Investigating the Effectiveness of Michael Heggerty on Preschool Rhyming

Sarah Wagner

Eastern Illinois University

Abstract

The purpose of this study was to investigate if Michael Heggerty is an effective program for use in a preschool classroom of three to five-year-olds. The principal investigator wanted to research if Michael Heggerty impacted children different based on age as well as gender. The principal investigator hypothesized that five-year-old participants would perform better than three-year-old participants and that females would perform better than males. Thirty-one preschoolers, ages three to five, participated in the study. All participants were students in an Early Childhood blended preschool classroom. During the seven-week study, participants took part in a pre-test for one week, a five-week intervention, and a week-long post-test. Participants were scored on their engagement in a daily nursery rhyme as well as an individual assessment at the end of each week. Out of the 31 participants in the study, 93.5% improved their scores from the pre-test to the post-test. When looking specifically at gender, the findings of the study found that Michael Heggerty's curriculum was most effective for males. In relation to age, the curriculum was most effective for three-year-old participants.

Keywords: preschoolers, rhyming, Michael Heggerty

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Phonological awareness is one of a key factor in predicting children's success in reading. It is the ability to hear and identify sounds and patterns within oral language. Phonological awareness development begins in the early years of life. Often, children in preschool programs are exposed to phonological awareness through various activities and assessments that should be planned by the classroom teacher (Illinois Early Learning Project, 2016a).

The current study investigates the effectiveness of Michael Heggerty's phonemic awareness curriculum on preschool rhyming development. The principal investigator wants to ensure it is helpful to all children within a classroom of three, four, and five-year-olds. Michael Heggerty's curriculum is a daily intervention that provides preschool students with a short lesson each day and a nursery rhyme each week. The daily lessons include skill modeling, repetition, and practice with skills such as rhyming, blending phonemes, segmenting, and more.

The purpose of this study is to investigate if Michael Heggerty's phonemic awareness curriculum is an effective program for rhyming instruction in a preschool classroom of 3-5 year olds. The study intends to investigate if utilizing Michael Heggerty's phonemic awareness curriculum positively impacts the rhyming abilities of students within an early childhood classroom.

In an effort to determine the specific impact Michael Heggerty has on children within an early childhood classroom, the study was guided by two questions. First, does Michael Heggerty impact children differently based on their age? Second, does Michael Heggerty impact children different based on their gender? The principal investigator hypothesized that five-year-old participants and females would make the most improvements while participating in Michael Heggerty's phonemic awareness curriculum.

The current study took place in a preschool classroom of three to five-year-olds. Prior to the study beginning, a week of pretest data was collected. Then, Michael Heggerty was implemented for five weeks following the pretest data week. Finally, a post-test study week was conducted. A total of 31 students of varying ages and genders took part in the study. The following section includes the landmark studies and current research pertaining to phonemic awareness and rhyming in early childhood education.

Phonemic Awareness and Rhyming in Education.

Different development standards and curriculums are integral to how educators plan their instruction within a classroom. These standards and curriculums are often developed based on the developmental learning sequences of children that have been researched. The following paragraphs explain the various factors that play a part in the development of rhyming skills in early childhood.

Illinois Early Learning and Development Standards

To better plan for phonological awareness activities, educators can reference the Illinois Early Learning and Development Standards (IELDS). IELDS are research-based standards which provide early childhood teachers with focus areas to develop lesson plans and interventions for their students (Illinois State Board of Education, 2013). The current standards were created by early childhood frontrunners, educators, and policy specialists across the state to ensure the document was useful, easy to read, and based on evidence of how preschool children typically develop (Illinois Early Learning Project, 2016a). The standards have most recently been updated in 2013 to align with the Illinois Early Learning Guidelines for Children Birth to Age 3, with the Illinois Kindergarten Standards, and with the Common Core State Standards for Kindergarten (Illinois Early Learning Project, 2016a). The IELDS create a foundation for

understanding for school staff and families, improve the quality of learning by making it more intentional, provide support for educators, and serve as a resource for staff that is responsible for developing school policies for preschools across the State of Illinois (Illinois State Board of Education, 2013). It is important for preschool educators to focus on how the IELDS interact with each other. For example, children will need to develop language skills before they can begin to participate in verbal interactions with their peers (Illinois State Board of Education, 2016a). It is also important to remember that children develop and learn at different speeds. A teacher must recognize that every child will demonstrate their abilities in their own way and at their own pace (Illinois Early Learning Project, 2016b). As an educator, one must be ready to always provide children with individualized instruction to ensure maximum educational growth.

Within the IELDS, literacy skills are referred to within their own section. The IELDS manual states that preschool children's various language skills, including phonemic awareness and phonological awareness, are some of the greatest predictors of success in reading during the first and second grades (Illinois State Board of Education, 2013). A child's development of language will be vital to their success throughout their early elementary career (Illinois Early Learning Project, 2013b). As an educator, it is extremely beneficial to model language skills. It is also important to plan lessons that develop phonological awareness, such as singing songs, saying rhymes, and manipulating sounds within words (Illinois State Board of Education, 2013). Also, per IELDS (2013), children will first recite rhymes, then provide rhyming words, and finally identify rhymes within texts. "Preschool educators can refer to the IELDS when determining appropriate expectations for preschoolers, when planning for individual children's needs, when implementing a *play-based curriculum,* and when using *authentic observational*

assessment procedures" (Illinois Early Learning Project, 2016a). One of Illinois' state approved play-based curriculums is The Creative Curriculum for Preschool.

Creative Curriculum for Preschool

Along with current IELDS, The Creative Curriculum for Preschool is a play-based curriculum many preschools across the country use to determine the way in which children learn phonological awareness. The curriculum is aligned with the current state standards. Within the curriculum, phonological awareness is addressed in its own section. Per the Creative Curriculum, "phonological awareness develops as a progression, from simple skills (e.g., listening) to very complex skills (e.g., manipulating individual sounds in words). Each phonological awareness skill involves varying levels of difficulty" (Heroman & Jones, 2010, p 543). The scope and sequence of these skills typically begin with listening to sounds, discriminating rhyme and alliteration, separating syllables, and then identifying onset and rime and phonemes (Heroman & Jones, 2010). Children may be perfecting different degrees of various skills simultaneously. This volume also stresses that mastering these skills is one of the biggest predictors of success in learning to read (Heroman & Jones, 2010). Like IELDS, Creative Curriculum suggests for educators to be aware of each child's level of phonological awareness and to provide differentiated instruction in the forms of songs, stories, and rhymes (Heroman & Jones, 2010). Also, in alliance with the IELDS, Creative Curriculum expresses the thought that children who are phonologically sensitive show stronger skills in reading, spelling, and writing in later grades (Heroman & Jones, 2010). When working with The Creative Curriculum for Preschool, it is important to find a quality assessment system that aligns with the curriculum.

