

Traditional Phonemic Awareness Instruction: A Case Study with Four Preschool Students
in a Special Education Classroom

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Abstract

The focus of this case study is on four preschool students at Stratton Elementary School in Colorado Springs, Colorado. The classroom is considered to be a special education classroom because a number of the students have articulation deficiencies and learning and developmental disabilities. They are too young to have undergone testing for individualized education programs, or IEPs, but many of them will be tested next year. The majority of the students in the classroom come from low socioeconomic families as well. These factors make it imperative that each student is getting taught proper pre-literacy skills so that they can all succeed alongside their classmates in later grades when learning to read. The research question driving this study is: Does the traditional auditory and visual approach to teaching first sound fluency, a skill taught within phonemic awareness instruction, prove to be effective in teaching students from a variety of backgrounds? The 4-year-old students were chosen for the study because of their closeness in age, all born within one month of each other. One student has a significant speech impediment, one student has a severe hearing loss, one student does not have diagnosed disabilities but has behavior problems, and one student has no diagnosed disabilities and comes from a middle-class family (he was placed in the classroom because his parents work for the district). The method used for data collection was qualitative observations through one-on-one intervention using a basic, picture set with the students three times a week for ten minutes at a time, over the course of three and a half weeks. An informal interview was also conducted with the teacher in order to collect demographic data about the students. The findings reveal that the traditional intervention approach proved effective for the two students without disabilities, somewhat helpful for

the student with a speech impediment, and not at all effective on the hard of hearing student. A multisensory approach to teaching first sound fluency, on top of the traditional auditory method, should be used in order to encourage the growth in phonemic awareness skills of all students, regardless of their learning profiles.

Keywords: phonemic awareness instruction, first sound fluency, hard of hearing, speech impediment, traditional method, multisensory approach

Traditional Phonemic Awareness Instruction: A Case Study with Four Preschool Students in a Special Education Classroom

Yopp and Yopp (2000) state that phonemic awareness skills are widely known as one of several major predictors of later reading comprehension. That is why it is extremely important that all preschoolers be effectively taught these skills before beginning kindergarten. Phoneme isolation, specifically first sound fluency, is a subset skill within this educational topic that is an effective way of gaging preschool students' levels of phonemic awareness. The traditional way in which first sound fluency is taught does not address every learning style but only uses auditory and visual cues. This does not engage every type of learner, specifically those with articulation and auditory deficits. The question thus becomes whether the traditional approach can be used effectively with all students, or whether an alternative approach must be taken, and what that approach might look like for educators.

Fielding-Barnsley (1997) supports the notion that the traditional auditory and visual approach to teaching phoneme isolation is appropriate for students who have high levels of phonemic awareness. Preschoolers who demonstrate knowledge in this subject prior to beginning phoneme isolation instruction do not necessarily need any

supplemental instruction regarding this topic. Cummings, Kaminski, Good, and O'Neil (2011) work with a similar population of students on phoneme isolation and document the students' ability to retain the information in their later early literacy skills in kindergarten. The First Sound Fluency skills of these kindergarteners specifically correlated with higher results on DIBELS (Cummings et al., 2011). This shows that the traditional approach to teaching first sound fluency skills can be both absorbed and retained by preschoolers as they approach reading instruction.

There is much less research regarding if traditional first sound fluency instruction is effective for populations of preschool students who have different educational profiles. Koutsoftas, Harmon, and Gray (2009) emphasize how important it is to ensure that students who are at-risk for reading failure and who are also from low-income families receive Tier 2 intervention, or intensive small-group instruction with an educator multiple times a week, when being taught phonemic awareness skills. Results showed that high-quality, intensive instruction in small groups is the best way to teach this population of students (Koutsoftas et al., 2009). Students who have learning disabilities, such as articulation deficiencies, must also receive high quality instruction that is adapted to their individual needs. Pieretti, Kaul, Zarchy, and O'Hanlon (2015) adopted a curriculum originally created for students who are d/Deaf and hard of hearing and used it with two students who have speech impediments in order to effectively teach phoneme isolation to these students. The study, while only including two participants, is legitimate in showing that a multimodal approach to teaching first sound fluency can be effective, specifically for students who are considered at-risk for reading failure.

Even less research exists regarding teaching phonemic awareness skills to d/Deaf and hard of hearing preschool students. The traditional approach could prove to be ineffective because of this population's auditory deficits. Wang (2008) is one of the only researchers who has addressed this topic and her findings emphasize the importance of using supplemental materials, on top of traditional auditory and visual instruction, when teaching first sound fluency to d/Deaf and hard of hearing students. Wang, Spsychala, Harris, and Oetting (2013) use Visual Phonics ©, a manual coding system, in order to successfully teach first sound fluency skills to this population of students. Gardner, Cihon, Morrison, and Paul (2013) also use this instructional tool with hearing kindergartners who are considered at-risk for reading failure to show that the supplemental method can be beneficial for students from a variety of backgrounds. The multisensory instructional tool, which addresses every learning style, can be thus be successfully implemented in all classrooms.

