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LITERACY FOR INDIVIDUALS WHO USE AAC: OBSERVATIONS OF TEACHERS
IMPLEMENTING LITERACY LESSONS IN SCHOOLS

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ABSTRACT

There is currently a gap between research and practice related to the implementation of adapted literacy instruction for individuals who use AAC. This is not surprising considering current practitioners consistently report that they do not feel they have the training or necessary skills to teach these individuals. There are evidence-based literacy practices to instruct individuals who have complex communication needs and require AAC. In order to close the research to practice gap, a better understanding of current practices is necessary. In the current study researchers asked 4 professionals to plan and implement one 30-minute literacy session for one of their students with CCN. Observations were then analyzed using an a priori coding system; the coding system was developed based on components of effective literacy instruction, including: (1) providing sufficient time, (2) targeting appropriate literacy skills, (3) using effective instructional procedures, (4) providing adaptations to support participation, and (5) making instruction meaningful. Results will be discussed per major coding area. Overall, results indicate that professionals were able to provide adaptations for independent participation (e.g., low-tech or high-tech supports), as well as create materials that were meaningful and personally relevant. Yet, the professionals lacked implementation of effective instruction procedures and did not provide sufficient time for instruction of relevant literacy skills. There is a currently an urgent need for literacy training at the preservice and in-service level in order to provide effective literacy instruction. Ideas for future research directions, including access to online trainings, will be discussed.

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Chapter 1

Introduction

According to the National Center for Education Statistics (2019), 14 percent of all public-school students in the United States received special education services in 2017-18. Among these students are individuals with diagnoses of Cerebral Palsy, Down Syndrome, and Autism Spectrum Disorder. Individuals with these disabilities often have co-occurring spoken communication disorders and these challenges are referred to as having complex communication needs (CCN). In America, approximately 1.3 percent of individuals cannot rely on natural speech for communication and 0.6 percent of people worldwide have significant speech impairments (Beukelman & Mirenda, 2013). When natural speech is a challenge, the use of augmentative and alternative communication (AAC) supports can be used to supplement or replace speech. Access to AAC allows individuals with complex communication needs to access to the world through communication supports to allow participation in leisure, work, and social interactions of their choice.

Benefits of AAC

Augmentative and alternative communication consists of aided and unaided communication, including writing, sign language, pointing to pictures, and using high-tech equipment with speech output like an iPad with apps (Beukelman & Mirenda, 2013). There are a countless number of benefits the use of AAC for individuals with complex communication needs. AAC can support social communication skills, as well as requesting of wants and needs, reading and writing skills, and turn taking abilities (Light & McNaughton, 2012). In addition, it can support individuals in education, allowing them to have a voice in their education and

participate in schooling (Thomas-Stonell, Robertson, Oddson, & Rosenbaum, 2016). AAC can additionally support in decreasing challenging behaviors (Bopp, Brown, & Miranda, 2004).

Although the benefits to AAC are numerous, AAC options are more limited when individuals cannot read. Without orthographic knowledge, AAC systems are dependent on communication partners and their ability to program the system accordingly, while facilitating, initiating, maintaining, and completing communication efforts made by the individual (Midtlin, Næss, Taxt, & Karlsen, 2015).

Literacy in AAC

“Teaching literacy skills is the single most empowering thing that we can do for individuals who require (AAC)” (Lindsay, 1989). Individuals with complex communication needs often have less exposure to language rich environments and limited engagement in literacy activities (Fonte & Boesch, 2018). Literacy not only affords educational advancement and engagement, but also daily relationships, employment, and leisure activities. Functional literacy skills support the entrance into social and peer groups for individuals who use AAC (Ruppar, Dymond, & Gaffney, 2011). Employment comes with increasing communication demands and literacy development is essential for maintaining employment opportunities (Light & McNaughton, 2014). Literacy gives individuals with complex communication needs social and cultural power, to form their own opinions and participate fully in activities (Machalicek, Sanford, Lang, Rispoli, Molfenter, & Mbeseha, 2010). Without literacy, an individual’s life and experiences are extremely limited.

Barriers to Literacy Learning. Individuals with complex communication needs have very different experiences when it comes to early literacy exposure. Light & Kent-Walsh (2003) explain that adults do not actively support language development through story reading, do not

give the child access to their AAC method, and use books as a physical way of interacting with text (page turning) instead of language learning (finding meaning). In addition, parent and educator attitudes towards the individual and AAC affect their learning outcomes. For example, as an individual gets older they are seen as unable to learn language when in fact they were just not given the necessary supports (Lund & Light, 2007). Teacher's previous experiences with students with CCN also usually negatively influence their potential to learn literacy (Ruppar et al., 2015). There are also intrinsic factors that affect literacy development for individuals who have CCN. Children with CCN may have cognitive deficits which affect memory and processing, as well as physical impairments which would limit their participation in typical literacy activities without adaptations (Light & McNaughton, 2013).

Lack of Training of Special Educators. Special education teachers receive different literacy training compared to general education teachers. According to Ruppar, Dymond & Gaffney (2011), teachers that have experience in general education classrooms have more positive views to literacy instruction that is similar for typically developing children. This is compared to a special education literacy teaching method that is focused on activities of daily living, limiting total communication for students. Adapted literacy instruction should not only be for daily living activities, but more importantly the evidence-based practices that enhance all literacy learning (Light & McNaughton, 2009b). According to Caron et al. (2017), professionals do not feel prepared to teach literacy to individuals with CCN. Even though the evidence-based practices exist, professionals are not applying the principles when teaching individuals with CCN and need access to further education of these practices (Ruppar, 2015).

