

# Teacher Knowledge of Literacy Content:

## Evaluation of Delaware Reading First

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# **Executive Summary**

In 2003, to improve the reading achievement of its kindergarten to third grade children, Delaware launched a five year, federally funded initiative called Delaware Reading First (DERF). A central component of the multi-faceted project was teacher training and professional development in Scientifically Based Reading Research (SBRR) practices. Program resources were directed each year toward teacher improvement goals, beginning with mandatory summer training institutes prior to Years 1 and 2 for all kindergarten to third grade general education, special education, and instructional support teachers in schools receiving DERF funding. On-site literacy coaches worked full-time in each school, providing additional support and information to teachers as they translated SBRR content into practice.

As part of a five-year DERF program evaluation, this technical report examines teachers' changes in literacy-related content knowledge, their sense of self-efficacy as reading teachers, and their perceptions and beliefs about early literacy instruction.

Findings presented here are based on the analysis of two data sets. The first is a baseline set of 175 surveys from summer 2003 and the second includes 202 surveys of DERF k-3 grade teachers from fall 2007. In addition, a subset of 48 teachers' with both baseline (summer 2003) surveys and year 5 (2007) responses was used for pre-post analysis.

## **Results in Brief**

### ***Reading Knowledge Scores***

- Teachers participating in the program for four years showed significant improvement in their reading knowledge scores.
- Teachers with four years of program experience score significantly higher than those who are new to the program.
- Improvement in reading knowledge scores is not steady or predictable as teachers' number of years in the program increases.
- There is no relationship between the teachers' years of prior teaching experience at the start of the program and their change in knowledge after four years in DERF.

### ***Ratings of Self-Efficacy***

- After four years in the program, teachers' ratings of their preparedness for teaching reading and for teaching struggling readers increased significantly.
- Teachers' sense of self-efficacy positively correlates with their reading knowledge scores.

### ***Beliefs about Early Reading Instruction***

- Teacher beliefs regarding code-based principles of early reading instruction increased significantly.

## **Conclusions & Recommendations**

- The comparison of teachers who had just started the program with those with one or more years of experience in the program indicates that program participation is associated with higher reading knowledge scores.
- Despite these findings, the performance variability observed between each group and the absence of a consistent pattern of improvement over the years makes it difficult to conclude that more years of experience in the program results in better performance.
- In short, program participation is associated with change in performance, but the extent to which the length of participation is a factor in that change is unclear.
- Limitations to this study could include differences in teacher characteristics and/or differences in form and quality of professional development and coaching. Technical issues such as modes of survey administration could also affect the results observed among the teachers who were in the program for four years.
- Essential questions for future decision making:
  - What information is critical for teachers of emergent and/or struggling readers to know?
  - How might coaches tailor or scaffold on-site professional development to meet individual teacher needs?

- How much improvement is meaningful enough to be worth the cost of the program?
- Should program resources be spent on expanding the program to more teachers instead of on continued support for teachers already in the program?

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# Teacher Knowledge of Literacy Content

Delaware Reading First (DERF) is a federally funded, comprehensive initiative designed to improve the reading achievement of kindergarten to third grade children in some of Delaware's lowest performing schools. Its proposal identified intermediate program goals at teacher, school, and system levels and provided explicit program guidance to participating districts. One core mechanism of change in Delaware's model is teacher professional development directed at increasing teacher knowledge and use of Scientifically Based Reading Research (SBRR). "Delaware intends to improve significantly the knowledge and expertise of teachers who teach early reading (Delaware Department of Education, 2002)."

A substantial amount of targeted, coordinated program resources were directed toward teacher improvement goals each year (US Department of Education, 2002). Two state-wide training institutes, held during the summer prior to Years 1 and 2, provided teachers with opportunities to increase their knowledge of reading-related concepts at the phoneme, grapheme, syllable, and word level. Subsequent professional development centered on recognizing typical literacy development and common difficulties children face in that process.