The objective of this case study is to examine whether the traditional approach to teaching first sound fluency can be effectively taught to students both with and without speech and auditory disabilities. Research shows that multimodal approaches should be taken advantage of when teaching specific populations of students, like those with articulation deficiencies or hearing loss. How will students, specifically with the prior disabilities mentioned, respond to traditional first sound fluency instruction? If the traditional approach does not work, what is the best way in which to teach first sound fluency to all preschool students? This case study, because of time limitations and lack of certification that is necessary in order to teach Visual Phonics © (a multisensory

approach to teaching phonemic awareness), only uses traditional instructional methods. Recommendations are given for further research based on the results of this study.

Literature Review

Phonemic awareness is a subset of phonological awareness in which listeners are able to hear, identify, and manipulate phonemes, the smallest unit of sound that can differentiate meaning within a word. It is widely known and accepted that phonemic awareness improves children's word reading and reading comprehension, as well as helping them to learn how to spell and providing a basis for learning phonics. Phonemic awareness builds a foundation for students to understand the rules of the English language and it in turn allows for each student to apply these skills and increase his or her oral reading fluency and understanding of text. Within phonemic awareness, there are different skills practiced: phoneme isolation, phoneme identity, phoneme substitution, oral segmenting, oral blending, sound deletion, and onset-rime manipulation. Phoneme isolation requires recognizing the individual sounds in words, such as the first sound, /k/, in the word "cat." This is also an example of first sound fluency, which is a brief but efficient measure of phoneme isolation. First sound fluency is a foundational aspect of phoneme isolation and should be practiced regularly with preschool age students over the course of an entire school year (Cummings et al., 2011). While there is a fair amount of research regarding teaching first sound fluency to preschoolers, there is much less written about if and how this skill is developed among the d/Deaf and hard of hearing population at this age. Statistics report that the majority of d/Deaf and hard of hearing adults read at only a 4th grade level (Wang et al., 2008). In the limited published research on the topic of phonemic awareness with d/Deaf and hard of hearing preschoolers, it is evident that

the traditional auditory approach is not effective. A more inclusive approach, using visual, tactile, and kinesthetic cues will be helpful to this population of students, who are not auditory learners. The use of a multisensory program like Visual Phonics © can benefit students who are hearing and students who are not because of its inclusive nature and thorough approach to addressing multiple learning styles. Traditional phonemic awareness instruction as well as alternative, multimodal approaches to teaching these skills to preschoolers, including those from low socioeconomic backgrounds, those with articulation deficiencies like speech impediments, and those that are d/Deaf and hard of hearing, can be synthesized in order to come to a conclusion about how first sound fluency can be most successfully taught to all students.

Traditional Phonemic Awareness Instruction Studies

Phonemic awareness development in preschool classrooms is widely acknowledged as an important step towards learning how to read, but there is still considerable confusion as to exactly what it is, the role it plays in reading development, and how it should be taught in classrooms. Yopp and Yopp (2000) discuss phonemic awareness is different than auditory discrimination, phonetics, and phonics. Phonemic awareness is the awareness that the speech stream consists of a sequence of sounds—specifically phonemes, the smallest unit of sound within a word. Simple activities, such as songs, rhymes, and word-sound games can be used in order to encourage phonemic awareness with preschoolers. Children generally are better able to capture and gain control over larger units of sound before smaller units of sound; so many preschool teachers tend to focus on rhyme and then syllables, before addressing individual phonemes in words (Yopp & Yopp, 2000). Yopp and Yopp (2000) provide a general

overview of how to introduce students to the topic of phonemic awareness, and suggest the use of simple, auditory activities (2000). Fielding-Barnsley (1997) expands on how to teach these phonemic awareness skills, specifically on the topic phoneme isolation. She uses a kit from “Sound Foundations” that concentrates on seven consonants and two vowels at a time. The kit consists of large color posters depicting scenes with many objects beginning with the same phoneme (sun, sand, seal, surfboard, etc.). The auditory and visual way in which the kit approaches teaching this skill is successful for her population sample and the students show later success in reading and writing as well as a result (Fielding-Barnsley, 1997). The population sample that she uses begins the study with a high level of phonemic awareness, and she follows a very traditional approach with this receptive group of preschoolers.