Potential Solutions

According to Ruppap and colleagues (2011), preservice and in-service training should encourage teachers to blend general education literacy instruction with meaningful instruction for individuals who use AAC. Ongoing decision making and training are essential to AAC intervention in order to gain literacy development (Augmentative and Alternative Communication, n.d.). In order to reach the wide range of professionals serving individuals with complex communication needs, such as special education teachers, Speech-Language Pathologists (SLPs), and parents, an online training could be created. Online modules would ensure training and continuing education of professionals, while potentially creating a uniform, research-based system to teach literacy to individuals with CCN.

Study Aims

In order to create a training that is comprehensive in literacy instruction, we need to understand what teachers are currently doing when instructing students. This will ensure that the research to practice gap is better understood, and that all differences in instruction are considered. For example, currently a significant body of research related to provision of letter-sound instruction for individuals with complex communication needs is available. Yet, these studies occurred with researchers in a 1:1 setting, often outside of the classroom. A better understanding of what educators do, in the real world will provide more specific information in the knowledge of what aspects of training are needed (e.g., direct instruction, vs. material adaptation). The study aimed to use real world observations to better understand key factors of evidence-based literacy instruction, specifically, instructional procedures, meaningful instruction, adapted instruction, literacy targets, and instructional time.

Chapter 2

Methods

Research Design

This study used a qualitative research design in order to understand the instruction methods used to teach literacy skills to individuals with complex communication needs. Qualitative research is used to evaluate special education practice and describe naturalistic behavior and experiences (Kozleski, 2017). We can use qualitative methods to discover what needs to be studied further in more structured and larger methods, narrowing the research to practice gap (Tracy, 2012). Qualitative research allows researchers to observe participants in a natural environment and collect first hand descriptive accounts, which its non-qualitative measures do not do (Allen, 2017). According to Light & McNaughton, we need to put AAC research into practice so we can improve in-service training for teachers and other professionals (Light & McNaughton, 2012). Therefore, observing current practices is a logical starting point.

Naturalistic observations are a type of research that allows researchers to describe human behavior and assign value to these descriptions (Salkind, 2010). In naturalistic observations, the researchers do not engage with the participants but rather gather information in their natural setting, looking for typical behaviors (Allen, 2017). In order to be the least intrusive, the current study employed the use of video observations. The researcher did not interact with the participant during the sessions in order to maintain the integrity of the sessions. In addition, the participants used all their own materials while working with the learner. The videos were collected from the school using an iPod and uploaded to an approved cloud server for data coding.

Participants

Recruitment. Participants were recruited from schools in the New England area. In order to meet the inclusion criteria, teachers had to be currently working with individuals with complex communication needs. They were given a questionnaire about their current degree of education, background in AAC and literacy instruction, their continued education in these areas, the number years working as a teacher, the number of years working with AAC, and their current caseload (Tables 1 & 2). A similar process of recruitment occurred for students in the study (Table 3). Instructors were asked about the students' current form of communication, current literacy skills, and related literacy goals. Informed consent was achieved for all participants in the study.

Table 1. Teacher Demographics and Experience

Teacher	Age	Degrees Earned	Completed Coursework in Augmentative and Alternative Communication (AAC)	Years as a Teacher	Years Working with AAC
T1	57	Northeastern, BS PT 1984; Endicot College M.Ed., 2013	One AAC course in Master's program	7	15
T2	DNR	Freed-Hardenman University, BS, 2005; Simmons College, M.Ed., 2009; American International College CAGS, 2017	None	13	13
T3	62	Skidmore College, BA 1978; Salem State University M.Ed., 1998	None	22	22
T4	DNR	DNR	DNR	DNR	DNR

Note: DNR = did not report; None = no experience

Table 2. Teacher Training and Caseload

Teacher	Completed Coursework in Literacy	Continuing Education in Augmentative and Alternative Communication (AAC) and Literacy	Current Caseload
T1	Basic course in English Language Arts (ELA) for moderate to severe disabilities; graduate research paper in evidence-based practice of literacy in students	Online research and articles, assistive technology conference, Closing the Gap website and publications, Early Literacy Skills Builder (ELSB) curriculum and story component	kids: 4; kids using AAC: 4; kids working on literacy: 4; kids working on LSC: 4
T2	Reading specialist/Certificate of Advanced Graduate Study (CAGS) (advanced developmental reading, speech and language development, advanced analysis of reading and language arts)	Assistive technology presentation by Apple	kids: 6; kids using AAC: 3; kids working on literacy: 6; kids working on LSC: 6
T3	None	None	kids: 6; kids using AAC: 3; kids working on literacy: 6; kids working on LSC: 0
T4	DNR	DNR	DNR

Note: DNR = did not report; None = no experience

Table 3. Student Demographics and Literacy Status (as reported by teacher)

Initials	Age	Current Form of Communication	Current Literacy Skills	Related Literacy Goals
MM	6	Nonverbal; great eye contact; Proloquo2Go on iPad with scanning by teacher; direct selection of 2 choices with eye gaze and reach	May know some beginning sounds (hard to know); words are paired with symbols/pictures	Upcoming Individualized Education Plan (IEP); make selections with switch driving activation
CG	18	Speech & Augmentative and Alternative Communication (AAC) device	Knows a few letter names and sounds	Increasing vocabulary-

				comprehension related goal
JN	10	AAC and verbal (words and phrases)	Knows 20 letters and 3 letter sounds	Letter sound correspondence
SW	10	No speech, has access to high-tech AAC	Knows a few letter names	Letters

Participant Description. Table 1: A total of 4 female teachers participated in the study. All of the participants had earned a Master's degree in education at varying locations, but teach in New England currently. They have practiced as teachers for 7-22 years and have been working with children who use AAC for at least 13 years. As seen in Table 1, the teacher participants have varying experience with AAC and literacy instruction. One participant did not report her demographic and experience information.

