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Shari Lehnhoff

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Phonemic Awareness Interventions and Their Effects on FAST Scores

Shari Lehnhoff

Northwestern College

July 2017

### Abstract

The purpose of this action research project was to determine if there is a correlation between the implementation of phonemic awareness interventions in the transitional kindergarten classroom and the results of the Early Literacy Implementation (FAST) scores. Technology-enriched phonemic awareness interventions were provided weekly over a period of two months. Data was collected through qualitative observations and quantitative FAST test scores. Analysis of the data collected suggests that the transitional kindergarten student's FAST scores increased as the phonemic awareness intervention is implemented in the classroom.

### Phonemic Awareness Interventions and Their Effects on FAST Scores

Phonemic awareness is the ability to reproduce and hear sounds in language. It involves knowing that words are composed of sound units; and that these sound units can be combined to form words. It is the ability to generate and identify rhyming words, to count syllables, to separate the beginning of a word from its ending, and to identify each of the phonemes in a word. Phonemic awareness is an integral part of early literacy and a method of ensuring that children have the necessary skills to be literate and develop the skills needed to read. It is an important component in a child's literacy development and should be a part of early literacy instruction. Strong phonemic awareness skills provide a concrete foundation for learning to read and this will influence student success in future years.

Further understanding of phonological terms is necessary for discussion regarding development of phonological awareness skills in early childhood education settings. The smallest unit of sounds is referred to as a phoneme. Children learn to use phonemes to speak. There are approximately 40 phonemes in the English language, though this number can fluctuate based on dialect and accent of language. A phoneme helps a child to determine the difference between log/ and dog and took/cook.

A grapheme is the minimal unit of a writing system or the letters and letter combinations that represent a phoneme. The English language has 26 graphemes, most commonly indicated by the American alphabet. Unlike phonemes, this number does not fluctuate based on dialect and language location. Grapheme knowledge is necessary for verbal explanation of phoneme representation. For example, we must understand the symbol "A" is called "a" before we can verbally discuss its presence in word format of a child's first name (e.g., "Your name is Abby. Abby starts with an" A.").

The relationship between phonemes and graphemes is known as sound-letter correspondence. It is the connection between the sounds in words and the letters that are used to represent those sounds. Children use the skill of grapheme-phoneme correspondence for phonetic reading skills. Children must understand the letters of the word “cow” are C-O- W. Contrarily, to read this word aloud and produce written representation of this word after receiving an auditory stimulus, a child must understand the sounds of this word in connection to the letters are /kauw/. This representation and understanding of sounds is known as phoneme segmentation. Word phoneme segmentation is the ability to break down words into individual sounds in order to form the word and its meaning.

MMCRU transitional kindergarten students are required to complete the FAST Early Literacy test three times per school year. This test is designed to measure a student’s ability to identify a variety of phonemic awareness skills. These skills include print concept, letter naming, letter sounds, non-sense words, and word segmentation.. When a student has a strong foundation of phonemic awareness skills there is a positive correlation between early literacy skills and the ability to read.

During FAST testing, the students were assessed on all of the categories of FAST, with an emphasis on word segmentation.. It was then determined that a weekly phonological awareness intervention of word segmentation would be necessary in the students’ progression. Using technology and Elkonin boxes, the students would work individually and in a whole group setting to segment specific words; breaking down individual sounds. Through this weekly intervention, the students’ FAST scores increased overall; showing word segmentation improvement.

### **Literature Review**

In the academic journal written by Paige C. Pullen and Laura M. Justice, titled “*Enhancing Phonological Awareness, Print Awareness, and Oral Language Skills in Preschool Children*”, Pullen and Justice focus on the awareness of phonological awareness in correlation to the development of literacy skills (Justice & Pullen, 2003). Pullen and Justice (2003) present the idea that there are three areas associated with ensuring a smooth transition for preschool aged children. The three areas of focus for Pullen and Justice (2003) are phonological awareness, print awareness, and oral language development. Specifically, it was found that the three focus areas presented by Pullen and Justice (2003) directly connect to the critical components of emergent literacy for preschool children.

