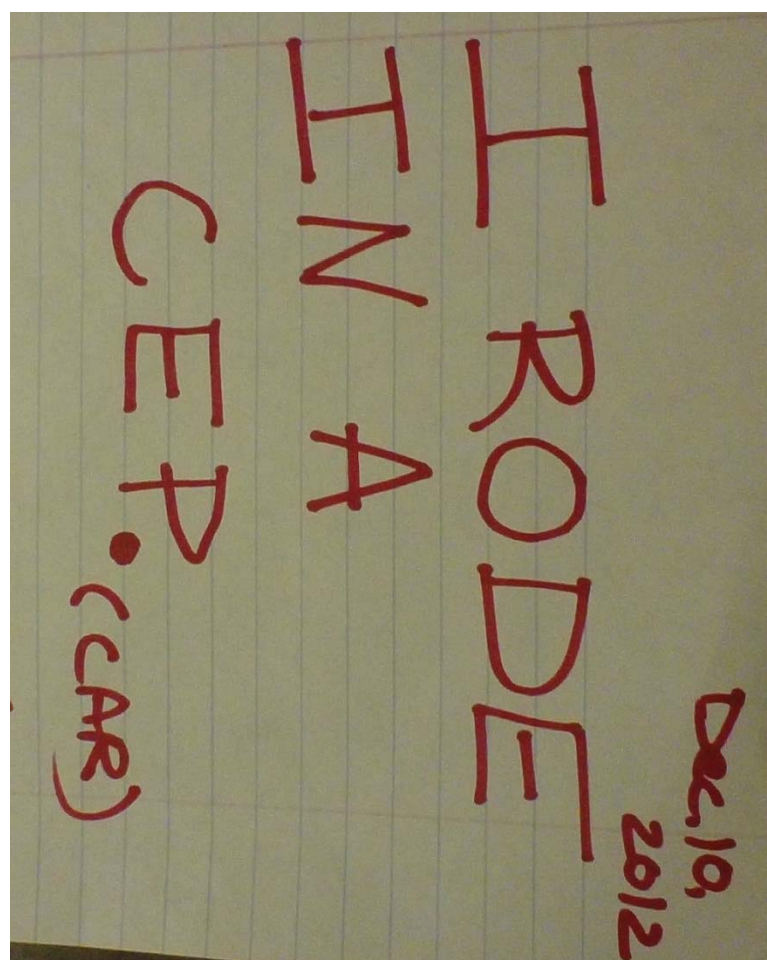
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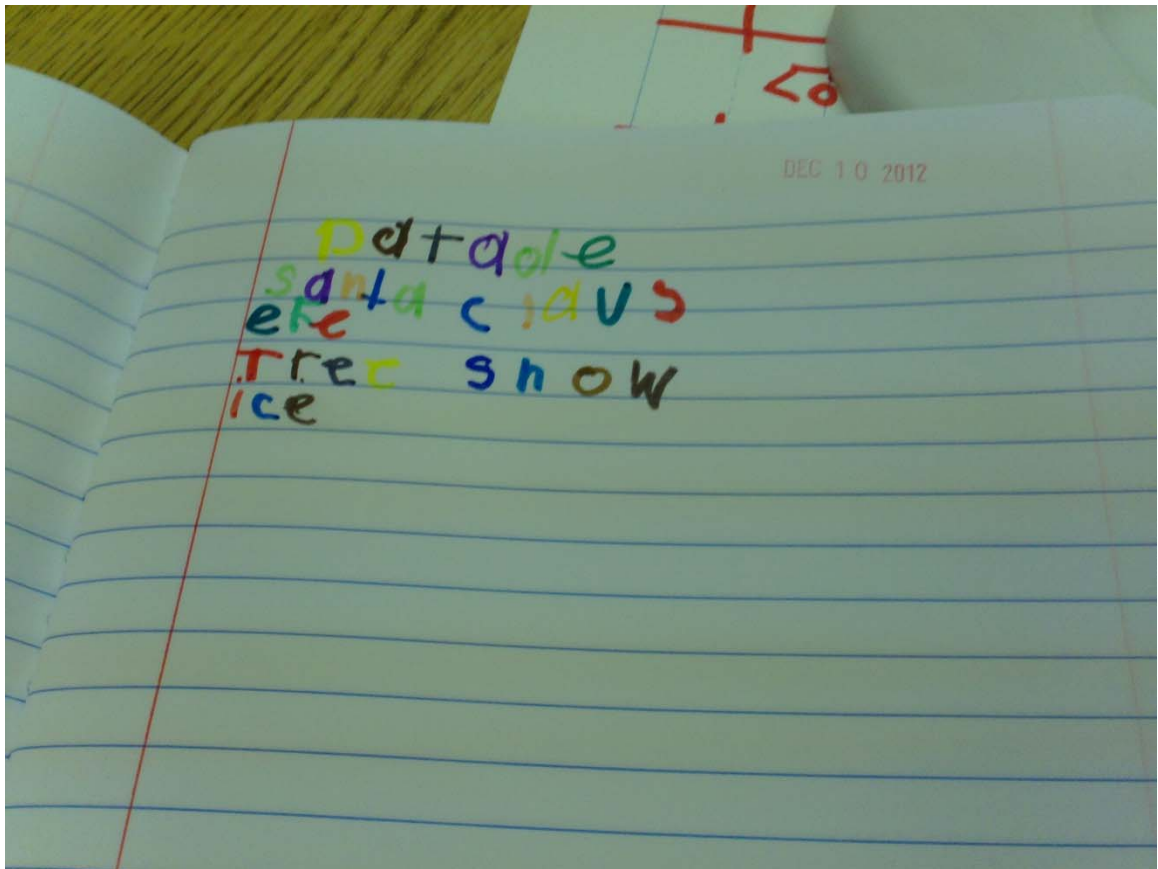
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Dec. 10,  
2012  
H R O D D E  
H N A  
C E P. (C A R)