The 4 students that were videotaped receiving literacy instruction all are currently enrolled at the same school in New England. One student, age 6, is diagnosed with Cerebral Palsy, while the other 3 students, ages 6-18, are diagnosed with Autism Spectrum Disorder. Table 3 describes the students' current methods of communication, their current literacy skills, and their related literacy goals.

Materials

No materials were provided for these observations. Video recordings of the literacy sessions were taken in a completely natural setting using an iPod touch and a tripod. These videos were uploaded to an account for researchers to obtain. Teachers were told to use whatever materials they were currently using to engage in a literacy session with the child. For example, teachers used materials such as low-tech books, worksheets, scissors, flash cards, etc. Only one student was seen using a high-tech AAC device out of all of the teacher literacy instruction sessions. There was no instruction given for the topic, direction, or requirements of a

literacy session. The only information provided was the prompt to prepare a 30-minute literacy session for a specific student on their case load. A list of low-tech and high-tech materials that were used by each teacher can be found in Table 4.

Table 4. Materials

Teacher	Student Initials	Low-Tech Materials	High-Tech Materials
T1	MM	Picture and word cards, animal figures, picture book, felt board	
T2	JN	Books, letter cards, picture cards	
T3	CG	Books, scissors, glue, worksheet, pencil	
T4	SW	Books, letter cards, worksheets, scissors, glue, picture cards, pencil	iPad

Procedures

Teachers were asked to plan one typical 30-minute literacy session for a student with complex communication needs who utilizes AAC. The teachers were not asked to provide lesson plans for the proposed session, but they were recorded as the session took place. Two sessions were recorded for each teacher and student pair.

Data Analysis

An a priori coding scheme was developed to evaluate the video recordings of the literacy instruction lessons. A priori coding schemes allow researchers to break down the data into meaningful components that can then be analyzed according to the central research questions (Gibson & Brown, 2009). In a priori coding schemes, they are developed by the researcher before data examination so they can discuss inherent themes and outcomes of the study (Gibson & Brown, 2009). In this study, the coding scheme (Appendix A) allowed us to evaluate five key elements of successful, evidence-based literacy instruction (Table 5).

Table 5. Principles of Effective Instruction (Light, McNaughton & Caron, 2016)*

Principle	Definition	Example
Meaningful Instruction	Provide instruction using meaningful and motivating materials that cater to the student's interests.	Sam likes SpongeBob and his SLP uses a SpongeBob book during shared reading.
Provide Sufficient Time	Professionals were asked to participate in one 30-minute literacy instruction sessions with their student.	Sam learns about letter sound correspondences for 30 minutes each session.
Target Appropriate Literacy Skills	Target letter sound correspondences, decoding, sight words, shared reading, writing, and reading comprehension during the session.	The SLP targets letter sound correspondences with the student.
Use Effective Instructional Procedures	Teach using the gradual release model of model, guided and independent practice. Feedback is provided throughout all steps of learning (National Reading Panel, 2000).	The SLP first model's the task for the student, then provides guided practice, and then lets the student try independently to assess learning.
Adaptations to Support Participation	Adaptations are provided to use alternative response methods (e.g., pointing, eye gaze) to allow the student to respond nonverbally.	Sam is unable to use his voice or an isolated point to respond. His SLP has him answer using a low-tech eye gaze board.

Instruction based on evidence-based literacy principles outlined by Light and McNaughton (2009a) were analyzed, including the: (1) provision of meaningful instruction, (2) use of sufficient instructional time, (3) utilization of effective instructional procedures (i.e. model, guided, and independent practice), (4) use of adaptations to support student participation (e.g., use of AAC, receptive comprehension measures, adaptations for motor needs), and (5) use of meaningful instruction. Sessions were evaluated to assess if the skills targeted were targeted during effective literacy instruction: decoding, encoding, sight words, shared reading, writing, or comprehension.

Teachers were evaluated on whether they made instruction meaningful for the child, provided sufficient time for the literacy session, and if the teacher provided appropriate supports for the child so that they can participate independently. Two major aspects of the evaluation also included how appropriate literacy skills were targeted and how the teacher used effective instruction procedures. The aim of the literacy session was to see effective instruction in at least one of the following: letter-sound correspondences, decoding, encoding, site words, shared reading, writing, and/or comprehension. Teachers were also evaluated on their use of effective instructional procedures: introduction, model, guided practice, and independent practice.

Qualitative descriptions of the study were also used to describe and support observations. Descriptive statistics were used to summarize some of this data (e.g. 28% of the activities included key literacy skills; 0% of the teachers completed all four steps of effective instruction). The coding scheme was used by an outside party to code a literacy session to ensure its accuracy and reliability. Inter-rater reliability was performed by an undergraduate research assistant for 20% of sessions and was found to be 100% between researchers.