Associate Professor in the Department of Elementary and Bilingual Education at California State University Hallie Kay Yopp (1992), author of “*Developing Phonemic Awareness in Young Children*”, says the aspect of language children are missing is phonemic awareness. Yopp (1992) focuses on the missing element of phonemic awareness surrounding young children. One major facet presented by Yopp (1992) explains the unawareness children have involving the makeup (sounds and phonemes) of words. Specifically, she uses the word cat as an example in proving the lack children have for the series of sounds or phonemes existing within words. Although Yopp (1992) proves her reiteration of the implementation of phonemic awareness, she says that the nature of phonemes is difficult for children to notice. Yopp (1992) concludes in saying phonemes and sounds are instrumental aspects to the improvement of oral language among children, however, phonemes are discrete abstract units of speech that can be difficult to understand.

According to the article written by Patricia A. McCarthy titled, “Using Sound boxes Systematically to Develop Phonemic Awareness”, there is a strong relationship between phonological processing of skills and the acquisition of reading and spelling alphabetic languages (McCarthy, 2008). McCarthy (2008) presents throughout her article one major element, which involves the increase of decoding language for children. She states it is important for children to have the ability to retrieve phonological information, but to also inhabit the ability to decode the information receives. McCarthy (2008) concludes that while phonological awareness increases, so does the decoding of the language for the children receive information.

Stuart S. Yeh and David B. Connell, conducted a research study surrounding the development of the sequence of phonemes within words. The article is titled “Effects of Rhyming, Vocabulary and Phonemic Awareness Instruction on Phoneme Awareness” and is measured by the research taken from 16 Head Start classrooms, involving 138 children who were randomly assigned to three different approaches (Connell & Yeh, 2008). The three different approaches surround the augmenting of early literacy instructions. Specifically, Yeh and Connell (2008) focused on the “(a) instruction in phoneme segmentation, blending, and letter-sound relationships, (b) rhyming instruction, (c) vocabulary instruction. Yeh and Connell (2008) found that the instruction enhancing of phoneme segmentation for students supports the phoneme segmentation skills and promotes future reading abilities surrounding rhyming and vocabulary” (p. 243). Results presented showed that enhancing phoneme segmentation could enhance phoneme skills for high disadvantaged student as young as four years old (Connell & Yeh, 2008).

According to the academic article titled “Phonological Awareness Interventions for Students At-Risk of Reading Failure” written by Jeanette M Chabot, reading is an important skill

in today's society (Chabot, 2010). The focus of this study was to determine if the implementation of phonological awareness within a first grade classroom improves reading abilities. The research was measured by letter sounds and phoneme segmentation fluency. Chabot (2010) conducted this study within her first grade classroom, as the reality of observation and examination was more prominent in an active classroom with current students. Results from the study showed the implementation of phonological awareness within a first grade classroom greatly improved reading abilities for most at risk students. However, the study did reflect improvements; it also determined the need for continuation of implementing phonemic awareness to continuously improve results for students post action research (Chabot, 2010).

### **Methods**

#### **Participants**

This action research project was conducted in a transitional kindergarten general education classroom. There are thirteen students, four females and nine males and their ages range from 5-6 years old. The student's demographics show a class that is predominately white and above free and reduced lunch socio-economics status. Of the thirteen students in the class, one receives special education and speech and language services. This student is on the spectrum and has a one-on-one paraeducator assigned to him full time.

#### **Data Collection**

The focus of the action research project was to determine if a weekly phonological awareness intervention improved the transitional kindergarten student's word segmentation scores on their FAST (Early Literacy Implementation) test. Both qualitative and quantitative data was integrated to determine if the phonological awareness intervention increased student FAST scores. The FAST tests that were administered to the transitional kindergarten students established quantitative data while observations and informal and formal questioning provided



qualitative data to the collection. The purpose for using both quantitative and qualitative data was to gather a more complete and better understanding of the research question. The mixed method approach was used to determine how a phonological awareness intervention affected the word segmenting scores of transitional kindergarten students. It provided more information from different vantage points using different methods and techniques and enriched the data.