Each school hired a full-time literacy coach to support teachers as they applied this knowledge to practice. Teachers and coaches worked together to identify student needs and plan for differentiated instruction. Coaches also lead professional reading groups; presented workshops tailored to the staff needs; modeled instructional techniques in the classrooms; and facilitated grade-level planning teams.

In addition, Delaware Department of Education coordinators and technical advisors ensured that teaching materials and professional readings were aligned to support and facilitate teachers' growing knowledge of language and literacy development. They brought in expert speakers throughout the school year for ongoing teacher professional development. They conducted site visits, and met with and advised coaches at monthly meetings. Finally, they advised and trained DERF principals and district administrators in effective leadership for classroom improvement.

To determine if interim teacher knowledge goals were accomplished, external program evaluators with the University of Delaware Education Research and Development Center (DERDC) developed two evaluation questions:

1. Does teachers' reading knowledge increase because of attendance at a Reading First Institute?

2. Do school-level professional development and opportunities to practice implementing effective reading strategies under the guidance of peer and expert mentors increase teachers' knowledge of reading related content?

Earlier studies addressed the first question and results are available in Delaware Reading First evaluation reports for Years 1 and 2 (Available online at [www.rdc.udel.edu](http://www.rdc.udel.edu).) This report focuses on the second. Teacher Knowledge Assessments (TKA) administered in Year 1 and again in Year 5, allowed evaluators to investigate Delaware Reading First teachers' knowledge from several perspectives:

- Do teachers show knowledge growth after four years in the program?
- What is the relationship between teachers' beliefs about their own efficacy and their levels of literacy knowledge?
- What other factors are related to teacher knowledge change?

Answers to these questions may help inform program developers to make decisions about its future and assist in their larger goal of guiding early literacy instruction throughout the state.

## **Methods**

### ***Participants***

Participants in this evaluation activity included teachers at twelve DERF focus schools whose primary teaching assignment was in a K-3 classroom. Group sizes for the survey administrations ranged from 175 to 202, reflecting the changing number of participating schools (12 in year 1 to 10 in year 5) and changes in school grade level configurations. During the program, two schools merged into one, and five school programs expanded from grades K-1 to K-3. Teachers who remained in the program and continued to teach in these grades were surveyed four times during this period, however only two administrations were analyzed for this report— the first and the last.



Those two survey groups differed very little in teacher characteristics, and 49% of Year 5 respondents reported they had also been in the first year's group. The two groups can be characterized as mostly female, Anglo, with 2-20 years of teaching experience. However, the percentage of teachers with 5-10 years of teaching experience increased from 17% in fall 2003 to 38% in fall 2007. Both years more than 90% were certified in elementary education and about one-third were certified to teach special education. Fewer than 5% were certified to teach ESL students. Regarding their education, all teachers had either a bachelors or masters degree with a fairly even split between the two. Finally, there was a large increase in teachers with more than six college courses in reading, from 22% in 2003 to 48% in 2007. For a full account of teacher characteristics for both survey administrations, see Appendix A, Tables A1 and A2.

### ***Instrumentation***

There were two instruments used to examine teacher knowledge, beliefs, and perceptions about teaching reading — the Teacher Knowledge Assessment (TKA) and the Teachers Perceptions of Early Reading and Spelling (TPERS) (Bos, Mather, Narr, & Babur, 1999). The two instruments were combined and administered as a single survey with the addition of several demographic questions and five questions which asked teachers about their sense of self- efficacy as reading teachers. The complete survey can be seen in Appendix B.

### **Caution**

TKA items generally focus on two areas: the structure of language and text and the reading process itself. Because the authors did not determine validity or reliability for this version of the instrument and no criterion scores were established for DERF participants, we caution the reader to consider it as a measure of change within this study only. Comparison to other studies is not appropriate and there is no other meaning attached to any scores beyond the trends reported. Appendix C ranks items in quartiles, by percent of teachers who responded correctly, from the group of teachers with four years DERF experience in fall 2007.