Chapter 3

Results

The results of the study were based around five key components of effective literacy instruction: instructional time, literacy skills, effective instruction, adapted instruction, and meaningful instruction (Light & McNaughton, 2009). Each of the five components were analyzed per literacy session based on the coding scheme and the effectiveness of each is discussed below.

Instructional Time

Instructional time refers to the amount of explicit literacy instruction a student receives. It is suggested that students receive at least 90 minutes of literacy instruction per day, which also increases by 60 minutes per day for “at risk” children such as those with complex communication needs (Light & McNaughton, 2009). Having an appropriate amount of time to work on literacy skills is essential to facilitating language growth and allowing ample time to understand and grow in literary concepts.

As defined in the coding scheme, instructional time includes the time from when the instructor first puts a material needed for the activity on the table, or verbally says an activity is beginning, to when the instructor clears the material from the table or verbally indicates the activity is over. This considers time on task as direct instructional time and not just total session length. For this study, we asked the teachers to prepare and carry out a 30-minute literacy session for their student. Despite this guideline, all four of the teachers observed failed to directly instruct their student for more than 10 minutes. For example, the longest recorded on task literacy session was with T1 (Teacher 1) with a length of 8 minutes 26 seconds. The shortest instructional time period was 1 minute 10 seconds by T3. This shows the great level of

variability in instructional times across teachers and students. Overall the average session length for teachers was only 8 minutes 9 seconds, falling well below the target for this study and especially the evidence based suggested time range.

Literacy Skills

Targeting appropriate literacy skills is essential to effective instruction. These skills include: letter-sound correspondences, decoding, encoding, sight words, sound blending, phoneme segmentation, shared reading, and writing (Light & McNaughton, 2009). In this study, teachers were observed targeting some of these literacy skills, but not all.

The 4 teachers completed 7 literacy sessions. In these, 18 total activities were documented, but only 5 (28%) addressed key literacy skills that drive effective literacy instruction. These 5 skills that were targeted included shared reading, letter-sound correspondences, and site word instruction. For example, T3 used shared reading with her student by reading a book about food, T2 offered opportunities for letter and sound identification, and T1 and T4 both targeted site words in their first sessions. The other 13 (72%) activities consisted of non-literacy related tasks and instructional breaks. For example, all four of the teachers were observed doing activities involving matching and receptive identification. T2 asked the student to answer wh-questions and sort pictures based on category. Overall, the skills that were targeted and the activities that were used were very different for each student and were not uniform over the 7 sessions.

Principles of Effective Instruction

In order for students to be able to learn material at a level of individualized success, teachers must scaffold the learning process and aid them in this challenge. Using the effective instruction method, teachers are able to help students acquire, rehearse, and connect knowledge

(Rosenshine, 2009). The principles of effective instruction that we looked at in this study include introduction, modeling, guided practice, and independent practice. In this order, they ensure learner success through gradual loss of teacher support and scaffolding (Archer & Hughes, 2010). Without all four in this respective order, effective instruction is not met. This is considered the gradual model: the teacher introduces the activity, the teacher does the task while the student observes, the teacher and student do the task together, then the student completes the skill independently while receiving both positive and corrective feedback (Light & McNaughton, 2009).

Each literacy session was evaluated on their ability to present each of these instruction methods and in this exact order to adhere to the gradual release model. During the 7 literacy sessions, 0% of the teachers completed all four steps of effective instruction in the right order. Many were seen to provide guided practice with their students, but rarely were the students asked to complete tasks on their own, using previous skills that were just modeled and practiced together. For example, T3 has her student cutting out words and matching the correct word to its picture. She does not model the task, but rather lets the student do it on their own. Only a couple of times does she provide feedback when the student misidentifies an object. T2 does a great job at guided practice as she prompts her student to give correct letter sound correspondences, such as, “M says...”. When they move onto a shared reading activity she has her student say the sentence after her, which could be considered a type of independent practice, but all of the components of the gradual model are not seen in order in each activity. While T4 and her student are working on letter-sound correspondences, the student is completing them on their own without the teacher’s help. There is no modeling or guided practice, but only independent practice. The same goes for the other non-literacy activities in this session. T1

introduces a word to her student and gives examples of that word. Then the student is asked to identify the word in a set. T1 in this case is modeling the word and the student is practicing its recollection independently, but they do not work together in guided practice.

Adapting Instruction

In order for instruction to be meaningful and appropriate, certain adaptations must be made for individuals with complex communication needs. In order to participate fully, students must be able to respond and be assessed according to their communication status (Light & McNaughton, 2009). According to the coding scheme, adapted instruction is defined as the supports a student is given in order to participate and support their learning needs. For example, a student with a disability that impacts motor movements should be given accommodations to participate without the need for use of motor skills, and a student who cannot communicate verbally will be given adaptations to participate non-verbally through the use of low and high tech AAC, receptive checks for knowledge, and other measures.