Teaching Strategies GOLD

Teaching Strategies GOLD (TSG) is the assessment that is commonly paired with the Creative Curriculum and used within many preschool classrooms and educational programs (Lambert, Kim, & Burts, 2015). "Assessment evidence should be gathered over time, from multiple sources including families, in naturally occurring settings so they can accurately reflect and support children's development and learning" (Lambert, Kim, & Burts, 2015, p. 49). TSG utilizes this approach during its trimester reporting system. Educators are responsible for collecting data on each student from classroom observations and incorporating feedback from families on skills that are seen at home. TSG is an authentic assessment system that is beneficial for all students within a preschool classroom. TSG "[…] is intended for use with typically developing children, children with disabilities, children who demonstrate competencies beyond typical developmental expectations, and dual language learners" (Lambert, & Burts, 2015, p. 52).

In relation to language acquisition and phonemic awareness skills, TSG acknowledges that children typically develop phonemic awareness in a set order of least to most complicated, but states that the skills can be learned in an overlapping order at times (Heroman & Jones, 2010). Children begin by joining in rhyming songs, then fill in rhyming words or create their own nonsense rhymes, then decide if two words rhyme, and finally create a group of true rhyming words (Heroman & Jones, 2010). In addition to TSG, other assessment systems are used within early childhood classrooms to obtain further data.

Individual Growth and Development Indicators

Individual Growth and Development Indicators (IGDIs) are another factor that lead to the push of phonological awareness and mastery in Early Childhood classrooms across the nation. As an educator, being able to monitor and measure student growth within areas such as

phonological awareness is extremely important when setting goals and making decisions for students. Measurable outcomes are one of the first steps in documenting student progress. More recently, a new trend involving general outcome measures (GOM) are making a run in early childhood education. "General Outcomes Measurement is an approach to assessment in which students' progress toward long-term educational goals is closely monitored over time" (McCormick, & Haack, 2011, p. 30).

One example of a preschool assessment that utilizes GOMs is the Individual Growth and Development Indicators (IGDIs). IGDIs is a type of Response to Intervention (RTI) used to identify students who are falling behind in literacy domains, intervene with these struggling students, and monitor their progress throughout the year (Wackerle-Hollman, Schmitt, Bradfield, Rodriguez, & McConnel, 2015). IGDIs assess picture naming, rhyming, and alliteration and can be used to monitor growth of children and ensure they are making progress in early literacy skills (Hojnoski & Missall, 2007). The IGDIs contains several tests related to alliteration, rhyming, and picture naming. "All three of these subtests consist of a series of several flashcards randomly presented to a child who is required to answer questions about rhyming, alliteration, and one-word picture vocabulary as quickly as possible" (Wilson, & Lonigan, 2009, p. 118). The children's scores from these subtests are then placed into a system where they are put into tiers for additional support.

Making these data-based decisions in relation to early literacy skills and phonological awareness helps educators to visibly see the deficits their students may have and better identify students who may need more support to not fall behind in reading later in their school career. Typically, these brief tests and lessons are done outside of the classroom and either occur in small groups or on a one-on-one basis. Per myigdis.com, over 12,500 preschools have used

IGDIs to test student outcomes (https://www.myigdis.com/). RTI tests that focus on literacy such as IGDIs have proven to be beneficial due to the strong ties phonological awareness has to later reading success (Wackerle-Hollman, et al., 2015).

Literacy Pedagogy

Listening skills. Before phonological awareness develops, infants first should learn how to recognize speech (Wood & Terrel, 1998). This includes identifying distinct pauses within language as well as identifying words, word boundaries, common phrases and cadence of language (Wood & Terrel, 1998). Once these skills are obtained, the child can begin working on other emergent literacy skills such as phonological awareness.

Phonological awareness. Phonological awareness is one of many pieces within the essential variables of literacy success. Within the research reviewed, there were a variety of variables given such as expressive and receptive language, alphabetic knowledge, rapid naming of letters and numbers, and writing one's name (Brown, 2014; Carlson, Jenkins, Li, & Brownell, 2013; Morrow, 2012). The consistent variable mentioned in the above articles was phonological awareness.

Phonological awareness, or the awareness of the sounds of language, plays a key role in reading success in later years. Research shows having strong phonological awareness in preschool and kindergarten is linked to becoming a better reader in third grade (Wackerle-Hollman, 2013). Once children attend a school program, their level of phonological awareness rises by thirty-two percent above its natural rate of development (Wood & Terrel, 1998). With the growing number of children struggling to read at grade level, many researchers are beginning to look at a child's early years to help determine the best ways to intervene. So far, "the findings support Maria Montessori's emphasis on the value of early language experiences" (Woods, 2003,

p. 37). These language experiences, especially those in early childhood settings, are perfect instances for incorporating emergent literacy skills such as phonological awareness.

Children typically develop the skills of phonological awareness in the following progression: rhyming, spelling, onset, rime, syllables, and manipulating sounds in words (Turan & Gul, 2008). Children may be perfecting different degrees of various skills at the same time. Research shows that children who become familiar with rhyming and alliteration during the preschool years are more successful in school than children who do not (Turan & Gul, 2008). The earliest and easiest developing skill within phonological awareness includes rhyming, identification of rhyming words, and creating rhyming words (Heggerty & Turso, 2010). Within the skill of rhyming, there are steps that build up to mastering the skill. Children are first able to recognize rhyming words, then repeat rhyming words out of a series, isolate non-rhyming words out of a series of words, produce a rhyming word with a familiar word, and then produce a rhyming word with unfamiliar words (Heggerty & Turso, 2010). The skills of phonological awareness can often be developed through emergent literacy.

Emergent literacy. In early childhood classrooms across the country, there is a push to enhance emergent literacy through play based activities and assessments. Exposure to books and other texts, repeated interactions with writing materials, involvement in activities including vocabulary and oral language, and development of listening skills and phonological awareness are all examples of ways to promote literacy in early childhood settings. Exposure to literacy at a young age influences a child's language development. "Classrooms that emphasize literacy weave it into the fabric of the curriculum through an interrelationship between spaces, materials, play activities, and teacher-child interaction" (Rosenquest, 2002, p. 241). Research has proven

that phonological awareness is enhanced when it is connected to class literacy instruction (Qi & O'Connor, 2000).