## ***Procedures***

The first administration of the teacher knowledge survey occurred prior to participants receiving any professional development related to DERF (summer 2003); the second was at the end of the first year of professional development activities (spring 2004); and the third followed the second summer training institute (fall 2004). For these three data collections, an evaluator from DERDC visited each school or training site and supervised the group administration of a paper and pencil version of the assessment. The final administration was conducted online at the beginning of the program's last year (fall 2007). School level literacy coaches read standardized directions to the teachers and directed them to the survey website. The faculty completed the surveys in a central library or computer lab in nine schools. Due to internet access problems, teachers from one school completed their surveys individually from classroom or home computers.

## ***Data analysis***

This report utilized data from the first and last survey administrations and employed both descriptive and inferential statistics to answer several questions related to the guiding evaluation question: Does school-level professional development and opportunities to practice implementing effective reading strategies under the guidance of peer and expert mentors increase teachers' knowledge of reading related content?

Descriptive analyses typically took the form of average survey scores and are often presented in chart format. In some cases, tests of significant differences were conducted to determine whether test performance varied across groups or over time. Correlation analyses were also performed to determine the relationship between teacher knowledge and other teacher characteristics. The specific statistical analyses are described in more detail as they relate to the findings below.

## Results

### *Reading Knowledge Scores*

*Finding #1—Teachers participating in the program for four years showed significant improvement in their reading knowledge scores.*

Of the 202 DERF teachers surveyed in 2007, 84 reported that they participated in the first four years of the program. Of these, 48 teachers' fall 2007 surveys were able to be matched with their baseline surveys (summer 2003). We examined this group for changes in average reading knowledge following participation in the Reading First program for four years. The average total knowledge scores for summer 2003 and fall 2007 were 13.8 and 17.7, respectively, out of a possible 32 points. A paired sample t-test indicated that the teachers showed significant improvement in their reading knowledge scores from baseline to fall 2007 ( $t=-8.32$ ,  $df=48$ ,  $p<.001$ ).

*Finding #2—Significant differences in reading knowledge scores can be seen when comparing teachers with four years of program experience to those who are new to the program.*

Table 1 details information about teacher reading content knowledge scores for the fall 2007 survey based on the number of years teachers participated in the Reading First program. (Newly hired teachers have 0 years.) The average scores for each group, out of a possible 32 points, range from 13.7 to 17.6 and individual scores across all groups range from 6 to 28.

Table 1. Average TKA scores by number of years in Reading First (fall 2007)

Years in RF (0=new)	Teacher #	Average Score (out of 32)	Standard Deviation	Range of Scores
0	25	13.7	4.2	6-23
1	22	15.7	3.1	10-24
2	17	16.5	5.1	8-26
3	24	13.7	3.1	7-19
4	84	17.6	4.6	6-28

An Analysis of Variance (ANOVA) was performed on the fall 2007 data set to determine whether there were significant differences in reading knowledge associated with the number of years teachers participated in DERF. Only 172 surveys were included in this analysis; the number of years of program participation was missing for some teachers. The results indicated that teachers with zero or three years of experience in RF have significantly lower total knowledge scores than participants who have been involved in RF for four years with a main effect of ( $F=6.62$ ,  $df=4,167$ ,  $sig.<.000$ ) and post-hoc significances of  $p = .002$  and  $p < .000$ , respectively. There were no other significant differences among the five groups.

*Finding #3—Improvement in reading knowledge scores is not steady as program experience increases.*

Box-plots in Figure 1 display differences in the score distribution by years of experience in the 2007 administration. The heavy horizontal line in the middle of each box is the median score (the score dividing the distribution into two equal parts), the box represents the middle 50% of scores, and the ends of the lines extending out from the box show the range of scores, excluding extreme scores which are shown as small circles beyond the ends of the lines. The figure clearly illustrates the differences regarding their score ranges and how the scores cluster. For example, teachers with four years of experience have the largest score range and the largest span of scores in the middle 50%. There is no clear pattern of growth.