In all seven literacy sessions, the teachers were seen adapting instruction in some way for their student. For example, one of the students utilized a high tech AAC device, which was placed near the student where they could access it. In both of T1's literacy sessions, she adapted the student's response output by counting eye gaze as a correct response. Usually the student would not be able to participate because of his limited verbal and motor output, yet when the teacher changed the response method, the student became very successful in the activity. T1 also adapted instruction by allowing the student to take motor breaks as it was very difficult for the student to have sustained motor movements in order to respond to the instructor's questions. This allowed for continued opportunity to participate without losing time and motivation during

the literacy session. T4 allows her student to use both their high-tech device and their verbal output to respond, as both are considered correct responses.

Meaningful Instruction

We are more motivated to learn about topics that are interesting to us. In order to create a learning environment for an individual with complex communication needs, it is these interests which will create meaningful instruction. Instead of trying to change the student to fit a rigid set of interests, it is essential to figure out what is meaningful to them to be able to plan interactive activities and environments (Beukelman & Mirenda, 2013). As defined by Light & McNaughton (2009), we can increase learner motivation by making links between activities and the learner's interests, varying the activities, and using positive styles of instruction. Meaningful instruction includes topics that the student is interested in, such as motivating words, subjects, and preferred activities.

In this study, 50% of the teachers were observed creating meaningful instruction based on their student's interests. For example, T2 shows meaningful incentives for her student when he gets distracted. He is very motivated by going on his swing so she keeps repeating, "reading then swing", which in turn the student also repeats to keep themselves on track. T3 uses a book about snacks during a shared reading activity, which is very rewarding to the student as they love snacks. They are very engaged and motivated to read the book. The other two teachers did not use any materials, subjects, or incentives that were engaging or meaningful to the student. By adapting instruction to make it more meaningful for the student, they are more likely to take away important literacy concepts from the topics they are learning.

Chapter 4

Discussion

This research observed teachers implementing literacy instruction to individuals with complex communication needs. Four special education teachers participated in this study, with a parallel study conducted with Speech Language Pathologists (SLPs). This research is essential to better understanding the research to practice gap in effective literacy instruction for individuals with complex communication needs. By observing current practices, trainings can be more tailored to common trends (e.g., if teachers are good at adapting materials but are missing certain components of instruction, the training can focus more on the latter). By combining what we know is occurring in classrooms with both teachers and SLPs with what is considered evidence-based practices, we can unify instruction across all professional domains. Like the results, the discussion will be organized according to the five key components of effective literacy instruction: instructional time, literacy skills, effective instruction, adapted instruction, and meaningful instruction (Light & McNaughton, 2009).

Instructional Time

General education students should receive at least 90 minutes of literacy instruction per day in order to become proficient language users (U.S. Department of Education, 2002). This does not include an additional 40 to 60 minutes for individuals with complex communication needs, as seen in this study, who need more instruction time in order to gain these essential skills (Vaughn, Wanzek, Woodruff, & Linan-Thompson, 2007). Observations show that none of the teachers in the present study completed a 30-minute literacy session as directed, and few even

reached 10-minute sessions. Even the longer observed sessions had disruptions, breaks, and time spent on miscellaneous tasks such as cutting and gluing.

This large research to practice gap in instructional time could be due to many factors. Rupp, Gaffney & Dymond (2015) suggest that low teacher self-efficacy, low expectations, and lack of individualization of instruction creates a lacking literacy environment. If a teacher cannot give the necessary supports for students with complex communication needs to acquire language, they are often seen as too challenging to teach. Therefore, their instructional time is going to be reflective of the lack of knowledge on how to teach literacy to students with CCN. Teacher surveys preceding this study show that they are not confident in their ability to teach literacy, which could have affected their preparation for the study itself.

Targeting Literacy Skills

Teachers were observed instructing students in tasks that were related to literacy, yet not core literacy skills recognized by the National Reading Panel. For example, sessions focused around receptive identification, copy typing, and matching activities. The National Reading Panel (2000) states that in order to enhance literacy skills, teachers must target phonemic awareness, phonics, and shared reading. Shared reading was observed in 3 out of 7 sessions. Of the 18 documented activities during all of the observed sessions, only five addressed these key literacy learning activities. Receptive identification focuses on the student's ability to choose a correct label from a set of pictures, without expressively communicating about the topic and expanding language. In addition, copy typing and matching activities focus on skills completely removed from literacy training, such as motor movement for handwriting and symbol recognition. When shared reading and letter sound correspondences were observed, they were very brief intervention methods. Shared reading should be used to target oral language, listening

comprehension, vocabulary development, and print concepts (Dynea & Justice, 2014). But in order for any of these skills to be reached, teachers must allow students to engage with the text, check for understanding, and go deeper into the contexts of the story (Browder et al., 2008); none of these key factors occurred. Phoneme awareness is one of the greatest predictors of reading ability in children with and without disabilities (“Learning to Read and Write”, 1998). Only one teacher was observed instructing one student in letter sound correspondence. The teacher ran through cards and had the child identify the letter and the sound that letter makes. Although this is technically letter sound correspondence, the teacher was usually stating the sound before the child and the student would repeat, without giving direct instruction to the student. Overall, teachers stated not feeling prepared to teach literacy skills to students with complex communication needs after entering the workforce. Similar to Ruppert, Gaffney & Dymond (2015), which 100% of the special educators in the study reported that undergraduate teacher programs did not prepare them to teach literacy to students with severe disabilities.