The quantitative portion of the study was the FAST (Early Literacy Implementation) student assessment that was administered and documented three times throughout the school year to assess student growth and subsequently the effectiveness of the phonological awareness intervention. The FAST test is administered to students in Iowa in grades transitional kindergarten through third grade to ensure that they are proficient in reading by the end of third grade. These test support the literacy skills needed to be academically prepared for expectations in kindergarten: sound-letter correspondence, word-phoneme segmentation, and onset phonemes. (Mongahen et al., 2013). FAST is administered at the beginning of the school year and periodically throughout the year using a universal screening assessment. The fall universal screening for transitional kindergarten students consists of print concepts, letter naming, letter sounds, and onset sounds. The print concept test involves the students identifying a letter, word, shape, and a sentence. The letter naming and letter sound section of the test involves the students identifying as many uppercase and lowercase letters of the alphabet and naming as many letter sounds as possible in one minute. Students are shown a series of four pictures and are asked to name the picture that begins with a specific sound when completing the onset sounds section of the exam.

The winter universal screening consists of onset sounds, letter sounds, word segmentation, and nonsense words. The word-segmenting test is a verbal test in which the

students are given six words that consist of three phonemes and four words that include four phonemes. The researcher says a word and the students are scored on the number of phonemes that they correctly identify in the word. The nonsense words assessment is a one minute test in which the student score is based on how many individual sounds they verbally produce or the by the correct number of words they read.

The spring universal screening covers letter sounds, word segmentation, nonsense words, and sight words. The students are given one minute to read as many sight words as possible. The students are allowed to say individual phonemes in the word as long as they recite the whole word after identifying each of the phonemes.

After each assessment period, the researcher will access and print the Composite Score Report from the Iowa's Tier site provided by the Department of Education and analyze the assessment results. Students whose overall composite score was below the recommended benchmark score, were provided weekly progress monitoring tests in the universal screening literacy content area in which they were not proficient. The researcher administered these progress-monitoring tests. Upon completion of the fall screenings, five students required progress monitoring. Six students received progress monitoring after the winter universal screening and seven received progress monitoring after the spring universal screening assessment.

The qualitative portion of the study involved the researcher utilizing a checklist to record anecdotal data regarding student' behavior, motivation, ability, attendance, and mastery of skills during the phonemic awareness intervention period. This process began after the second FAST Universal Screening period (February 2017) and ended with the third FAST Universal Screening

period (May 2017). Throughout the reflection period, the researcher addressed and documented the following questions and concerns:

- What was the behavior of my students?
- Did they attend to the task?
- Were they in attendance?
- How well did they do with the interventions?

The entire data collection process took place over an eight-month span from October 2016 to May 2017. The first FAST Universal Screening test was administered in October 2016 and then again in January 2017. Following the January FAST Universal Screening test, a twenty-minute weekly phonological intervention was implemented during the months of March and April. Using a SMARTboard and Elkonin boxes, the students worked individually and in a whole group setting to segment specific words based on a given image. The students would interactively drag markers to the corresponding Elkonin boxes while verbalizing the individual sounds in the given image and word. After implementing this word segmenting intervention for eight weeks, the third and final FAST Universal Screening test was administered in May 2017 (see Appendix A).

## **Findings**

### **Data Analysis:**

A minimal amount of researcher bias was included during the data collection and intervention period of the research even though the researcher was the teacher of the students that received the intervention. The school district goals and the literacy goals of the elementary building support the belief that interventions can and do benefit and improve literacy skills and

FAST scores. The researchers strong interest in phonemic awareness, the support from the TLC literacy coach, and elementary building staff, and the hypothesis that phonemic awareness interventions does improve FAST scores played an important role in the activities that were planned during the intervention period.

Despite the minimal amount of researcher bias, specific measures were implemented to provide quantitative and qualitative unbiased data. Collecting both quantitative and qualitative data contributed to the understanding and awareness about the benefits that phonemic awareness interventions plays in increasing literacy skills and improving FAST scores.