As stated by Yopp and Yopp (2000) in their introduction, phonemic awareness and phonics are two different concepts. Phonics is a method of teaching people to read by correlating sounds with letters in an alphabetic writing system, while phonemic awareness does not address letters or the alphabetic writing system directly. When working with preschoolers, it can become difficult to differentiate the two concepts and teach them independently from one another. Phonemic awareness and phonics are known to predict success in reading acquisition, but there is question as to whether the two should be taught in isolation from one another. For example, it might be more important that a four-year-old is able to recognize the first sound, or phoneme, in a picture of “sand,” than it is important for him or her to identify the letter-sound connection of “s” in the alphabetic writing system. Castles, Wilson, and Coltheart (2009) answer this question in their research regarding what helps children learn letter-sound correspondences. Their

data suggests that there is little value in training preschoolers in either letter forms or sounds in isolation in advance to providing instruction on the links between the two. Castles et al. (2009) use the traditional auditory and visual approach to teaching first sound fluency through a type of dominoes game in which the research subjects connect pictures that begin with the same initial sound. The traditional approach is successful for this population of students, and can be taught in tandem with phonics without negative effects.

Phonemic Awareness Instruction and Socioeconomic Status of Students

Phonemic Awareness instruction in preschool classrooms is important, regardless of the external factors that influence students and teachers alike. That being said, it is important to acknowledge and take into consideration factors such as access to resources for teachers and the socioeconomic status of students within the school. Students who attend schools in low-income areas can be more likely to be at-risk for reading failure because of these external factors. For this reason, it is even more important that phonemic awareness skills are properly and effectively taught to this population of preschoolers. McGee and Dail (2012), address the importance of developing benchmarks for preschool students in areas of alphabet recognition, concepts about print, phonemic awareness, and alphabetic principle in order to identify students who are not making satisfactory progress throughout the year. McGee and Dail (2012) use traditional tests of phoneme isolation with pictures prompting the subjects to pronounce the initial sounds in words in order to assess their phonemic awareness skills. They were fairly successful in using this traditional, auditory and visual, approach to teaching phoneme isolation, with only 24% of participants not being able to segment beginning phonemes at expected levels (McGee

& Rochelle, 2012). They took extra steps in creating benchmarks throughout the year to encourage the success of all of the participants.

The environment in which phonemic awareness skills are taught to preschool age students, specifically for those that are at-risk for reading failure who might need a higher level of individualized attention than a student who is on track for reading success, is important. Koutsoftas et al. (2009) discussed the benefits of using Tier 2 intervention in order to increase the phonemic awareness skills of low-income preschoolers. Tier 2 intervention consists of high-quality, short-term explicit instruction that is carried out in small groups by teachers, reading specialists, speech-language pathologists, or other educators. Koutsoftas et al. (2009) found that the intervention they implement is successful for 71% of children in narrowing the gap in first sound fluency that had begun to emerge before the treatment. The majority of the students who qualified as either receiving special education or as those learning English as second language also demonstrated a positive response to the intervention as well (Koutsoftas et al., 2009). The experiment uses the traditional, auditory and visual, approach to teaching first sound fluency but is done so with a very purposeful instructional method. Koutsoftas et al. (2009) support the statement that low-income, preschool age students can be taught first sound fluency successfully when they receive high-quality, intensive intervention.

Multimodal Approaches to Teaching Phonemic Awareness with Students with Disabilities

A traditional, auditory and visual approach to teaching phonemic awareness skills can be effective for preschool age students, including those from low-income areas if done so in an efficient, high-quality manner. That being said, there are researchers who

are in support of a more well-rounded, multimodal approach in order to most effectively teach phonemic awareness skills to this age group. This type of approach expands on the traditional visual and auditory cues and uses kinesthetic and tactile modalities as well in order to more thoroughly teach the topic of phonemic awareness to a wider audience of students. Researchers use control groups in order to prove its effectiveness over the traditional teaching approach.

In a study addressing articulation, phonemic awareness, and literacy in young children, Pieretti et al. (2015) compared the effectiveness of a traditional articulation therapy approach to that of a multimodal approach for each of two 4-year-old children. The participants demonstrated severe articulation deficiencies in two very different profiles. Pieretti et al. (2015) found that the multimodal approach not only directly improved both participants' articulation abilities, but also enhanced their development of phonemic awareness and literacy skills. Their approach emphasizes using symbols because it promotes both phonemic awareness and sound-symbol correspondence. Pieretti et al. (2015) discuss the disconnect that a student might face between his or her learning style and the traditional approach to teaching phonemic awareness. They adopt the FONEMZ © curriculum in their own research in order to address this issue. The program was designed to support learners who may have weak auditory skills, including auditory discrimination and processing skills and was initially used with d/Deaf and hard of hearing populations. The kit includes symbols with distinct colors and shapes for each of the 40 main phonemes. Some of the symbols partially resemble their corresponding letter, some resemble the shape of the mouth during the production of the sound, and some resemble the International Phonetic Alphabet symbol for the sound. The auditory,

tactile, kinesthetic, and visual modalities are used simultaneously in an interpersonal and interactive approach (Pieretti et al., 2015). The control group in this experiment that was treated with a traditional approach to teaching phonemic awareness did not produce as significant improvements. This data supports the notion that a multimodal method to teaching phonemic awareness is successful because the participants, through exposure to this alternative approach, began to integrate sound-symbol association and articulation to acquire the phonemic awareness and self-awareness skills necessary to identify individual phonemes and change their productions (Pieretti et al., 2015). Further research with larger sample populations should be conducted in order to further legitimize these results.

