

Rejecting Vocal Ableism and Removing Barriers to Instruction for Students Communicating Nonverbally: Utilizing the Nonverbal Reading Approach as Students Develop Decoding and Subsequent Encoding Skills

Abstract: Learners who have communicative disabilities and are not able to easily access conventional forms of literacy such as speech, signing, or creation of print, struggle to develop their writing skills. The augmentative and alternative communication (AAC) systems that exist are picture based communication systems, and speech generating devices (SGD), used to translate typed words into computer generated vocalizations. Although AAC technology is available to support students in communication, technology support is a luxury that is unfortunately not accessible to everyone communicating nonverbally. The Nonverbal Reading Approach (NRA) has been successful in teaching students decoding skills. This article explores the skills of self-dialogue, internalization of verbal pathways, and letter kinemes, to encourage encoding.

Nonverbal Communication and Literacy Learning Environments

Students who are more secure in their ability to identify letters, articulate the initial sounds of words, and demonstrate knowledge of print concepts are more apt to begin writing clearly within the pre-kindergarten setting (Diamond et al., 2008). However, written language is the last literacy system to be acquired (Johnson, 1986). Keeping that in mind, it is expected that there are a greater number of challenges in this area of learning than in others. Inviting children into the writing world, no matter the skill level and ability, is the first step. Participatory appropriation (Mallory & New, 1994) is described as the inclusion of all students within an educational setting, and sharing writing experiences in this inclusive form allows students to learn and model for one another. This inclusion validates children's individual skills and abilities, and showcases each scholar as valued members of the educational community. Within an early childhood setting, teachers can utilize inclusive writing protocols to promote written development across the range of student abilities. Edmister et al. (2013) outline a variety of tools children can use to interact with the writing plane and maximize participation and expression by all. As children use different media to express themselves through symbolic writing, learners begin to define the media's strengths and limitations for communication (Edwards & Willis, 1999).

However, children who have communicative disabilities and are not able to easily access conventional forms of literacy such as speech, signing, or creation of print, struggle to develop their writing skills. This hurdle limits participation in social and physical environments starting at a young age (Drasgow & Halle, 1995). As the process of decoding words develops simultaneously with the ability to encode words, students with communicative disabilities

struggle to verbally ‘sound out’ words. A common prompt for students in the early childhood setting is to ‘say the sounds’ of a word in order to decode to read or encode to write. There have been some support systems developed to support learners who communicate non-verbally. The Non-verbal Reading Approach (NRA) was developed as an intervention to support students in the process of internally decoding words. When it comes to communicative output, there have been two prominent types of augmentative and alternative communication (AAC) systems developed. The first support systems are picture based communication systems and protocol, which involve teaching students how to use picture symbols to prompt adults and peers in social situations to communicate needs. The second augmentative and alternative communication systems are speech generating devices (SGD), which are used to translate typed words into computer generated vocalizations.

Boesch et al. (2013) assert that the integration of augmentative and alternative communication systems into learning environments support students who are nonverbal develop effective communication skills. Although these systems support students in communicating quickly and efficiently, the aim is to facilitate communication using these systems with students while simultaneously teaching the skills of independent encoding and decoding. Bidirectionality in the learning process, as outlined by Diamond et al. (2008), states that students should be exposed to both writing and reading practices concurrently in order to foster optimal literacy development.

Review of Literature

In the research done by Boesch et al. (2013), students were exposed to picture based communication and SGD, and both tools supported students in developing their ability to

communicate. Picture based communication is used as an intervention for teaching functional communication skills, making requests, and ensuring needs are met. Picture based communication is systematically designed to build behavior, and more advanced communication and independence (Boesch et al., 2013).