Principles of Effective Instruction

The gradual release model and the four principles of direct instruction were not observed in any of the seven literacy sessions. This model has been grounded in education since it was first established in 1983. It allows for stronger reading performance through explicit instruction and shifts of responsibilities between the teacher and learner (Webb et al., 2019); because of the short and numerous activities seen in all of the sessions, it was difficult for the student to understand the shift in responsibility. Model, guided, and independent practice need to be mapped out explicitly for the student so they know how and when to respond accordingly. Teachers were observed prompting the student to act or telling the student to complete a task independently, but always in varying orders and this was not seen in every activity. In most

instances, the teachers were observed introducing an activity and then having the student complete or respond by themselves. There was only one instance of guided practice in the sessions where the teacher is prompting the student to tell them what letter sound corresponds to the card they are holding. Even this is more of a prompting activity rather than them working together to learn in the activity. Morgan and colleagues explains that because of large preservice class sizes, different school locations, and competing schedules, preservice teachers do not always learn effective teaching strategies (Morgan, Menlove, Salzberg, & Hudson, 1994). We need to prepare classroom teachers with the skills to teach phonological awareness and literacy and by doing this we can increase student learning (McCutchen, Abbott, Green, Beretvas, Cox, Potter, Quiroga, & Gray, 2002). Under IDEA (2004), legislation changed teaching credentials to include “highly qualified”. This proves the need for extensive instruction in all educational areas, including literacy, and if preservice and in-service teachers fail to use up to date evidence-based literacy practices, there will be detrimental consequences (Copeland, Keefe, Calhoun, Tanner, & Park, 2011).

Along with the principles of effective instruction comes corrective and positive feedback. T4 does a very good job of supporting the student through the activity by giving verbal feedback of, “Great Job”, “Try again”, and “I see you looking! Awesome job!”. Yet, corrective feedback was not observed by any teachers (e.g., No, you picked the word “dog” we are looking for the word “dad”). Corrective feedback is used to express whether a task is being accomplished, by differentiating correct and incorrect answers, giving more or different information, and building on knowledge (Hattie & Timperley, 2007). This corrective and positive feedback is important as it helps students measure their own success, proves to increase success, and motivates students to continue in an activity (Archer & Hughes, 2010). Even if corrective feedback is used

appropriately, the gradual release model must be present in the right order for learner success to be maximized.

Adapting Instruction

Adapting instruction is essential for creating significant instruction for children with complex communication needs. If they are expected to participate in a way that does not fit their motor, cognitive, or physical needs, then the session is meaningless. In all sessions, teachers were seen adapting instruction in some way. Augmentative and alternative communication devices were on, in range of the child, and used when necessary. Not only were technological devices used to adapt instruction and participation, but also varying interpretations of communicative intent. For example, understanding that a child with severe motor impairments will use eye contact and shifting of gaze to indicate a selection. While some adaptations were available, more adaptations are necessary in order to support full participation of the individuals who uses AAC. For example, when teaching letter-sound correspondences the teacher must state the sound for the child who uses AAC and then provide some sort of letter-sound cards for the child to identify the sound that is being made by the teacher. This adaptation to the literacy task supports the participation of the learner and allows the teacher to better understand progress and knowledge in this key literacy area.

Meaningful Instruction

In order for students to be engaged and excited about learning, the material and activities must relate directly to their interests. Once they understand that the task is relevant to their individual life, it will support not only the generalization to their everyday life, but will inherently increase their interest in the preferred activities (Light & McNaughton 2009a). Not only can meaningful, contextualized instruction give students with complex communication

needs the skills to participate fully in general education curriculum, but it also gives them access to individualized skills for their specific needs (Calculator, 2009). In this research, we could see varying levels of meaningful instruction, both intrinsic and extrinsic. According to Sweet and Guthrie (1998), teachers found that students who were more intrinsically motivated, as opposed to extrinsically, were viewed as higher achievers. In addition, there is a negative impact on literacy learning and retention when teachers use extrinsic motivation to get students to participate in non-preferable literacy activities (Sweet & Guthrie, 1996). Therefore, focus should be put on making the skills and topics specific to each student rather than adapting reinforcers. These observations show more focus on meaningful extrinsic motivators, such as swinging, instead of direct student interests. Teachers should instead try creating individualized, relevant story books, or creating activities that include the student, their interests, and their peers.

Clinical Implications

Preservice and in-service teachers feel that they do not have the skills necessary to teach literacy to individuals with complex communication needs. This research further proves the lack of preparedness and inconsistencies in the way literacy instruction is prepared and conducted. One potential contributor stems from the outdated misconception that individuals with complex communication cannot learn literacy, when in fact if they are given the right supports (in some cases AAC), they stand no risk of developing language, literacy, and communication skills (Light & McNaughton, 2012). Despite growing research proving the essential role teachers play in literacy development, teachers still lack the knowledge to promote early literacy learning (Cunningham, Zibulsky, & Callahan, 2009). Cunningham, Zibulsky, and Callahan (2009) even describe the “overestimate” of what knowledge they have to teach literacy to students. This

presents another problem in which teachers are not seeking out evidence-based practices and current research to improve their teaching methods.

Because teaching is not a clinical field, there are no national guidelines for teacher's scope of practice for literacy instruction. Special educators are finding it hard to adapt to Common Core curriculum for their students because of their varying skills and needs (The Challenges of Common Core for Special Education, 2016). The only way to ensure uniform practice for all special education teachers are literacy programs at the undergraduate and graduate level which prepare educators to teach literacy to individuals with CCN. In order to reach practicing special education teachers, continuing education programs need to be in place and sought out. According to Ruppert and colleagues (2015), teachers were more confident in their literacy instruction and were more positive about student outcomes when they participated in continuing education activities. In addition, Ruppert, Roberts, & Olson (2018) explain that teachers should be prepared with knowledge about recommended practices for students with significant needs in order to increase student learning and acceptance within the school system.