In a comparable case study with a small group of children who had differing developmental delays, Isakson, Marchand-Martella, and Martella (2011) used the *McGraw Hill Phonemic Awareness* © curriculum in order to prove that a multimodal approach to teaching first sound fluency and phoneme segmentation fluency can benefit students. The study lacks a control group in order to compare their results to, but the data is still significant. The results showed an average increase of 16.6 first sounds per minute and 27 phonemes per minute. These results are impressive and the five month length of the study emphasizes its significance. The curriculum uses white boards, trays, and small manipulatives on top of the traditional picture-sound cards (2011). The case study supports the hypothesis that a multimodal approach to teaching first sound fluency will not hurt students and can only benefit their learning.

The success of both studies that use alternative, multimodal curriculums (FONEMZ © and *McGraw* ©) for teaching phonemic awareness to students with diagnosed disabilities supports the statement that this approach to teaching phoneme

isolation, specifically first sound fluency, can benefit preschool students with learning disabilities. The traditional approach, while providing a bare minimum for teaching these skills, does not address every type of learning style and can be expanded upon in order to engage all students from a variety of backgrounds.

Phonemic Awareness Instruction with the d/Deaf and Hard of Hearing Population

Phonemic awareness addresses important skills that preschoolers are able to develop, despite their young age. Students, especially those from low-income areas or those with disabilities, can benefit from high-quality, small group instruction using a multimodal approach to teaching this topic. While a traditional auditory and visual approach to teaching phonemic awareness might be enough for some students, it is not enough for every preschooler. Students who are d/Deaf or hard of hearing might struggle with this standard approach because of their auditory deficits. This is why it becomes even more important that research on multimodal approaches be expanded upon so every student, specifically one who is d/Deaf or hard of hearing, is given an equal opportunity to his or her classmates to learn phonemic awareness skills. Research regarding teaching phonemic awareness skills to d/Deaf and hard of hearing students is still in its infancy, but what exists emphasizes the importance of using supplemental curriculums and programs, like Visual Phonics ©, on top of the traditional auditory and visual approach to teaching first sound fluency.

There is continuous debate about whether or not reading is different for d/Deaf and hard of hearing individuals than it is for the hearing population. As long as there is no concrete answer to this question, there is also no definite answer as to how d/Deaf and hard of hearing preschoolers should be taught phonemic awareness skills. Wang, Trezek,

Luckner, and Paul (2008) acknowledge both sides of the argument regarding this topic. On one side of the argument, researchers assert that reading is different for those who are d/Deaf and hard of hearing, stating that these students are visual learners and phonemic awareness practices founded on research with hearing children is inappropriate. Deaf students think differently and use non-phonological means, such as signs and fingerspelling, in order to comprehend printed text. They bypass phonological coding by using orthography or go straight from print to meaning when reading (Wang et al., 2008). Allen, Clark, Giudice, Koo, Lieberman, Mayberry, and Miller (2009) support this idea that reading is different for d/Deaf and hard of hearing students and find Wang's research and recommendations to be problematic as a result. They believe that there are weak correlations between phonemic awareness and reading comprehension, and stronger correlations between other variables such as overall language skill and early exposure to a visual language (Allen et al., 2009). These are minority opinions and are not widely agreed upon by researchers of phonemic awareness both within and outside of the d/Deaf and hard of hearing community.

On the other, more widely accepted side of the argument, researchers believe that reading is the same for all individuals and there are certain fundamentals that apply to all children when learning phonemic awareness. The way in which these fundamentals are delivered should vary based on the individual differences in children. Children who are d/Deaf or hard of hearing who have little or no usable residual hearing typically do not benefit from traditional phonemic awareness instruction. Recent investigations have indicated that these students demonstrate the most progress when phonemic awareness instruction is supplemented with alternative, multimodal methods such as Visual Phonics

© (Wang et al., 2008). In a case study later performed by Wang et al. (2013) found that over the course of a 40-week intervention with three d/Deaf and hard of hearing preschoolers, they all successfully demonstrated the use of phonemic awareness skills when they were explicitly trained with an instruction kit that was also supplemented with Visual Phonics ©. This supports the argument that d/Deaf and hard of hearing students read using the same fundamental phonemic awareness skills as any other student, but the way in which they develop these skills must include more multimodal teaching approaches, like the use of Visual Phonics ©, on top of the traditional phonemic awareness curriculum. Success in an experiment conducted by Narr (2008) with ten d/Deaf and hard of hearing kindergarteners provides further evidence of that Visual Phonics © is a helpful, multimodal tool that can be successful through multiple grade levels. Taking the extra step and using supplemental materials like the Visual Phonics © curriculum when teaching students who are d/Deaf and hard of hearing will ensure that they are given an opportunity to succeed alongside their classmates.