**Quantitative data analysis.** The quantitative data collected through three different assessment periods provided scores for a variety of literacy skills. The quantitative data collected through the winter and spring assessment periods provided scores for word segmenting knowledge.

Table 1: Word Segmenting

Student	Winter	Spring	Point Gain	Increase From Winter to Spring
A-EB	28	34	6	21%
B-PB	31	34	3	10%
C-BH	16	30	14	88%
D-RD	28	32	4	14%
E-LC	27	32	5	19%
F-OJ	26	30	4	15%
G-JK	27	32	5	19%
H-LM	32	33	1	.031%
I-GM	9	9	0	0%
J-HO	31	34	3	.096%
K-BS	5	30	25	500%
L-IS	30	34	4	13%
M-KS	30	30	0	0%

The initial word segmentation scores from the winter universal screening period revealed that 77% of the students were at benchmark or above in word segmenting skills. This number indicates that word segmenting skills are above average.

The final word segmentation scores from the spring universal screening period revealed that 92% of the students were at benchmark or above in word segmenting for an increase of 15%. The data also shows that 30% of the students obtained the maximum score on the word segmentation universal screening exam.

The quantitative data also reveals that 85% of the students made growth in the amount of points gained from the winter to spring screening period.

Student I, who showed no growth in word segmenting is autistic and receives individual special education and speech and language instruction. His scheduled speech and language one-on-one time was during the phonological awareness intervention instructional time.

Student M maintained the same word segmentation score from the winter to the spring screening period. This score may reflect the qualitative data that reveals the student was off task, tired, and inattentive during the intervention period.

Student C and student K showed the most improvement between the winters to spring universal screening periods. However, the qualitative data reveals that Student C was off task and unattentive at times where student K was focused, on task, and engaged during the intervention period. It is obvious to the researcher that this intervention was successful with students with various attention levels.

**Qualitative data analysis.** Qualitative data was observed weekly throughout the intervention period. Qualitative data was primarily observed, however, informal discussions with

students and groups of students also provided valuable data about whether or not word segmentation interventions were beneficial in improving FAST scores (see Appendix B).

## **Discussion**

### **Summary of Major Findings**

Throughout this study, the findings concluded that based on the amount of exposure the students had with word segmenting interventions, their word segmentation FAST scores increased. The data shows that the interventions had a positive effect on the student's spring word segmentation FAST scores. The greatest area of improvement for student growth was seen with students who received both weekly progress monitoring and interventions. The study also found that students who were actively engaged with the weekly word segmentation intervention, showed the most gains in the spring universal screening. Teacher observation also showed that the word segmentation intervention was beneficial. As the interventions continued, the amount of mastery on 3 and 4 phoneme words increased (see Appendix B).

### **Limitations of Study**

The limitations in the research included administering the same word segmentation intervention each week. Only one approach was utilized during this study; therefore, a different intervention may have different results. The researcher must also take into consideration other factors that may influence the findings of the research project. Natural maturation combined with additional classroom activities and lessons, which specifically focused on word segmentation and phonemic awareness, may have affected the results of this study.

### **Further Study**

Implications for future research suggest that more information about phonemic awareness specifically word segmentation be considered. More research needs to be conducted on other

beneficial interventions that can be administered using technology to improve FAST scores. In addition, implementing the word segmentation interventions longer than eight weeks and performed more frequently for shorter amounts of time may have been more beneficial for this specific group of students. This group was unique due to behaviors and the inability to focus for specific amounts of time.

### **Conclusion**

The findings compiled from the collected data suggest that word segmentation interventions can have a positive impact on student's word segmenting FAST scores. Both the qualitative and quantitative data suggest that phonemic awareness interventions are beneficial for increasing word segmentation scores on the FAST assessment and improved early literacy skills.