Speech Language Pathologists (SLPs) and special education teachers are often working together to teach language to individuals with complex communication needs. These professionals need to be prepared before graduation of their respective programs to work together (Wilson, McNeill, & Gillon, 2016). SLPs are given in depth training in phonological awareness whereas teachers are usually limited to their exposure of this knowledge (Carroll, Gillon, & McNeill, 2012). This supports the claim that teacher education should prepare them with knowledge of language and literacy concepts, as teacher's linguistic knowledge positively correlates with student improvement (McCutchen, Green, Abbott, & Sanders, 2009). In order to close the research to practice gap for both teachers and SLPs, research needs to be done for

different training methods that professionals can use in preservice and in-service environments. This will ensure uniform practice not only among professionals but nationally for students with complex communication needs.

Limitations

Observational studies pose their problems because of the qualitative nature of the data. Teachers were asked to implement 30-minute literacy sessions as they normally would, given no materials or guidance. It cannot be explicitly stated whether or not the filming of these sessions, or observational manner affected the way the teachers conducted their sessions. It is unknown if the teachers in the study had ever been filmed instructing students prior to the experiment. In addition to the teacher, students were aware of the person filming and may have acted differently than a typical classroom setting. They were also familiar with the individual filming which could have impacted their behavior either negatively or positively. Teachers were not asked to submit lesson plans or describe their instruction methods. This could have given more insight into their rationale, typical teaching practices, and if the session met their personal teaching standards. Another limitation is the inherent small sample size. Only four teachers were sampled, who of which completed seven literacy sessions for the study. With a larger sample of teachers from different schools, we can get a greater idea of the type of literacy activities they are implementing in their classrooms and the effect it has on students with complex communication needs.

Chapter 5

Conclusion

In order to live a life full of effective communication, individuals must be able to communicate independently. As Downing explains, “Literacy is power – power to control your own life and influence the world around you” (Downing, 2005). The results of the above study highlight the need for education around literacy instruction for special education teachers. Observations show that literacy instruction is not uniform and does not follow effective instruction principles. Through the participant interviews, it was obvious that these professionals understand the importance of literacy instruction, but do not have enough information about the current research in literacy instruction and what should be occurring in their lessons. Professionals were proficient in adapting instruction and making instruction meaningful to their students. They had a difficult time planning a session that would provide sufficient instruction time, target literacy skills, and use effective instruction methods. The study shows the need for additional training for both preservice and in-service teachers. With more training, teachers will have a more well-rounded view of literacy instruction, literacy skills, and the time needed to see student gains. This will ensure that teachers across the nation are all using effective methods of literacy instruction for individuals with complex communication needs, and uniform instruction will be met. More research is needed to see how training preservice teachers can help in their careers serving individuals with CCN and how continuing education programs can help in-service teachers enhance their current methods of literacy instruction.

Appendix A

Code Book

<i>Code Book</i>			
Point		Definition	Example
For Each Session			
Session Length	Write time here	The time from when the instructor first engages with the student to the time when the instructor indicates the end of the session by clearing materials from the table or in verbally indicating that the session is done	A teacher greets the student and the session time starts. When the teacher turns around to tell the person filming they are done the session ends.
Session Length over 30 minutes	Yes/No	The overall session length with be 30 or more minutes.	Sam learns about letter sound correspondences for 30 minutes each session.
For Each Activity			
Activity Length	Write time here	The time from when the instructor first puts a material needed for the activity on the table, or verbally says an activity is beginning, to when the instructor clears the material from the table or verbally indicates the activity is over. Start and end the timer at whichever event happens first (verbal or physical indication). This does not include visual schedules or reinforcing toys.	
	Write yes if present and give example		
Receptive ID		Asking the student to find or identify an item, symbol, picture, or word.	The SLP asks the student to point to the apple, the symbol for crawl, or the letter z.
Shared Reading		The student engages in a reading activity with another person.	The SLP and the student read a book about going to the store together.

Letter Sound Correspondences	The instructor asks the student to say the sound that a letter makes, or asks the student to point to the letter that makes a specific sound.	Jimmy is given a card with the letter b on it. He is asked to say /b/
Articulation	The instructor works on producing a sound or word with a student.	The SLP works on pronouncing the sound /b/ and the word bat with the student.
Sight Words	The student is asked to verbally read a word or physically indicate that they can discriminate a verbally presented word from another verbally presented word using their method of selection (e.g., looking, pointing). There should be no pictures or symbols presented to the student along with the orthographic representation of the word.	The student is given the words 'cat' and 'dog' spelled out with no symbols or pictures and is asked to identify the word 'cat'
Copy Typing	The student is asked to write or copy a word or letter that the instructor has typed or written.	The instructor writes the word ball on a piece of paper and has the student type it on their device.
Comprehension	The instructor asks the student questions about a story.	The student and teacher read a book about family and the teacher asks the student what the main idea of the story was.
Matching	The student is given a picture or label and has to match it to its corresponding picture or label.	The student is given a picture of a pizza and asked to match it to the word 'pizza'
Naming and Labeling Letters	The instructor asks the student to say the name of a letter or the student is verbally given a letter name and is asked to find it.	The student is given a picture of a letter and is asked to name it.
Category Sorting	The instructor identifies and overall category and asks the student to find all of the things that belong in that category.	The student is given three images of fruits and vegetables and is expected to put the fruits with the other fruits and vegetables with other vegetables.
Labeling Objects	The student is asked to say an objects name	The teacher gives the student a picture of an