Visual Phonics © is a manual coding system and an alternative means of acquiring phonologically related skills that can be used with students who are d/Deaf and hard of hearing (Wang et al., 2008). The curriculum is a multisensory system of hand cues and corresponding written symbols that represent aspects of the phonemes of a language. When using Visual Phonics, the speaker holds the hand near the mouth, speaking or providing mouth movements while simultaneously producing a hand cue. The hand cues mirror the articulatory features of the sound, and the written symbols reflect the gestures used in the cues. The system incorporates speechreading (visual), articulatory feedback (tactile), and hand motions (kinesthetic) in order to be multimodal,

or multisensory. As a student gains information about phonemes, the hand cues become less necessary (Wang et al., 2008). Visual Phonics is not a communication system but an instructional tool and because of this it can be used as such with all students. Gardner et al., (2013) take advantage of this multimodal method of teaching phonemes to hearing kindergarteners that are at-risk for reading failure. Their results indicate that Visual Phonics can be used to effectively teach this population of students in letter-sound relations and that these skills can be maintained over time once instructed. The use of a program like Visual Phonics engages students through every sensory system, and requires that students retain this information as well in order to apply it when learning phoneme isolation. Visual Phonics can thus benefit every student, not just those that are d/Deaf and hard of hearing.

Summary

Phonemic awareness can predict later reading success, as cited by all of the above studies. Within phonemic awareness, there are many smaller skills that a student must master in order to have a full grasp of the educational topic. One of these subset skills is called phoneme isolation, and that can be broken a part even further when looking at the separate phonemes, or smallest units of sound within the word. First sound fluency addresses the initial sound in a word, and is a skill that should be mastered by all preschoolers. There is a significant amount of research that supports a basic, auditory and visual approach to teaching first sound fluency. In this approach, students simply look at pictures of objects and attempt to differentiate the first phoneme from the rest of them by sounding out the word. Research has proven that this can be an efficient way of teaching this topic to certain populations of students.

This traditional approach to teaching first sound fluency, while at times effective, is neither engaging nor inclusive of all students, like those who are d/Deaf or hard of hearing, or those who have learning disabilities such as an articulation deficiency. A limited number of researchers have attempted and succeeded in implementing alternative multimodal, multisensory approaches to these populations of students, as well as those without disabilities at all. Pieretti et al. (2015) and Gardner et al. (2013) used separate multisensory curriculums, FONEMZ © and Visual Phonics ©, that were created specifically for d/Deaf and hard of hearing students with hearing sample populations and had notable success. The implication of both of these research reports encourage that a multimodal approach should be used in all classrooms, specifically those that have students who may benefit more from a thorough, inclusive instructional method than the traditional one. Beyond this, the multimodal approaches to teaching first sound fluency are much more engaging because of the multiple learning styles they address, and for this reason every student can benefit and enjoy engaging with them.

While there is a limited amount of case studies that address the success of using Visual Phonics © to teach phonemic awareness skills to d/Deaf and hard of hearing populations, there is a significant gap in research regarding the long-term effects of how this teaching method might affect later reading comprehension. The statistic that states that the majority of d/Deaf and hard of hearing adults read at a 4th grade age level suggests that this gap in research should be filled as soon as possible. If Visual Phonics © is a skill that students are able to retain over time and use when they begin reading instruction, it should be mandatory that teachers of this population be certified in teaching this sign system. This will allow preschool educators to implement it into their own

classrooms in order to encourage later reading success. Messier and Jackson (2014) recently addressed the need for improvement in phonological awareness preparation programs for educators who are working with children who are d/Deaf and hard of hearing. In their study, both teachers of the deaf and speech-language pathologists demonstrated significant gaps in phonological awareness knowledge even though they all reported high levels of self-confidence in the topic. So while it is encouraged that all classrooms adopt a multisensory approach to teaching phonemic awareness, specifically first sound fluency, it is done so tentatively and with the assumption that educators themselves know exactly what they are teaching to their students.