However beneficial these communication tools are, Heller et al. (2002), explains that AAC systems do not fully support students in the ability to learn to read and write. AAC devices are insufficient in allowing students to ask questions or receive immediate feedback due to the restriction of symbols and images (Heller et al. 2002), or the inability to create novel messages. The limitations that picture based communication and SGD place on students' communicative ability contribute to the struggle to learn how to read and write (Swinehart-Jones & Heller, 2009). Struggling to develop literacy skills is not just attributed to the limitations of picture based communication and SGD, but also to lowered expectations in the educational environment due to the difference in student contribution, inadequate instructional strategies, and lack of information on how to support students with speech or language disabilities (Heller et al., 2002).

Heller et al. (2002) asserts that learning to decode and comprehend are the foundational skills taught in schools, as these lead to fluent reading. Students with severe speech impairments and those who communicate non-verbally typically struggle with phonological processing in comparison to same-aged peers (Swinehart-Jones & Heller, 2009). Due to students' inability to verbally communicate the words and receive feedback from peers and educators, learning to read can be challenging. Sandberg (2001) states that the ability to verbally articulate the phonological sounds of words is not mandatory in order to decode or encode, but is beneficial. This finding was crucial in developing the NRA as a tool to support students with severe speech impairments

(SSI). The struggle to decode words, paired with the lack of a strategy to fluently identify words puts students at risk for academic hardship (Heller et al., 2002).

The NRA teaches students to utilize internal dialogue to silently verbalize phonemes in order to sound out words. This silent decoding allows students to blend sounds internally (Heller et al., 2002) and then choose from an array of choices verbally presented. Educators analyze the errors students make and tailor decoding instruction based on student need (Swinehart-Jones & Heller, 2009). When teaching students using the NRA protocol, the process involves guided practice with a teacher and then evaluation of student understanding. Students move through three stages of decoding: teacher modeling internal speech by vocalizing the sounds of the word slowly, then reading them quickly without stopping, and finally saying the entire word (Swinehart-Jones & Heller, 2009).

In research conducted around the effectiveness of the NRA, Coleman-Martin et al. (2005) tested three different methods for implementing the protocol: teacher only instruction, teacher plus computer-assisted instruction (CAI), and solely computer based instruction. Following the three trials of the NRA, a teacher questionnaire was provided and based on this study conducted with four students, teachers plus CAI had the most consistently positive outcomes (Coleman-Martin et al., 2005). It is important to note that the same three step protocol of guided instruction and subsequent evaluation is used across all studies. Swinehart-Jones & Heller (2009) expanded on the study by sharing the success of the protocol being used to teach content specific vocabulary throughout the year, as well as the effectiveness in teaching students to generalize the decoding of unknown words that have similar phonemic patterns. Additionally, the Swinehart-Jones & Heller (2009) study sought to understand when students are decoding using

the NRA strategy independently, showing understanding and mastery of the internal blending of phonemes. This study observed student motoric indicators, or gross-motor movements, to indicate when students were working through the independent decoding of a word. Movement can look different from student to student: moving a finger under a word while decoding, moving a mouse across the screen, or swinging an arm to show movement through the word are all demonstrations of motoric indicators (Swinehart-Jones, 2009). All students in the study were successful in demonstrating the internalization of the NRA protocol paired with motoric indicators, presenting as movements in head position, blinking, moving a finger from left to right as a technique to track the letters on the page (Swinehart-Jones, 2009).

Conceptual and Theoretical Research

Jie-Qi Chen et al. (2011) explains that activity is the most foundational part of child development, as children interact with their environment at home and at school, while Wollman-Bonilla (2000) shares that literacy development is not only situated in the cognitive development realm, but also the sociocultural. As students are developing their writing skills, they are not doing so in a vacuum. Writing as communication is done for a purpose and happens through learning within social interactions (Wollman-Bonilla, 2000). In order to support the growth and development of students learning to encode, it is vital that the cultural norms of literacy tools are modeled (Sivian, 1986). As teachers are modeling and inviting children into the writing process, they are providing scaffolding for the internalization of letter formation and the concept that letters together create words, and words carry meaning and message (Sivian, 1986). In order to support students in their development of writing with peer and teacher support, Jones (2015) highlights the inclusive method of interactive writing (IW). IW is a group effort in order

to write a meaningful message that involves students taking turns writing letters, words, and sharing the writing utensil (Jones, 2015). When students are a part of the development of the message, and an active part in the learning, students become more than just a conduit for information (Mallory & New, 1994).