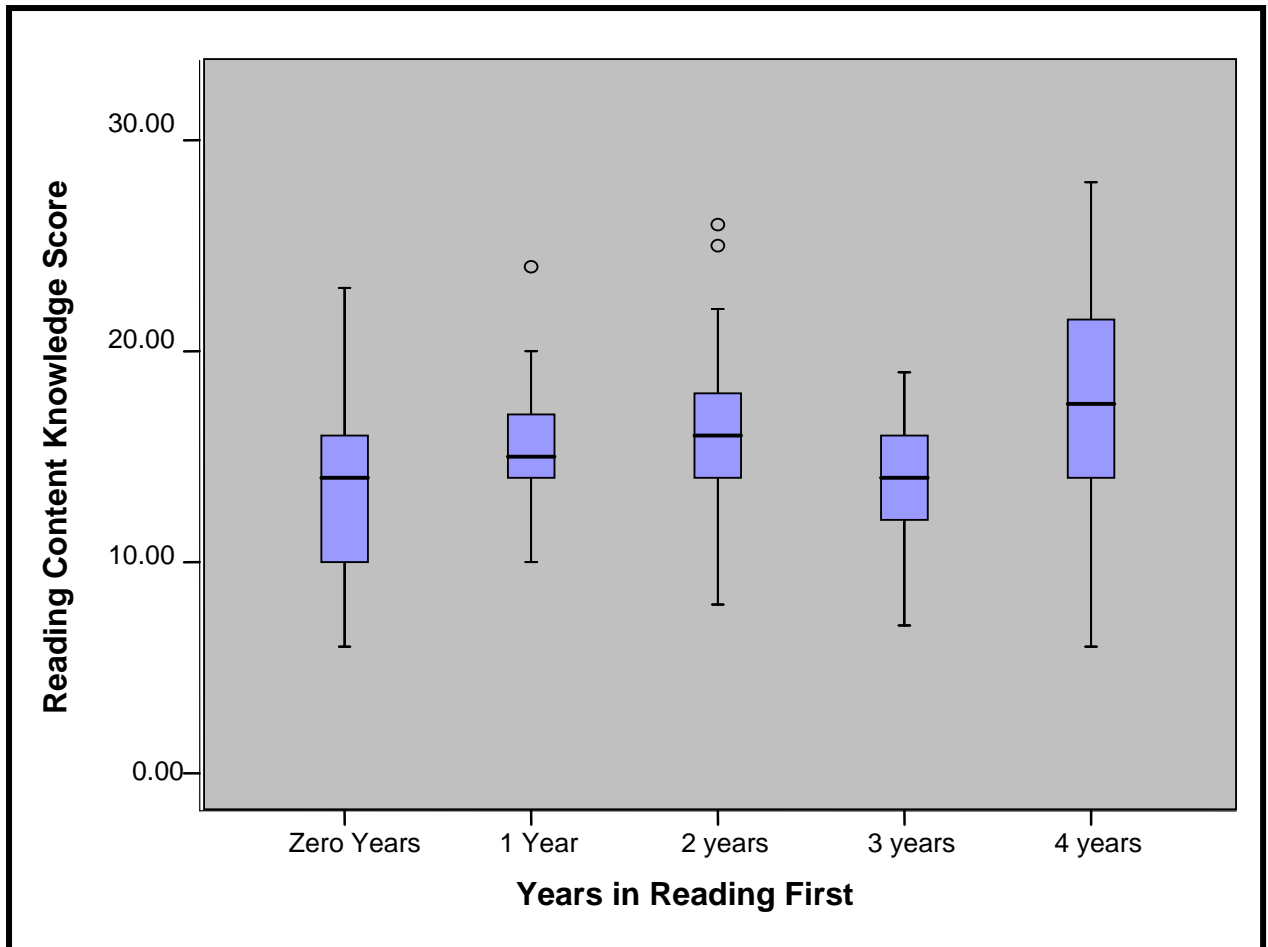


Figure 1. Distribution of TKA scores by years in Reading First (fall 2007)

*Finding #4 – There is no relationship between teachers’ number of years teaching experience at the beginning of the program, and their change in knowledge after four years in DERF.*

We analyzed a subset of teacher surveys that were matched from baseline to fall 2007 to examine change in performance relative to their years of experience as teachers. Difference scores were calculated to show how much each teacher’s knowledge score had changed from baseline to fall 2007 (TKA fall-07 – TKA baseline). Teachers who have been in the program for four years show changes in their knowledge of teaching reading from -3 to 12 points, with an average change of 4.0 points (mode and median) and a standard deviation of 3.3 points (see Figure 2).