Preschool educators, regardless of the diversity of their classroom, should be encouraged to use a multimodal approach to teaching first sound fluency to their students. Using a supplemental instructional method like Visual Phonics © will engage students visually, auditorially, kinesthetically, and tactilely. This ensures that every learning style is addressed when teaching one specific topic. Any teacher should take advantage of this rare teaching opportunity that can cater to all of his or her students' learning styles. Studies show that both d/Deaf and hard of hearing students, as well as hearing populations, can benefit from educators incorporating this type of instruction into their classroom. Beyond this, it is very important to recognize that if a d/Deaf or hard of hearing student is in a classroom with hearing peers, his or her teacher must be equipped with the right tools to properly and effectively teach him or her phonemic awareness topics such as first sound fluency. The traditional, auditory approach to teaching this topic will very simply not work as well for a student with auditory deficits. A teacher with a firm understanding of the multimodal approach to teaching first sound fluency,

using a supplemental curriculum like Visual Phonics, can cater to every one of his or her students learning styles and best set them up for later reading success. A multisensory approach to teaching first sound fluency to preschoolers will benefit both teachers and students alike.

Methods

The research design was a case study with four pre-school aged students and one teacher as participants. Qualitative data was collected through written observations over the course of the three and a half week study.

Participants

The participants in this case study were four preschool students and one teacher in a special education classroom at Stratton Elementary School in Colorado Springs, Colorado. Stratton Elementary School is 44% free and reduced lunch and the minority population at the school is at 29%, the majority of that minority being Hispanic (Public School Review, 2017). The student participants, three males and one female, were intentionally selected because of their closeness in age. All the students were four years old and born within one month of each other.

Weston is a four year old, Caucasian male who lives in a two-parent household whose parents work full-time and make a combined yearly income of under \$49,000. One of his parents holds a Bachelor's degree while the other is a high school graduate. He has two siblings. He has an articulation deficiency and his parents regularly read to him.

Liam is a four year old, Hispanic male and an only child who lives in a one-parent household. His parents' highest educational levels are both high school graduates and

they both work full-time. The total household income is under \$49,000. His parents read to him less than once a day.

Isaac is a four year old, Caucasian male who lives in a two-parent household whose parents work full-time and make a combined yearly income of between \$100,000-\$149,0000. Both of his parents hold Master's degrees. He has two siblings and his parents read to him multiple times a day. He is in the classroom because both of his parents work for the district.

Annie is a four year old, Caucasian female who lives with her grandfather. Her parents only just entered her life. She is hard of hearing but is oral and uses sign language. Both of her parents are fully deaf and speak sign language. Her grandfather is hearing and speaks sign language. Her grandfather is divorced and takes care of both Annie and her older brother. He is a high school graduate and works full time and has a total household income of between \$50,000-\$74,999. He reads to Annie multiple times a day in sign language paired with voice.

The teacher participant, Mrs. Julia, has been working in Colorado Springs public schools for over 15 years. She received her Master's in d/Deaf Education and is a certified Early Childhood Educator. She provided the above demographic information about the case study students in an informal interview.

Materials

In this study, a simple auditory and visual approach to teaching first sound fluency was used with the students through 14 pictures of different objects that all started with different initial sounds (letters) deemed identifiable to this age group that were printed in color on normal paper (Appendix A). Because of the age of participants and

Colorado Public School state requirements, no handouts or worksheets can be given to students. This implies that all the results were recorded through qualitative observation.

A written prompt with list of census questions and other general questions (Appendix B) was used in an informal interview with the teacher in order to gather more information about each of the participants. When working with Annie, the participant that is hard of hearing, a speech screen was used on several occasions in order to compare the difference in response to treatment. The speech screen was a circular disk covered in a thin, black cloth material that allowed for sound to come through it easily, but hid the researcher's mouth so she could not read lips.

Procedure

Over the course of three and a half weeks, the four student participants were pulled out individually during their play period in order to work on first sound fluency skills for approximately 10 minutes a session three times a week. The same set of 14 pictures was used with the students each time. Depending on the response and improvement of the participants, questions prompting the students to expand on their knowledge of first sound fluency, as well as their knowledge on phonics, were asked.

Prompting Questions:

1. "Can you think of another word that starts with the same sound?" (Elaboration on first sound fluency)
2. "Do you know what letter makes that sound?" (Connection to phonics)

The responses of students to these questions were recorded. When appropriate, these questions were also asked to the participants who were not showing as much

progress in order to ensure the equal treatment of each of them in the study. In order to reduce the potential for student harm, all written data was observational.