As students who are participating non-verbally in the classroom have shown success in the development of their decoding skills by internalizing the letter-sound correlations, the next step is to develop encoding skills. By teaching students the verbal pathways (Fountas & Pinnell, 2013) of letter formation, providing opportunity for practice of formation, and participating in IW activities within the daily routines and classroom setting (Jones, 2015), it is theorized that the internalization of the verbal pathways can lead to independent letter formation and encoding of words learned through the NRA. As a cognitive process, students are being asked to retain the letter formation and association with the sound and symbol in long term memory, and apply it within the task environment in written form (Flower & Hayes, 1981). As a sociocultural interaction, students are learning through participatory association (Mallory & new, 1994) via the sharing of knowledge from teacher to student, as well as student to student. Salleh et al. (2012), explains that the opportunity for experience and apprenticeship along with ensuring that the material is realistic and relevant is vital to the development of knowledge, which validates the model of encoding exposure and practice through IW (Jones, 2015).

Current Tools and Limitations

With this study rooted in the theoretical framework of social constructivism, the research questions involve how teacher to student interaction can facilitate encoding development and how interactive writing among the entire classroom community can develop 'voice' and writing

skills. Existing AAC tools are appropriate for initial requesting, but that begs the question of what comes next in developing literacy skills. Edwards (1999) explains that literacy can be defined as the ability to read and write messages in the service of three goals. Goal one is recording and preserving experiences. Goal two is to reflect, explore, and extend one's thoughts and feelings. The third and final goal is communicating and sharing ideas with others. Picture based communication allows students to only do one of these goals: communicating and sharing ideas of others, and does so with limitations (Edwards, 1999). Although, for young children, it's natural to combine symbolic forms with writing when expressing thoughts; AAC does not fully allow children to span the range of literacy communication abilities.

The promising research around the NRA is valuable because as Reutzel (2017) states, there is a correlation between letter naming and letter writing fluency. If students are able to decode words fluently by using strategies developed during initial NRA training, then students theoretically can develop their writing skills outside AAC. Pazeto (2016) shares that vocabulary, phonological awareness, and rapid naming skills predict performance in written language. If students have developed the ability to decode fluently with the NRA, then transitioning to written language is a natural next step.

Reutzel (2017) explains that when students see a letter, shape, or picture, it is relayed to self with internal dialogue, which leads to internal and personal meaning becoming attached to the visual. This is why a common phonics instruction technique is to teach the letter, paired with the sound, and a picture cue. This strategy is done to build schema, so students have a frame of reference to pull up on. This is why when looking at symbols in another language, we struggle to make meaning, as we have no association to what that symbol is or the sound it makes. That is

when students experience disequilibrium (Branscombe, 2013). Disequilibrium is described as the time period when humans are taking in new information, but it does not align to any information already learned. Within a state of disequilibrium, no existing schema is available to reinforce what is being learned (Branscombe, 2013). Reutzel (2017) goes one step further to coin the phrase “kinemes,” which is explained to be letter recognition that includes awareness of shapes, and the motor memory of the form. This contributes to our lack of understanding symbols in another language, as we have no method for forming the letter or significance it holds.

When teaching students who are communicating nonverbally how to write, the strategy of instruction using letter, picture, sound is still accessible. However, as the child cannot articulate the sound audibly, it is grappled with internally. The question is, does the implementation of teaching of kinemes in addition to the NRA protocol support students in developing independent writing ability outside of picture based communication and SGD? Peterson (2016) explains that learning to write is not done by solely learning how to generate written text. As children make circles, lines, and squiggles, hand eye coordination is being developed and the understanding that communication happens by making marks and drawings is formed. Peterson (2016) emphatically states that educators can build off of the natural inclination to make marks to help students learn to write, despite any difference in ability to verbally communicate.