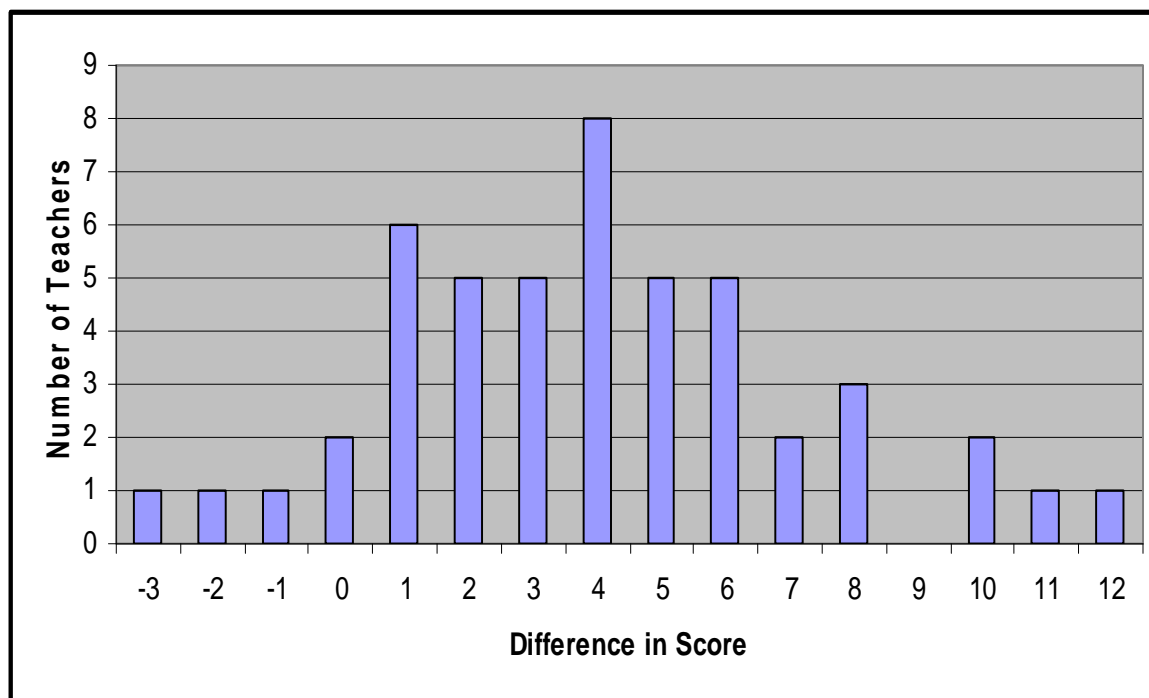


Figure 2. Change in TKA performance from baseline to fall 2007

A correlation analysis showed no significant relationship between the number of years of teaching experience when entering the program, and teachers' test performance change ( $r=-.054$ ,  $p=.71$ ).

### ***Ratings of Self-Efficacy***

*Finding #5– Teachers participating in DERF for four years reported significant improvement in their feelings of self-efficacy for teaching reading and for teaching struggling readers.*

A subset of teachers with survey data from the first administration (summer 2003) and the last administration (fall 2007) was created to determine whether their self-efficacy for teaching reading in general, as well as for teaching struggling readers, had changed during their participation in the Reading First program. Average ratings for baseline (summer 2003) and fall 2007 were 2.7 and 3.4 for general reading, and 2.4 and 3.2 for teaching struggling readers, where 1 = not at all prepared and 4 = well prepared (see Figure 3). Two paired sample t-tests were performed to determine whether there were significant differences in teacher self-efficacy over time. The

results indicate that the teachers reported feeling significantly more prepared to teach reading in general ( $t=-5.75$ ,  $df=47$ ,  $p<.001$ ), as well as struggling readers ( $t=-7.35$ ,  $df=48$ ,  $p<.000$ ), after four years in the program.