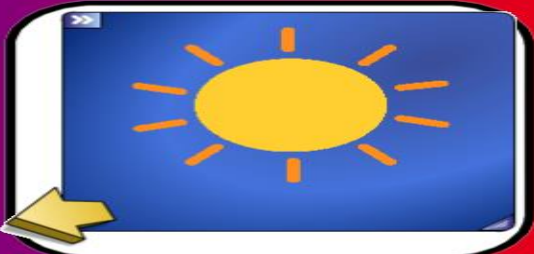
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Appendix A

Phonemic Awareness: Word Segmenting Intervention

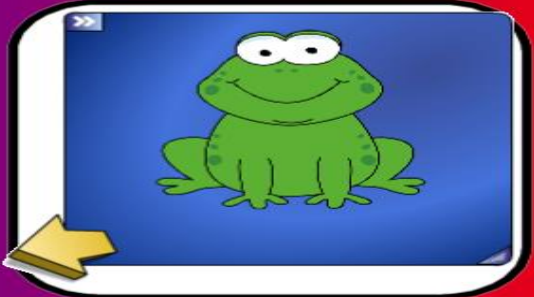


COUNT THE SOUNDS YOU HEAR

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Four yellow circles are positioned below the boxes.

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Four yellow circles are positioned below the boxes.

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Appendix B

Weekly Anecdotal Notes Following the Intervention

Anecdotal Notes for Capstone Project: Week 1 March 8

Student:	Attendance:	Behavior:	Attn. Span	3 Phonemes	4 Phonemes	Comments:
EB-A	✓	✓	✓	✓	n-a	
PB-B	✓	✓	✓	✓	↓	
BH-C	✓	✓	✓	✓	↓	
LC-D	✓	✓	✓	✓	↓	
RD-E	AZ	nfa	n-a	n-a	n-a	n-a
OJ-F	✓	✓	✓	needed help SDSO	n-a	n
JK-G	✓	✓	✓	✓	↓	
LM-H	✓	✓	✓	✓	↓	
GM-I	Speech	n-a	n-a	n-a	n-a	n-a
HO-J	✓	✓	✓	✓	↓	
BS-K	✓	✓	✓	needed help	↓	
IS-L	✓	talking	✓	✓	↓	
KS-M	✓	slepy	slepy	needed help	↓	

Anecdotal Notes for Capstone Project: Week 2 March 15

Student:	Attendance:	Behavior:	Attn. Span	3 Phonemes	4 Phonemes	Comments:
EB-A	✓	✓	✓	✓	n-a	
PB-B	✓	✓	✓	✓	↓	
BH-C	✓	off task	redirected	✓	↓	
LC-D	✓	talkative	reminders about interrupting	✓	↓	
RD-E	AZ	✓	✓	✓	↓	
OJ-F	✓	✓	✓	needed help	↓	
JK-G	✓	✓	✓	✓	↓	
LM-H	✓	✓	✓	✓	↓	
GM-I	speech	n-a	n-a	n-a	↓	
HO-J	✓	✓	✓	✓	↓	
BS-K	✓	✓	✓	needed help	↓	doesn't hear ending sound
IS-L	✓	silly	reminders	✓	↓	
KS-M	✓	✓	✓	needed help	↓	

Anecdotal Notes for Capstone Project: Week 3 March 22

Student:	Attendance:	Behavior:	Attn. Span	3 Phonemes	4 Phonemes	Comments:	
EB-A	OK	✓	OK	OK	n-a		
PB-B	↓	✓	↓	↓	↓		
BH-C	↓	✓	↓	↓	↓		
LC-D	↓	✓	↓	↓	↓		
RD-E	AZ	n-a	→				
OJ-F	OK	✓	OK	OK	↓		
JK-G	↓	✓	↓	↓	↓		
LM-H	↓	✓	↓	↓	↓		
GM-I	@speech	n-a	→				
HO-J	OK	✓	OK	OK	↓	better!	
BS-K	↓	✓	↓	😊	↓		
IS-L	↓	✓	↓	OK	↓		
KS-M	↓	✓	tired, sleepy	some help needed	↓		