One way of promoting emergent literacy skills and enhancing phonological awareness is by selecting age appropriate books that contain simple story lines children can connect to (Rosenquest, 2002). The stories should be introduced one-on-one with children, then in small groups, and finally in a large group setting. Each reading should be interactive. Stories should also be read repeatedly to give children the chance to improve their listening skills. Vocabulary from the book should be used throughout the school day as well to enhance literacy development (Rosenquest, 2002).

Another way to promote emergent literacy skills in an early childhood classroom is to help children connect print to spoken words. When all areas of learning are involved (reading, writing, listening, and speaking) children are more likely to learn and retain information (Morrow, 2012). Children must be exposed to various types and styles of texts such as labels, newspapers, magazines, lists, environmental print, and books (Bingham & Pennington, 2007). Children must observe adult's genuine interest as well as modeling reading in this wide variety of text for it to become meaningful to the child. Modeling print tracking as the teacher reads is truly important for children to understand where to start reading, the direction to follow, and much more. Emergent literacy is also an excellent time to incorporate instruction of various phonological awareness skills.

Early Childhood Instruction of Phonological Awareness

Children's phonological awareness can be established through clear training in an early childhood setting (Qi & O'Connor, 2000). Phonological awareness instruction should first be modeled by the teacher, then done with the child, and finally independently practiced by the

child (Bruns, 2007; Qi & O'Connor, 2000). Rhyming books, activities utilizing syllables, finger plays, songs, listening activities/games, and reading nursery rhymes are a variety of ways to model and promote phonological awareness within an early childhood classroom (Mihai et al., 2014). Utilization of language and word plays help children learn to see patterns in language and later use this knowledge for reading (Brown, 2014). These activities can be implemented during group times or even during quick transition times. Repetition of these activities provide students with ample chances to hear and understand the different pieces of language that go along with phonological awareness, such as rhythm and rhyming (Woods, 1998). Planned instruction of these activities is made easy through the use of Michael Heggerty's phonemic awareness curriculum.

Michael Heggerty

Phonemic awareness: The skills that they need to help them succeed! Is a thirty-five-week curriculum of daily phonemic awareness lessons written by Michael Heggerty and consulted by Christine Turso (2010). Phonemic awareness is a small piece of phonological awareness that includes the ability to manipulate phonemes, or individual sounds within words, as well as focus on sounds in words (Heggerty & Turso, 2010; Wood & Terrell, 1998). Per research completed by Heggerty and Turso, there are nine skills that fall within phonemic awareness. These skills include increased language awareness, rhyming, identifying onsets, blending, identifying final and medial phonemes, segmenting, substituting phonemes, adding phonemes, and deleting phonemes (Heggerty & Turso, 2010). The daily lessons take about ten to 15 minutes to complete. These lessons include skill modeling and practice in the previously listed phonemic awareness skills. Using curriculum that trains by initial sounds or rhyming parts, such as Michael Heggerty's curriculum, enhances segmentation skills and letter-sound

knowledge (Qi & O'Connor, 2000). Along with the short lesson, a nursery rhyme is taught each week. "There is a strong link between the nursery rhyme knowledge of Pre-K children and their future success in reading and spelling" (Heggerty & Turso, 2010, p. ii). Nursery rhymes are also a prime time for children to develop their listening skills that will later be used to identify rhyming sounds within words (Heggerty & Turso, 2010).

Conclusion

Phonological awareness and the awareness of rhyme have a large impact on literacy (Wood & Terrel, 1998). With the large amount of research regarding the importance of phonological awareness, specifically rhyming, it is necessary to understand the success of a curriculum within an early childhood classroom that will positively affect these skills. After looking at research regarding various curriculums for early childhood classrooms, there was no specific data related to the success of Michael Heggerty's curriculum. Therefore, the research that will be conducted will look at the effectiveness of Michael Heggerty's curriculum within an early childhood classroom.

Methods

The principal investigator utilized a quantitative approach to investigate the effectiveness of Michael Heggerty within a preschool classroom. The study was conducted over a seven-week period during the spring semester of 2017. The following describe the participants, setting, research materials, and data collection procedures.

Participants

The participants in this study were purposely selected from the principal investigator's classroom of 31 children. The 31 children who took part in this study were three to five-year-olds. The mean age of the participants in the study was 3.9 years old. Approximately, 31

percent of the participants were female and 69 percent were male. Sixty-six percent of the participants were Caucasian, 12 percent were African-American, six percent were Asian, and 15 percent were more than one race. Within the 31 children, 36 percent had Individualized Education Plans (IEPs). Of these twelve IEPs, there were children labeled with Developmental Delays, Speech and Language impairments, and Other Health Impairments (OHI). All children, with and without IEPs, in the principal investigator's classroom participated in the study.

To further break down the participants within the study, the principal investigator tested her morning and afternoon classes separately. The participants within the morning class were a mean age of four-years-old. Twenty-two percent were females and 77 percent were males. Seventy-seven percent of this class were of the Caucasian race, five percent were African-American, 11 percent were Asian, and five percent were more than one race. Within this classroom, 38.8 percent of the participant population had IEPs for Speech and Language impairments and/or Developmental delays.

The participants within the afternoon class were a mean age of 3.9 years old. Forty percent were females and 60 percent were males. Fifty-three percent of the afternoon session participants were of the Caucasian race, 20 percent were African-American, and 26 percent were more than one race. Thirty-three percent of children within this population had IEPs for Speech and Language impairments, Developmental delays, and Other Health Impairments (OHI). Table 1 below shows the demographic information based on age and gender.

Table 1

Demographic Information on Participants. n=31

School Session	Gender		Age		
	Male	Female	Three	Four	Five
Morning	13	4	6	6	5
Afternoon	9	5	2	11	1
Total	22	9	8	17	6

Setting

The study took place in a blended preschool classroom at Mattoon Area Preschool. The preschool center is located in East Central, Illinois which is a rural community with a population of roughly 19,000. The preschool program is comprised of three half-day blended classrooms, one self-contained classroom, and one full-day blended classroom. There are a total of 117 preschool children enrolled within the building.

Data Source, Instruments, and Research Materials

The investigator utilized one instrument to collect data during this study. The instrument was created based on the assessments from Michael Heggerty's phonemic awareness curriculum (Appendix C), as well as from Teaching Strategies Gold objective 15a (Appendix D). The method gave children a chance to earn five points a week for participating in the rhyme of the day, another five points for being able to fill in the missing rhyming words from the weekly rhymes, and another ten points for identifying if two words rhymed or not. Each week, a new instrument utilizing the same method was implemented to collect data (Appendix B-B5). Overall, six instruments were utilized over the course of the study.