Results and Discussion

Case 1: Weston

Weston struggled with the traditional approach to teaching first sound fluency, but showed some growth and improvement over time. At times, his speech impediment made it difficult to differentiate when he did not know the first sound in a word from when he just could not articulate the sound correctly. Weston receives intervention daily because of his speech impediment, so he was aware of when he was going to have trouble pronouncing the first sound in a word, and the hesitation he gave made differentiating where the issue lay slightly less difficult. When he first started the first sound fluency intervention, he was only able to identify the first sounds in two pictures representing the words “bird” and “fish.” As he became more comfortable working on this skill, he moved slower and focused more in each session. He was able to identify several more first sounds in pictures, but never any more than half of the 14 in the set. Over time, he was more willing to attempt to pronounce the first sound, whether or not he was correct, instead of just responding with “I don’t know.” He never correctly answered the prompting questions. A major limitation in this intervention was the lack of knowledge in what specific words Weston struggled to pronounce with his articulation deficiency. Having this information would better explain his struggle with first sound fluency. Because of his speech impediment and the lower socioeconomic status of his family, it is recommended that Wyatt receive an alternative approach to teaching first sound fluency. He was not entirely receptive to the traditional treatment and therefore further steps must

be taken in order to ensure he understands the concept alongside his classmates. As Pieretti et al., (2015) conclude with their participants with articulation deficiencies, an alternative approach to teaching first found fluency will produce better results with students who have articulation deficiencies than the traditional teaching method. A curriculum that uses multiple modalities will give Weston a more thorough understanding of the concept, and allow him to engage in ways other than just auditory response, which is what he struggles with most with his speech impediment. Using other modalities, like tactile and kinesthetic cues and responses, will allow for Weston to demonstrate his understanding without having his speech impediment interfere with his progress in first sound fluency skills.

Case 2: Liam

Liam began the three and a half week intervention with a high level of phonemic awareness. In the first session, he was able to identify all the of the first sounds in the 14 pictures, except for “ladder.” He was much more difficult to work with than the other students in the case study because of major behavioral issues. He was unwilling to engage in the activity on several occasions and refused, even when the teacher intervened. When he was willing to engage in the intervention, he easily veered off-task and needed constant redirection. With this said, the traditional approach to teaching first sound fluency was effective for him. The limitation with this student was his high level of phoneme isolation awareness before even beginning the study. There was not a significant amount of data to record because he knew his first sounds very well from the very first day of intervention. Similar to that of the participants that Fielding-Barnsley (1997) and Cummings et al. (2011) engage with, Liam has a high level of phonemic awareness ability before the study began and therefore could produce the correct answers.

He was able to answer the prompting question regarding applying his first sound fluency knowledge to different words, but was not as capable of connecting phonemic awareness to phonics. While worth noting, the fact that Liam was less capable of this skill is not worrisome because it is a more complex skill for students at his age. While the traditional method worked well enough, engaging Liam with a multisensory approach that is more hands-on might be beneficial in keeping him more on-task and interested in the activity. An alternative approach to teaching phoneme isolation could be recommended to Liam in order to see if it affects his behavior, but it is not necessary for academic purposes.

Case 3: Isaac

Isaac proved to be the most knowledgeable in first sound fluency in comparison to his fellow participants. In his first intervention session, he identified all 14 first sounds correctly, and was able to identify many of the letter-sound connections of the pictures. In this first session, he could identify the letter-sound connection when working with pictures that represented words that started with the letters “v,” “f,” “p,” “j,” “k,” and “z.” He was also able to give multiple examples of words that started with the same sounds as the ones in the 14-picture set that was used. He was cooperative and receptive over the course of the three and a half weeks, even though he began with such a high level of first sound fluency. The major limitation with this student is that he does not qualify to be in the special education classroom, and it is of question as to why he is in it. He is not from a low-income home and he does not have any diagnosed disabilities. His parents read to him multiple times a day and it can be assumed that they have positively influenced his capabilities in this study. Because of his high level of skill with first sound fluency and his cooperation in the intervention, as with the participants that Fielding-Barnsley (1997) and Cummings et al. (2011) worked with, it is not recommended that anything more than

the traditional approach be used with Isaac. If the whole class is learning through an alternative approach, it is okay that Isaac be taught in this way as well, but it is not necessary.

Case 4: Annie

Annie did not respond well to the traditional approach to teaching first sound fluency. A microphone is always used when working with Annie, and it connects directly with her hearing aide. In the first intervention session, she could only correctly identify the first sound in the picture of the word “ladder.” In the following sessions, she improved slightly but could never correctly identify more than five sounds in the 14-picture set and in the last session she only identified one sound correctly (/f/ in “fish”). Every time a speech screen was used, Annie was unable to identify all of the first sounds in the pictures. This made it clear that she relies heavily on lip-reading, which implies that she might have little to no phonemic awareness skills at this time. She was very aware of her reliance on lip reading, and got frustrated whenever a speech screen was used. Over the course of the three and half weeks, she became less and less enthusiastic and willing to work individually on first sound fluency during interventions. She started saying “I don’t know,” in response to every picture, instead of attempting to sound out the first sound in the word. Interestingly, her phonics skills were very high when separated from the picture set. Castles et al. (2009) support this in stating that phonics and phonemic awareness are separate skills. She could not answer the prompting questions regarding what letter the picture started with, but she could answer the question when it was phrased as “What sound does the letter ‘s’ start with?” It is worth noting that she was had high phonics skills from the start of the intervention, but almost no first