March 29

Anecdotal Notes for Capstone Project: Week 4

Student:	Attendance:	Behavior:	Attn. Span	3 Phonemes	4 Phonemes	Comments:
EB-A	✓	✓	✓	✓	✓	Great work!
PB-B	✓	talkative	✓	✓	✓	OK
BH-C	✓	✓	distracted	✓	3 out of 4 sounds	
LC-D	✓	✓	focused!	✓	✓	
RD-E	AZ	n-a				→
OJ-F	✓	✓	✓	✓	2 out of 4 sounds.	more confident
JK-G	✓	✓	✓	✓	✓	!!
LM-H	✓	✓	✓	✓	✓	
GM-I	speech	n-a				→
HD-J	✓	✓	✓	✓	✓	Good work!
BS-K	✓	✓	✓	better!	struggles	
IS-L	✓	off task	laying down on chairs	✓	3 out of 4 sounds	
KS-M	✓	" "	tired	✓	3 out of 4 sounds	

April 5

Anecdotal Notes for Capstone Project: Week 5

Student:	Attendance:	Behavior:	Attn. Span	3 Phonemes	4 Phonemes	Comments:
EB-A	✓	OK	OK	✓	✓	
PB-B	✓	↓	↓	✓	✓	
BH-C	✓	↓	not focused 20-20	✓	✓	
LC-D	✓	↓	OK	✓	✓	
RD-E	✓	↓	↓	✓	3 out of 4	
OJ-F	✓	↓	↓	✓	3 out of 4	
JK-G	✓	↓	↓	✓	✓	
LM-H	✓	↓	↓	✓	✓	
GM-I	@speech					→
HD-J	✓	OK	OK	✓	✓	
BS-K	✓	↓	↓	✓	3 out of 4	
IS-L	✓	silly	reminders	✓	✓	
KS-M	✓	OK	OK	2 out of 3	3 out of 4	

Anecdotal Notes for Capstone Project: Week 6 April 12

Student:	Attendance:	Behavior:	Attn. Span	3 Phonemes	4 Phonemes	Comments:	
EB - A	✓	✓	OK	✓	✓		
PB - B	✓	talkative	↓	✓	✓		
BH - C	✓	silly		✓	✓		
LC - D	✓	silly		✓	✓		
RD - E	✓	✓		✓	✓		
OJ - F	✓	✓		✓	✓		
JK - G	✓	✓		✓	✓		
LM - H	✓	✓		✓	✓		
GM - I	espeech	—————→					
HD - J	✓	✓		OK	✓	✓	
BS - K	✓	✓		↓	✓	✓	
IS - L	✓	✓	↓	✓	✓		
KS - M	✓	✓	↓	✓	✓		

Anecdotal Notes for Capstone Project: Week 7 April 19

Student:	Attendance:	Behavior:	Attn. Span	3 Phonemes	4 Phonemes	Comments:
EB - A	✓	✓	✓	✓	✓	
PB - B	✓	✓	✓	✓	✓	
BH - C	✓	✓	✓	✓	✓	
LC - D	absent	n-a	—————→			
RD - E	✓	✓	✓	✓	some help	
OJ - F	✓	✓	✓	✓	" "	
JK - G	✓	✓	✓	✓	✓	
LM - H	✓	✓	✓	✓	✓	
GM - I	espeech	n-a	—————→			
HD - J	✓	✓	✓	✓	✓	
BS - K	✓	✓	✓	✓	some help	
IS - L	✓	✓	✓	✓	✓	
KS - M	✓	✓	✓	✓	✓	

April 26

Anecdotal Notes for Capstone Project: Week 8

Student:	Attendance:	Behavior:	Attn. Span	3 Phonemes	4 Phonemes	Comments:
EB - A	✓	✓	✓	✓	✓	
PB - B	✓	✓	✓	✓	✓	
BH - C	✓	✓	✓	✓	✓	
LC - D	✓	✓	✓	✓	✓	
RD - E	✓	✓	✓	✓	✓	
QJ - F	✓	✓	✓	✓	Some help	
JK - G	✓	✓	✓	✓	✓	
LM - H	✓	✓	✓	✓	✓	
GM - I	espeech	n-a	—————→			
HD - J	✓	✓	✓	✓	✓	
BS - K	✓	✓	✓	✓	✓	
IS - L	✓	✓	unattentive	✓	✓	
KS - M	✓	re-directed	sleepy	✓	✓	