Figure 1. A sample of Hayley's writing from December 2012



*Figure 2.* A sample of Suki's writing from December 2012



## APPENDIX A

COMMUNICATIVE COMPETENCE DESCRIPTION TABLE

<p><b>Low Social, Low Linguistic</b></p> <p>Morphological markers and other small units of language may be absent or inconsistently used</p> <p>Demonstrates a basic understanding of word meaning, but has difficulties with multiple meaning words and figurative language</p> <p>Stress of attending to linguistic forms and interaction is apparent</p> <p>Use of social discourse practices such as social wh-questions and conversational turn-taking may be limited or incomplete</p> <p>Difficulty incorporating audience perspectives that may differ from their own</p>	<p><b>Low Social, High Linguistic</b></p> <p>Demonstrates understanding of the nuances of language including multiple meanings and figurative language</p> <p>Commands use of morphological markers and vocabulary</p> <p>Attending to linguistic forms and interaction is comfortable</p> <p>Use of social discourse practices such as social wh-questions and conversational turn-taking may be limited or incomplete</p> <p>Difficulty incorporating audience perspectives that may differ from own</p>
<p><b>High Social, Low Linguistic</b></p> <p>Morphological markers and other small units of language may be absent or inconsistently used</p> <p>Demonstrates a basic understanding of word meaning, but has difficulties with multiple meaning words and figurative language</p> <p>Stress of attending to linguistic forms and interaction is apparent</p> <p>Effectively uses social discourse practices such social wh-questions and conversational turn-taking</p> <p>Incorporates audience perspectives that may differ from their own</p>	<p><b>High Social, High Linguistic</b></p> <p>Demonstrates understanding of the nuances of language including multiple meanings and figurative language</p> <p>Commands use of morphological markers and vocabulary</p> <p>Attending to linguistic forms and interaction is comfortable</p> <p>Effectively uses social discourse practices such social wh-questions and conversational turn-taking</p> <p>Incorporates audience perspectives that may differ from their own</p>

This table contains descriptions of the skill set likely to be observed in individuals with high and low levels of linguistic and social communicative competence.

## APPENDIX B

## COMMUNICATIVE COMPETENCIES IN WRITING CHECKLIST

Writing Characteristic	Low Linguistic, Low Social	High Linguistic, Low Social	Low Linguistic, High Social	High Linguistic, High Social
Demonstrates understanding of the nuances of language including multiple meanings and figurative language				
Commands use of morphological markers and vocabulary				
Effectively uses social discourse practices such as social wh-questions and conversational turn-taking				
Incorporates audience perspectives that may differ from their own				

This checklist places linguistic and social communicative competency skills in the context of written communication and categorizes the skills based on if they would be demonstrated by a student with high or low competence in each area.