Prior to the beginning of study, the students were given a pretest to obtain initial scores. The pretest was given to provide the principal investigator a baseline for all participants. Then, Michael Heggerty's phonemic awareness curriculum was utilized for five weeks following the pretest. It was given during large group instruction and lasted approximately five to seven minutes each session. Students were given a plus or minus on a chart for each day to score if they participated in the nursery rhyme portion of the intervention. At the end of each week, the remainder of the instrument was given individually to each student and scored by the principal investigator. If students were absent during any time of the assessment, the principal investigator made up their intervention and assessment the day they returned. After the five weeks of intervention, the students took part in a post-test week.

Each instrument gave students of all abilities the chance to obtain points. Each day of the week, students received a point for participating in the rhyming portion of the intervention. These rhymes were given based on Michael Heggerty's phonemic awareness curriculum. At the end of the week, students participated in a one-on-one rhyme session with the principal investigator. The students received a point for each rhyme they were able to complete during the second portion of the instrument. The rhymes were familiar to students as they were previously reviewed during large group times. The final portion of the instrument gave students the opportunity to decide whether two words rhymed. They received a point for each correct answer. The assessment was worth a total of 20 points.

Procedures of Data Collection

The time frame anticipated for the study was seven weeks. Data collection began on January 30, 2017. The pretest week ran from January 30 to February 3, 2017. The daily intervention, which was Michael Heggerty, was carried out during large group instruction five

days a week for five weeks. The intervention took roughly ten minutes to complete per day. Table 2 below shows the number of minutes of data collection throughout the five-week intervention. Each day, students were asked to repeat the weekly nursery rhyme or poem. The principal investigator recorded if children were attempting to participate or not. The students were also asked to repeat a series of rhyming words, isolate sounds at the beginning and end of words, and compound words during the intervention. Testing of the intervention was conducted individually at the end of each week. The intervention portion of the study lasted from February 6, 2017 until March 10, 2017. A post-test week was completed during the week of March 13, 2017 through March 17, 2017 to complete the seven-week study.

Table 2

The Number of Minutes of Data Collection during Five-Week Intervention

	Week	# of Days Per Week	Total # of Minutes per day for AM and PM	Total # of Minutes per week(mpw) for AM and PM
	1	5	20	100
	2	5	20	100
	3	5	20	100
	4	5	20	100
	5	5	20	100
Total	5	25	100 mpw	500

Note: AM =Morning session, PM =Afternoon session, MPW= Minutes per week.

Data Analysis and Results

This section explains how data was analyzed. The current study looked at how Michael Heggerty's phonemic awareness curriculum impacted the rhyming abilities of preschool student participants. Thirty one students participated in the seven-week study. Data from a week-long

pre-test, five weeks of intervention, and a week-long post-test were included in the descriptive analysis of data.

Data Analysis

The data was analyzed quantitatively utilizing descriptive analysis. The principal investigator analyzed the data of the participants overall as well as according to gender and age. The data was investigated to determine if Michael Heggerty's phonemic awareness curriculum has a positive impact on rhyming growth within a preschool classroom and if it more heavily impacts children based on their age and gender.

The pre-test, intervention, and post-test scores were tabulated in Microsoft Excel as they were collected during the study. The excel file was organized alphabetically and by gender. Then, a second excel sheet was created with the same scores but organized by age. The scores from the self-developed assessment based on Michael Heggerty were analyzed to determine if the curriculum effectively enhanced preschool rhyming skills. Children's raw pre- and post-test scores were analyzed and compared across the five-week intervention. Their mean scores were also analyzed during the five-week intervention to investigate if gender played a role in the curriculum's effectiveness. Next, raw scores for the five-week intervention were analyzed based on age. Mean scores were also analyzed in a table form from the intervention as well as pre- and post-tests based on age. The following section will discuss the results of the study according to the research questions.

Results

Implementing Michael Heggerty's phonemic awareness curriculum appears to have an impact on rhyming abilities within a preschool classroom. Following the five-week intervention, 29 of 31 students who participated in the study made a gain in their rhyming abilities. Of the 31

participants, 29 made a gain of at least one point, one participant stayed the same with a score of a 16 in the pre- and post-test, and one participant decreased in ability, scoring a 13 in the pre-test and a 10 in the post-test. Figure 1 below reflects these scores.

Overall, the lowest pre-test score was a 0 out of 20 possible points. Three participants scored a 0 on the pre-test. The highest pre-test score was an 18 out of 20 points. Only one participant scored this on the pre-test. The lowest post-test score was a 2 out of 20 points. Only one participant scored a 2 on the post-test. The highest post-test score was a 20 out of 20 points. Four participants scored 20 out of 20 points on the post-test. Figure 1 below represents these scores.