Choice Making	The student is presented with objects, symbols, or items and is asked to pick one.	orange and asks the student to say what it is. The instructor presents the student with two symbols to ask if they want to read or play and the student chooses the symbol play.
Principles of Effective Instruction		
Meaningful Instruction	Instruction includes things that the student is interested in. This includes motivating words, topics and preferred activities.	Sam loves scooters and reads a book about scooters with his instructor.
Target Literacy Skills		
Letter sound correspondences	The instructor asks the student to say the sound that a letter makes, or asks the student to point to the letter that makes a specific sound.	The instructor asks the student to point to the letter that says /b/.
Decoding	The instructor asks the student to read a word by identifying all of the individual letter sound correspondences in a word and blending them together to read the word.	The instructor gives the student 4 pictures and the word 'cat'. The student sounds out all of the letters in the word 'cat' verbally, or in their head, and points to the picture for 'cat' to show their understanding.
Sight words	The student is asked to verbally read a word or physically indicate that they can discriminate a verbally presented word from another verbally presented word using their method of selection (e.g., looking, pointing). There should be no pictures or symbols presented to the student along with the orthographic representation of the word.	The instructor gives the student the word cat and dog and asks the student to point to the word 'dog'.
Shared reading	The student engages in a reading activity with another person.	The instructor reads a book about the grocery store to the student.

Writing	The student writes, types, or selects letters to form a word without being provided a model.	The teacher and the student write the word "ball"
Comprehension	The instructor asks the student questions about a story.	The student and instructor read a story about baseball and the instructor asks the student what the story was about.
Effective Procedures	Do not check any of the boxes for guided and independent practice unless the step above it has been completed. For example if the student only practices independently but was not given guided instruction, they do not get a check for independent practice. If a student participates in independent practice after having first model and then guided practice they can get a check for independent practice.	
Introduction	The instructor tells the student what the task is and what they will be working on.	The instructor is targeting letter sound correspondences and says to the student "today we are going to learn about the sounds that letters make."
Model Practice	The instructor models the task for the student and the student watches the instructor do the task.	The instructor says the letter sound and points to the letter that makes the sound to model the task.
Guided Practice	The student and the instructor do the task together. The instructor prevents the student from making errors as much as possible.	The student and instructor points to the letter that makes a sound together.
Independent Practice	The student does the task without instructor assistance and is given feedback their performance.	The instructor asks the student to point to a letter that makes a sound independently.
Adaptations to Support Participation	The student is given a way to participate that supports their learning needs. A student with a disability that impacts motor movements should be given accommodations to participate without the need for use of motor skills. A student who cannot communicate verbally will be given adaptations to participate	

non-verbally through the use of AAC, receptive checks for knowledge and other measures.

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ACADEMIC VITA

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EDUCATION

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HONORS AND RESEARCH

Schreyer Honors College - State College, Pa

August 2018 – May 2020

- Designed a field research project as the basis for a senior thesis project (approved; implementation in progress)
- Completing required honors credits and engaging in supplementary learning beyond prescribed coursework

Augmentative and Alternative Communication Laboratory - State College, PA

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- Pursuing research project as a part of honors thesis (under tutelage of Dr. Jessica Caron, Ph.D., CCC-SLP)
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PUBLICATIONS

Leah Brush, B.S., Emilia Livi, Jessica G. Caron, Ph.D., and Meghan O'Brien, M.S. (2019). *Literacy for individuals who use AAC: Observations of SLPs and teachers implementing literacy lessons in schools*. Poster submitted for presentation at the Pennsylvania Speech-Language-Hearing Association (PSHA) Annual Convention, April 2020.

ORGANIZATIONS AND LEADERSHIP

National Student Speech Language Hearing Association - State College, Pa

September 2017 – May 2020

- Participate in events and service opportunities to help individuals with diverse communication disorders
- Attend seminars/discussions regarding Speech Pathology, Audiology, and Bilingual Education

Health and Human Development Honors Society - State College, Pa

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- Represent the HHD student body by participating in a variety of service opportunities

Communication Sciences and Disorders Peer Mentor Program - State College, Pa

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- Advise transfer students about the major and led them through the transition to University Park

WORK EXPERIENCE

Part-time Nanny (Multiple Families); Barista – Havertown, PA and State College, PA

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VOLUNTEER EXPERIENCE

THON Operations Committee - State College, Pa

August 2017 - February 2018

- Worked with team members to prepare supplies and safety measures for THON dance marathons
- Led the planning of engaging and inventive team-building events for other committee members

Epsilon Sigma Alpha National Service Organization - State College, Pa

September 2017 – May 2020

- Helped raise funds and awareness for our sole benefactor St. Jude's Children's Hospital
- Assisted in Penn State Chapter's involvement in THON and its compassion towards children battling cancer

Independent Dancer Couple THON 2020 - State College, Pa

August 2019 – February 2020

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