Interactive Writing Immersed in NRA

In Jones’ (2015) study of the benefits of interactive writing and Writers Workshop (WW) instruction methods, the process of inviting students to orally rehearse and revise the words and sentences being written is highlighted. As the students in this study are participating non-verbally

in their literacy development, it would be beneficial to see if the complimenting elements of IW (sharing the pen, creating a meaningful message, group collaboration) support student literacy development.

Educator Next Steps

Although AAC technology is available to support students in communication, technology support is a luxury that is unfortunately not accessible to everyone communicating nonverbally. With hope, this article reaches the instructors who support students who communicate nonverbally, and prompt intentional teaching of internal dialogue after seeing the power it holds.

Teachers that utilize the Fountas & Pinnell (2013) verbal pathways to explicitly teach each letter kineme and model the creation of each letter when writing by verbally talking through the formation of each letter as a strategy for instruction (Flower & Hayes, 1981) are setting their students up for success. Teachers will model letter creation and state the verbal pathway, daily. As this method of instruction is meant to complement the internal dialogue power that the NRA highlights, modeling thinking through teacher vocalization is vital for students to observe in order to internalize. Teachers should work to provide a minimum of two opportunities daily for participation in interactive writing (IW) during instruction, where students will be asked to contribute the same words via encoding that are being taught during the NRA instruction. For example, time for the IW would occur during everyday classroom routines such as Morning Message, literacy centers, and NRA practice. To begin, students are not being asked to transfer letter-symbol correlation to novel words and messages, but rather demonstrating understanding of letter formation in words being taught and practiced in the NRA. Initial work should focus on

the writing on consonant-vowel-consonant words (CVC) words, so that the emphasis is the teacher modeling the kinemes and motor memory formation (Reutzel, 2017).

The baseline data collected during the first six weeks of the academic year could include the encoding of ten CVC words being taught during the NRA protocol. When participating in NRA lessons, after students identify a word, the next prompt from the teacher will be to write the word. Due to the volume of work requested within the baseline, the alphabetic sample of upper and lower case letters may not be completed in one day, but rather over the course of a week by the research team. Progress monitoring samples may be collected in the last week of the quarter for teacher evaluation of data.

Anticipated Classroom Results

McArthy et al. (2016) states that participation in writing allows humans to gain their voice and develop their identity within a variety of settings. The anticipated results of this teaching strategy are just that; to build the foundational encoding skills of students who are communicating non-verbally, and begin the development of written voice and novel message creation. With repeated exposure to verbal pathways, opportunities to practice writing using known words practiced in the NRA, it is anticipated that participants in the study will be able to legibly encode the words that they are successfully decoding. Elbow (2012) describes the process of learning to write as a necessity in order for writers to develop a sense of social presence, power, and developing an understanding of self.

Kathryn et al., (2002), Coleman-Martin et al. (2005), and Swinehart-Jones et al. (2009) studies show success in decoding for students using the NRA. The method of utilizing explicit instruction to model the decoding of words allowed students who are communicating

non-verbally to internalize letter sounds, and then decode words independently. If this method of modeling and internalization is beneficial for encoding, and it is known that bidirectionality in the learning process of reading and writing, as outlined by Diamond et al. (2008) is beneficial for student literacy development, then a logical conclusion remains that encoding and subsequent written communication is possible without the reliance of picture based communication or SGD. Starting with encoding the words being learned through the NRA will allow teachers to focus on the implementation and teaching skills of letter formation.

Limitations

Educator attitude impacts the outcome. Working with a population that communicates non-verbally and possibly has difficulty with fine motor skills when grasping a writing tool, there may be educator hesitation around the practice of handwriting. Picture based communication and SGD help students communicate needs fluently and efficiently. Taking the time to develop fine motor skills, letter formation, and creation of CVC words during the NRA protocol may cause a shift in the classroom schedule as the element of encoding can be time consuming. However, written language is the last literacy system to be acquired (Johnson, 1986) and although encoding may take time, all humans deserve the ability to communicate.

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