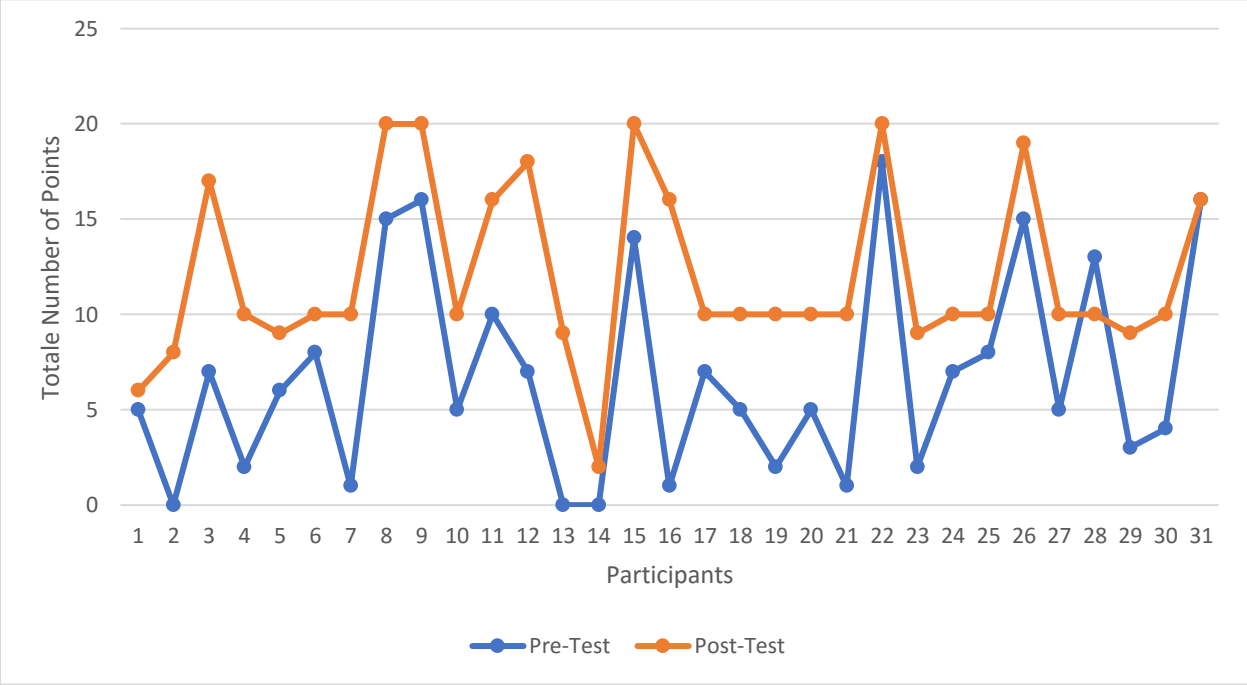

Figure 1. Scores of Pre- and Post-Test of Self-Developed Assessment Based on Michael Heggerty for All Participants

Note. Participants #1 through 22 were boys and participants 23 through 31 were girls.

Does Michael Heggerty Impact Children Differently Based on Gender?

When investigating the effectiveness of Michael Heggerty's phonemic awareness curriculum based on gender, males had the lowest pre-test score of 0. Three male participants scored 0 on the pre-test. The lowest post-test score by a male was a 2 out of 20 points scored by one participant. The highest post-test score was a 20 out of 20 points scored by four male participants. Out of 22 male participants, all 22 made progress over the five-week intervention. Figure 2 below represents these scores.

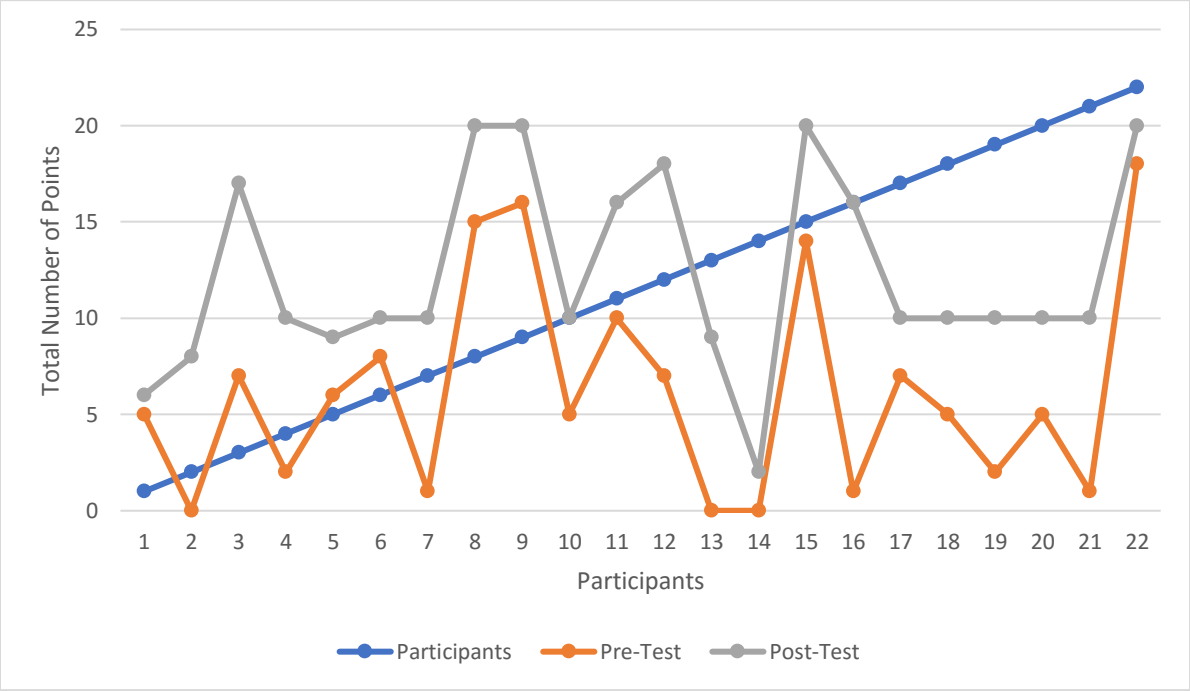

Figure 2. Scores of Pre- and Post-Test of Self-Developed Assessment Based on Michael Heggerty for Males

Female participant's lowest pre-test score was a 2 out of 20 possible points. Only one female participant scored a 2. The highest pre-test score for female participants was a 16 out of 20 possible points. Only one participant scored a 16. The lowest post-test score for female participants was a 9 out of 20 points. Two female participants scored a 9. The highest post-test

score for female participants was a 19 out of 20 points scored by one participant. Figure 3 below represents these scores.