sound fluency skills and none that developed over the course of the three and a half week study. It is recommended that an alternative approach be used to teaching Annie first sound fluency. Because of her reliance on lip-reading, she confused all sounds that used the same parts of the mouth and throat, called speech pairs, like the sounds /p/ and /b/. Both look exactly the same when watching the mouth but not actually hearing the sounds. Annie is a very capable preschooler, as shown in her use lip-reading, oral language, and sign language. She is an impressive student, and given the right tools, her first sound fluency skills could improve drastically. Using a multisensory tool kit, like Visual Phonics ©, on top of the traditional approach used in this intervention, is recommended for Annie. This will allow for her to see the sounds more clearly and interpret what first sound fluency actually means. As supported by Wang et al. (2011), this approach to teaching first sound fluency produces the best results for students who are d/Deaf or hard of hearing. It engages the learner wholesomely and Annie is entirely capable of learning a supplemental material that will help her succeed.

Conclusion

Each of the students in the case study had a very different profile and therefore responded differently to the intervention approach to teaching first sound fluency. Two of the students began with high levels of phoneme isolation skills, while two were held back by disabilities. While their needs differed, none of the students would suffer from a more inclusive approach to teaching phonemic awareness. It can be recommended that when working in a special education classroom with students who are at-risk for reading failure, a multisensory method to teaching first sound fluency is the most effective way to reach the needs of every student.

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Appendix A

Picture set used during intervention

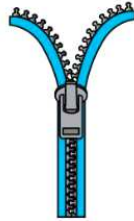
Sound Sorting



Sound Sorting



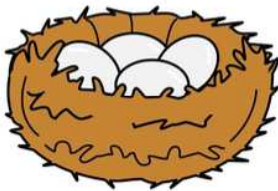
Sound Sorting



Sound Sorting



Sound Sorting



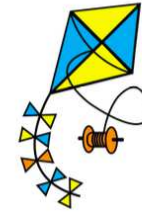
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Sound Sorting



Sound Sorting

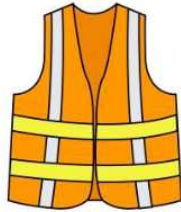


Sound Sorting



Sound Sorting

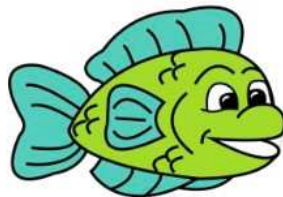
Sound Sorting



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Sound Sorting



Sound Sorting



Appendix B

Question prompt for informal interview with teacher

(Filled out for every student in case study)

- 1) What is the name of case study?

- 2) What is marital status of parents/guardians?
 - a. Now married
 - b. Widowed
 - c. Divorced
 - d. Separated
 - e. Never married (Skip question 3)
- 3) How many times have they been married?
 - a. Once
 - b. Two times
 - c. Three or more times
- 4) How many children do they have?

- 5) How many people live in their home?

- 6) What is guardian's educational level?
 - a. Completed some high school
 - b. High school graduate
 - c. Completed some college

- d. Associate degree
 - e. Bachelor's degree
 - f. Completed some postgraduate
 - g. Master's degree
 - h. Ph. D., law or medical degree
- 7) What is other guardian's educational level, if applicable?
- a. n/a
 - b. Completed some high school
 - c. High school graduate
 - d. Completed some college
 - e. Associate degree
 - f. Bachelor's degree
 - g. Completed some postgraduate
 - h. Master's degree
 - i. Ph. D., law or medical degree
- 8) How many hours per week does guardian work?
- a. 35 hours a week or more
 - b. Less than 35 hours a week
 - c. Not currently employed
- 9) How many hours per week does other guardian work, if applicable?
- a. n/a
 - b. 35 hours a week or more
 - c. Less than 35 hours a week

d. He or she is not currently employed

10) What was their total household income before taxes during the past 12 months?

- a. less than \$25,000
- b. \$25,000- 34,999
- c. \$35,000- 49,999
- d. \$50,000- 74,999
- e. \$75,000- 99,999
- f. \$100,000- 149,999
- g. 150,000 or more

11) To your knowledge, do guardians read to child?

Y N

12) If yes, how often?

- a. multiple times a day
- b. once a day
- c. less than once a day
- d. I don't know