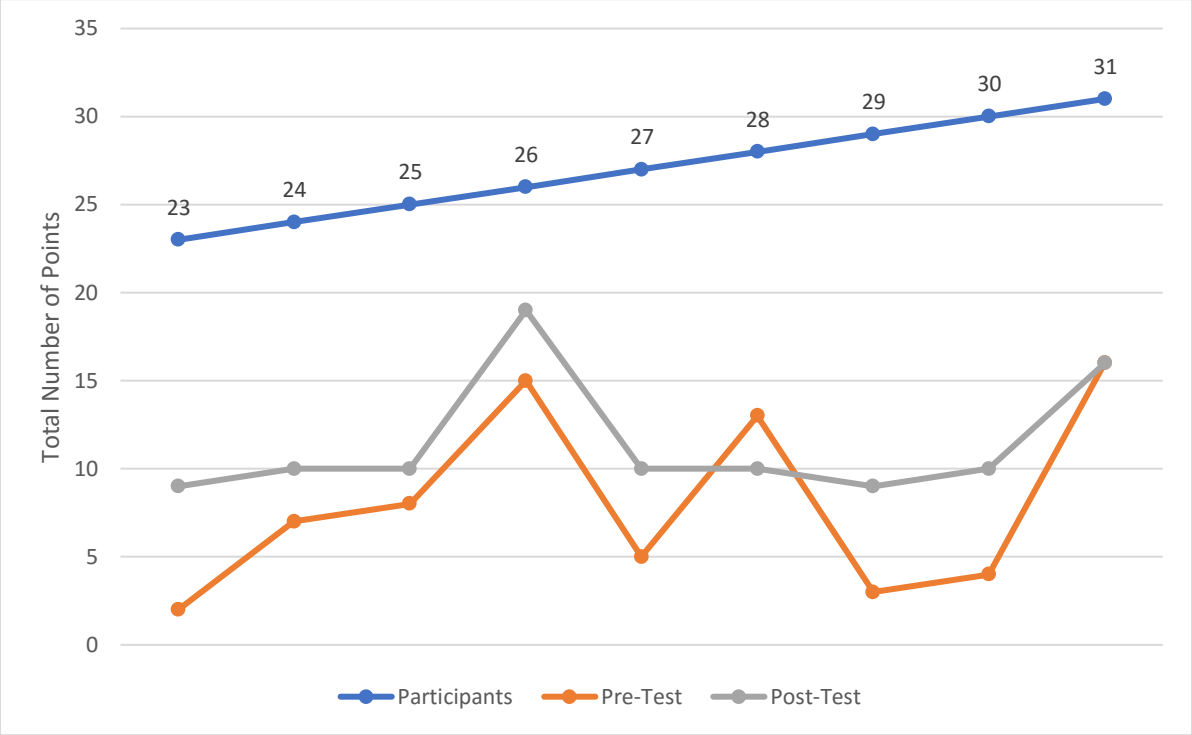

Figure 3. Scores of Pre- and Post-Test of Self-Developed Assessment Based on Michael Heggerty for Females

When females and male scores are compared using the pre- and post-test scores shown in Figure 2 and Figure 3 above, males have the lowest pre-test score of 0. Males also have the highest pre-test score of 18. Males have the lowest post-test score of 2 as well as the highest post-test score of 20.

When the mean scores from the five-week intervention are investigated, males demonstrated the most amount of progress over the time span. During week one of the intervention, they scored an average of 8.18 out of 20 points. During week five, they scored an average score of 11.13 out of 20 points. During the five-week intervention, the mean score for males within the setting raised by 2.95 points. During week one, the females had a mean score

of 9.88 out of 20 points. During week five, females scored an average of 10.77 out of 20 points. During the five-week long intervention, the mean score of females was raised by .89 points. Table 3 shows the mean scores for males and females over the five-week intervention.

Table 3

Mean Scores from Five-Week Intervention According to Gender n=31

Gender/Weeks	Week 1	Week 2	Week 3	Week 4	Week 5
Male n=22	8.18	9.54	10.04	11.13	11.13
Female n=9	9.88	10	11	10.88	10.77

Does Michael Heggerty Impact Children Differently Based on Age?

When investigating the effectiveness of Michael Heggerty on preschool rhyming based on age, three-year-old participants had a low pre-test score of zero. Three participants scored a zero. The highest pre-test score of three-year-old participants was a 7 out of 20 points scored by two children. The lowest pre-test score from four-year-old participants was a 3 out of 20 points. One four-year-old scored a high of 17 out of 20 points on the pre-test. The lowest post-test score for four-year-olds was a 6 out of 20 points and the highest post-test score for four-year-olds was a 20 out of 20 points, scored by two participants. The lowest pre-test score for five-year-old participants was a 7 out of 20 points and the highest pre-test score for five-year-olds was an 18 out of 20 points. The lowest post-test score from five-year-old participants was a 10 out of 20 points and the highest post-test score was a 20 out of 20 points scored by two five-year-old

participants. Table 4 below shows the raw scores for participants throughout the seven-week study based on age.

Table 4

Raw Scores of Participants Based on Age n =31

Participant	Pre-Test	Week 1	Week 2	Week 3	Week 4	Week 5	Post-Test
2	0	8	4	3	6	7	8
4	2	5	3	8	6	8	10
7	1	5	5	9	9	9	10
13	0	0	1	1	7	5	9
14	0	0	0	0	3	0	2
17	7	8	9	9	10	9	10
24	7	7	9	8	10	8	10
29	3	6	6	6	7	6	9
1	5	8	9	5	6	5	6
3	7	8	9	11	7	17	17
5	6	8	16	9	9	10	9
8	15	11	19	18	18	19	20
9	16	15	20	20	20	20	20
10	5	7	5	8	9	10	10
16	1	8	9	10	17	14	16
18	5	9	9	8	10	10	10
19	2	3	9	8	8	4	10
20	5	6	7	9	10	10	10
21	1	6	5	9	9	9	10
23	2	5	6	10	10	10	9
25	8	10	10	10	10	10	10
27	5	12	12	9	10	10	10
28	16	14	9	12	10	10	10
30	4	7	10	10	10	9	10
31	16	17	10	16	14	15	16
6	8	9	10	10	10	10	10
11	10	10	10	12	17	15	16
12	7	10	14	15	15	16	18
15	14	19	18	19	19	19	20
22	18	17	19	20	20	19	20
26	15	11	18	18	17	19	19

Note. Scores in this chart are separated by age. Blue highlighted numbers indicate three-year-olds, green highlighted numbers indicate four-year-olds, and salmon highlighted numbers indicate five-year-olds.

When comparing mean scores from pre- and post-test data based on age, three-year-olds demonstrated the most improvement. Three-year-olds increased their mean score by six points overall. Four-year-old participants increased their mean score from seven out of 20 points to 11.94 out of 20 points, an increase of 4.94 points. Five-year-old participants increased their mean score from 12 out of 20 points to 17.16 out of 20 points, an increase of 5.16 points. Table 5 below demonstrates the above scores. Table 6 below further demonstrates the mean scores based on age over the five-week intervention.

Table 5

Mean Scores from Pre- and Post-Test Self-Developed Assessment based on Michael Heggerty According to Age n=31

Age/Week	Pre-Test	Post-Test
Three n=8	2.5	8.5
Four n=17	7	11.95
Five n=6	12	17.16

Table 6

Mean Scores from Five-Week Intervention According to Age n=31

Age/Week	Week 1	Week 2	Week 3	Week 4	Week 5
Three n=8	4.87	4.62	5.5	7.25	6.5
Four n=17	9.05	10.23	10.70	11	11.29
Five n=6	12.66	14.83	15.66	16.33	16.33

The following section discusses the findings, implications, and limitations of the current study.

Findings, Implications, and Limitations

Findings

The overall findings of this study indicate that Michael Heggerty's phonemic awareness curriculum appears to be effective for use within a preschool classroom. Out of the 31 participants in the study, 93.5% improved their scores from the pre-test to the post-test. When looking specifically at gender, the findings of the study found that Michael Heggerty's curriculum was most effective for males. In relation to age, the curriculum was most effective for three-year-old participants.

Based on the results of the research questions, the original hypothesis of five-year-old participants and females making the most improvements was inaccurate. According to the results three-year-olds made the most progress over the seven-week span from the pre-test to the post-test. Within the seven-week investigation, males made the most progress over females.

While analyzing the data the principal investigator found that 52 percent of three and four-year-old participants were unable to exceed a score of 10 out of 20 points. An additional 28 percent of three and four-year-old participants scored less than 10 points on the assessment. The principal investigator believes this is caused by their developmental progression in relation to rhyming sequences.

Implications

Because the findings from the current study indicate that Michael Heggerty's phonemic awareness curriculum is an effective method to increase preschool children's rhyming abilities,

teachers within preschool programs should consider including the curriculum within their daily instruction. The use of daily nursery rhymes, providing missing rhyming words, and identifying if two words rhyme is an effective assessment method to ensure the majority of student's make academic gains in their rhyming abilities. Pre-service teachers would benefit to understand the progression of rhyming skills in early childhood and become familiar with Michael Heggerty's phonemic awareness curriculum to utilize in their own practice.

Parents can also be involved in utilizing this curriculum. The weekly nursery rhymes can be sent home for parents to say/sing with their children. The principal investigator plans to continue to utilize Michael Heggerty's phonemic awareness curriculum to enhance preschool student's abilities to participate in rhyming activities and identify rhyming words.

Limitations

One limitation of the current study is the variable of student behavior. The intervention took place during daily large group instruction and some students struggled to stay seated and engaged throughout the large group session. The principal investigator implemented Michael Heggerty's phonemic awareness instruction within five minutes of being seated at the carpet for group time to enhance participant's attention spans. Some children were also given the option to sit in classroom chairs or cube chairs to help their focus during the intervention.

The second limitation was the fact that the research took place in the principal investigator's classroom with a limited number of participants. In order to be more reliable, the research would need to be completed on a larger scale in various early childhood classrooms.

Reflections and Action Plan

Reflection

Michael Heggerty's phonemic awareness curriculum proved to be an effective method to enhance student's abilities to participate in rhyming activities during the current research study. Every Monday, when a new nursery rhyme was introduced, the majority of the students were excited to learn it and participate throughout the week. Often, the students would ask to recite rhymes from the previous weeks and many could often recite them without teacher assistance. Occasionally, during transition times, students would begin reciting rhymes without prompting from the principal investigator. Many children who had previously struggled to engage in any rhyming activities began to participate in the rhymes of the day during the intervention and some were even able to begin giving the missing rhyming word in sentences.

Action Plan

The principal investigator suggests further studies to replicate the findings of the current study with another preschool classroom in the future in hopes of removing the participant behavior limitation. In future studies, the principal investigator recommends collecting data for five weeks prior to implementing Michael Heggerty's phonemic awareness curriculum. Following this data collection, the principal investigator should collect data for seven weeks utilizing the same schedule as the current study. With this approach, the principal investigator can explore the difference in the teacher's current practice in relation to rhyming skills and that of the skills developed while utilizing Michael Heggerty's curriculum. Future studies could also be completed following the above method but Michael Heggerty's curriculum could be implemented during small group sessions instead of large group sessions. This could limit the variable of distractions due to student behavior.

The principal investigator plans to share the findings from the current study with five other preschool professionals within her program at a professional learning committee meeting. She also plans on providing a copy of the results of the study with her principal. The results will also be shared in the preschool program's professional development binder to prove to State officials that Michael Heggerty is an effective practice within the program. The data and findings from the study will also be shared at a poster presentation at Eastern Illinois University. Because of the positive results that were determined in the current study, the principal investigator plans to continue to use Michael Heggerty's phonemic awareness curriculum within her current classroom to strengthen student's abilities to participate in rhyming activities.

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Appendix A

Mattoon Schools
making a difference, one student at a time

Mattoon Community Unit School District 2

January 20, 2017

Dear Institutional Review Board Members,

As principal of Mattoon Area Preschool, I approve the appropriateness of Sarah Wagner's action research program titled Investigating the Effectiveness of Michael Heggerty on Preschool Rhyming. Ms. Wagner discussed the components of the study as well as the expected outcomes. This project is age appropriate as preschool teachers work to increase phonemic awareness through rhyming. Conducting the project at Mattoon Area Preschool is very flexible and should be completed before the end of the semester. If you have any questions, please contact me.

Sincerely,

Lisa A Jaco

Lisa Jaco
Principal at Mattoon Area Preschool

1701 Charleston Avenue • Mattoon, Illinois 61938 • Phone: 217-238-4850 • Fax: 217-258-8885
www.mattoon.k12.il.us

Appendix B

Student Name:_____Week: Pretest/Week 6 Post-test Date:_____

Joins in Rhyme of the day: /5 days

Pretest rhyme: Little Jack Horner
Post-test rhyme: Mary, Mary Quite Contrary

Fills in missing rhyming word: /5 correct

1. One, two, buckle my ____(shoe)
2. Three, four, shut the ____(door)
3. Five, six, pick up _____(sticks)
4. Seven, eight, lay them _____(straight)
5. Nine, ten, a big fat _____ (hen)

Decides whether two words rhyme: /10 correct

Pat, hat ____	Fast, in ____	Men, then ____	Tub, rub____	Fin, win ____
Pan, big ____	All, tall ____	Dog, zip ____	Go, no ____	Went, tent ____

+ =correct - = incorrect

Appendix B.1

Student Name:_____Week: 1____Date:_____

Joins in Rhyme of the day: /5 days
Week 1 Rhyme: Polly Put the Kettle On

Fills in missing rhyming word: /5 correct

1. Pat a cake, pat a cake, bakers man
   Bake me a cake as fast as you ____(can)
2. Pat it, and roll it, and mark it with a B
   and put it in the oven for baby and ____(me)
3. Little Jack Horner, sat in a _____(corner)
   Eating his Christmas pie
4. He put in his thumb and pulled out a _____(plum)
5. And said, what a good boy am _____! (I)

Decides whether two words rhyme: /10 correct

kettle, settle ___	put, on ____	on, Ron ____	take, make____	off, love ____
put, foot ____	off, cough ____	again, hen ____	gone, lawn ____	men, then ____

+ =correct - = incorrect

Appendix B.2

Student Name:_____Week: 2____Date:_____

Joins in Rhyme of the day: /5 days
Week 2 Rhyme: This Little Piggy

Fills in missing rhyming word: /5 correct

1. Little Miss Muffet sat on a ____, eating her curds and whey (tuffet)
2. Along came a spider who sat down beside____ and frightened miss muffet away (her)
3. Old Mother Hubbard went to the_____, to get the poor dog a bone.(cupboard)
4. When she came there, the cupboard was _____, and so the poor dog has none. (bare)
5. Roses are red, violets are blue, sugar is sweet, and so are _____ (you)

Decides whether two words rhyme: /10 correct

this, miss ___	little, skittle ____	pig, they ____	went, sent____	to, moo ____
pig, wig ____	market, zoo ____	stay, may ____	little, in ____	home, comb____

+ =correct - = incorrect

Appendix B.3

Student Name:_____Week: 3____Date:_____

Joins in Rhyme of the day: /5 days
Week 3 Rhyme: Jack and Jill

Fills in missing rhyming word: /5 correct

1. Jack and Jill went up the ____ to fetch a pail of water (hill)
2. Jack fell down and broke his ____ and Jill came tumbling after (crown)
3. Up Jack got and home did _____as fast as he could caper (trot)
4. He went to bed and bound his_____(head)
5. With vinegar and brown_____ (paper)

Decides whether two words rhyme: /10 correct

jack, lack ___	Jill, they ____	went, sent ____	up, cup____	wear, there ____
fetch, pail ____	pail, sail ____	water, yes ____	Jill, fill ____	down, crown___

+ =correct - = incorrect

Appendix B.4

Student Name:_____Week: 4____Date:_____

Joins in Rhyme of the day: /5 days
Week 4 Rhyme: Rain, Rain Go Away

Fills in missing rhyming word: /5 correct

1. One, two, listen and____ (do)
2. Three, four, face the____(door)
3. Five, six, put your finger on your _____ (lips)
4. Seven, eight, line up _____(straight)
5. Nine, ten let the quiet walking_____ (begin)

Decides whether two words rhyme: /10 correct

rain, pain ___	he, the____	go, no ____	so, how____	away, stay ____
come, some____	day, may ____	so, she ____	play, may ____	rain, stain___

+ =correct - = incorrect

Appendix B.5

Student Name:_____Week: 5____Date:_____

Joins in Rhyme of the day: /5 days
Week 5 Rhyme: Betty Botter

Fills in missing rhyming word: /5 correct

1. Rain, rain, go away. Come again another ____ (day)
2. Little Johnny wants to ____ Rain, rain go away. (play)
3. Humpty Dumpty sat on a wall, humpty dumpty had a great_____ (fall)
4. All the kings' horses and all the king's men couldn't put humpty together _____(again)
5. Roses are red, violets are blue, sugar is sweet, and so are_____(you)

Decides whether two words rhyme: /10 correct

bought, taught__	some, let____	bit, hit ____	put, foot____	butter, cutter___
some, come____	bit, they ____	put, kit ____	bought, no ____	batter, have___

+ =correct - = incorrect

Appendix C

Skill 5: Rhyme Recognition

Teacher Administration Directions: *Tell me if these two words rhyme.* Write an x or + if the student responds correctly. If the student responds incorrectly, circle the incorrect word pair.

1. pat, hat ___	3. men, then __	5. fin, win ____	7. all, tall ___	9. go, no ___	
2. fast, in ___	4. tub, rub ____	6. pan, big ____	8. dog, zip ____	10. went, tent __	____ /10

Appendix D

Checkpoints for Wagner A.M.

Period: Winter 2016/2017

Area: Literacy

Objective: 15 - Demonstrates phonological awareness

Dimension: a. Notices and discriminates rhyme

Level	Not Yet	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9
Indicators	**Not Yet**		**Joins in rhyming songs and games**		**Fills in the missing rhyming word; generates rhyming words spontaneously**		**Decides whether two words rhyme**		**Generates a group of rhyming words when given a word**	
Examples (–)			• Hums along and joins in random words in rhyme • Sings with a group , "One, two, buckle my shoe..."		• Completes the rhyme in the phrase, "The fat cat sat on the ___ (mat)." • Chants spontaneously, "Me, fee, kee, tee, lee, bee."		• "Do *bear* and *chair* rhyme? What about *bear* and *goat*?" • Matches rhyming picture cards		• Says "*bat, sat, lat*" when asked, "What words rhyme with *cat*?"	
Colored Bands (–)										

Appendix E

Dear Parents/Guardians:

As part of my graduate work in Elementary Education at Eastern Illinois University, I am conducting an Action Research project in my classroom this semester. This research project is a requirement to fulfill my Master's degree coursework.

I will be conducting a study that will assess student's rhyming abilities. The study will be completed over a period of seven weeks. At the beginning of the seven-week-period, I will complete a pre-test with the children to gather baseline data. During the study, I will be using Michael Heggerty's Phonemic Awareness curriculum as an intervention during daily large groups. At the end of the study, I will complete a post-test to determine the student's growth.

The results gathered from this study will exclusively be used for the purpose of this project. All data collected will be confidential and the results that will be gathered and presented will not contain any specific identifying information such as names.

I have been granted approval by the school principal to conduct this research project in my classroom this Spring. If you have any questions or concerns regarding this project, please feel free to contact me at any time. My school phone number is 217-238-8800 and my e-mail is wagners@mattoon.k12.il.us .

Thank you for your time,

Ms. Sarah Wagner

Appendix F

January 26, 2017

Sarah Wagner

EC/ELE/MLE

Thank you for submitting the action research protocol titled, "Investigating the Effectiveness of Michael Heggerty on Preschool Rhyming**"** for review by the Eastern Illinois University Institutional Review Board (IRB). The protocol was reviewed on 1/25/2017 and has been certified that it meets the federal regulations exemption criteria for human subjects research. The protocol has been given the IRB number 17-016. You are approved to proceed with your project.

The classification of this protocol as exempt is valid only for the research activities and subjects described in the above named protocol. IRB policy requires that any proposed changes to this protocol must be reported to, and approved by, the IRB before being implemented. You are also required to inform the IRB immediately of any problems encountered that could adversely affect the health or welfare of the subjects in this study. Please contact me in the event of an emergency. All correspondence should be sent to:

Institutional Review Board
c/o Office of Research and Sponsored Programs
Telephone: 217-581-8576
Fax: 217-581-7181
Email: eiuirb@www.eiu.edu

Thank you for your cooperation, and the best of success with your research.

Cheryl Siddens, Compliance Coordinator
Office of Research and Sponsored Programs
Telephone: 581-8576
Email: casiddens@eiu.edu