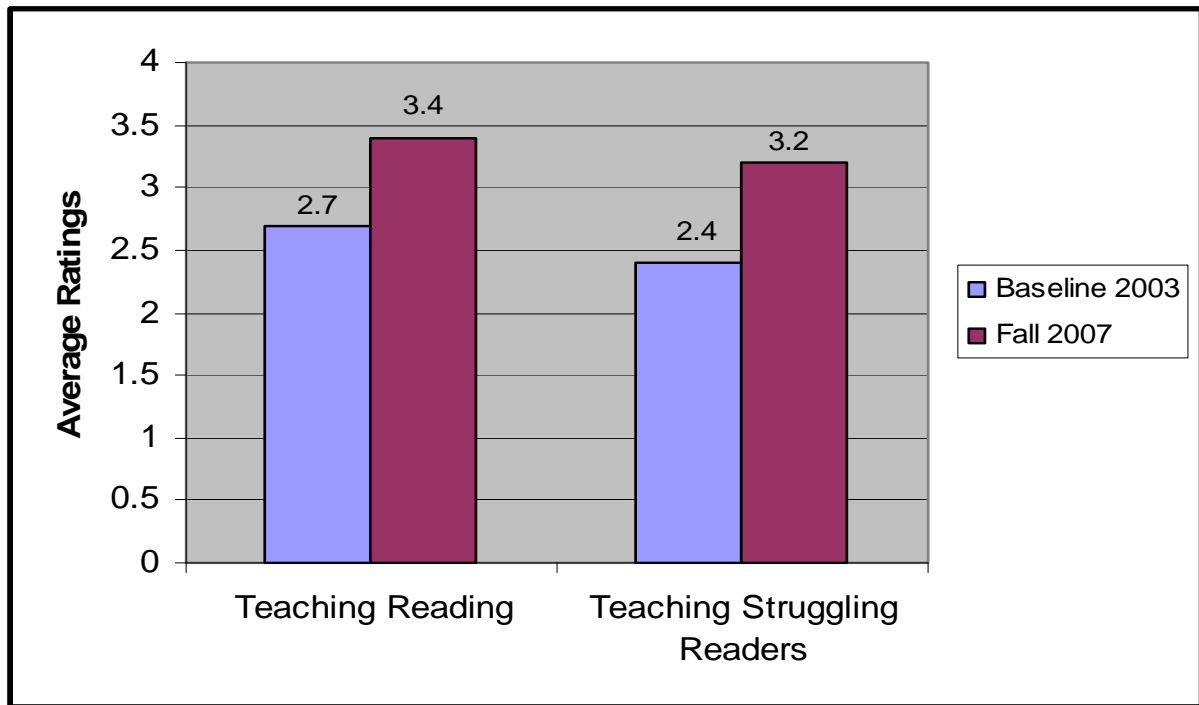


Figure 3. DERF teachers' self-efficacy for teaching reading (1= not at all prepared; 4= well prepared)

*Finding #6—Teachers' sense of self-efficacy correlates significantly with their reading knowledge scores.*

The fall 2007 data set was used to determine whether there were significant differences in reading knowledge based on teachers' self-reported ability to teach reading (see Figure 4). An ANOVA was performed and results indicated that there were differences among the groups ( $F=15.5$ ,  $df=2,191$ ,  $p<.001$ ). Teachers who believe they are adequately or well prepared to teach reading have significantly higher knowledge scores compared with teachers who believe they are somewhat prepared ( $p=.05$ ), and teachers who report being well prepared also have scores significantly higher than teachers who feel adequately prepared ( $p=.05$ ). Additional support for the relationship between self-efficacy and knowledge is provided by the results of a correlation analysis between the two measures. The correlation analysis indicated

that there is a significant positive relationship between self-efficacy and reading content knowledge, though the relationship is considered weak ( $r=.37$ ,  $p<.001$ ).

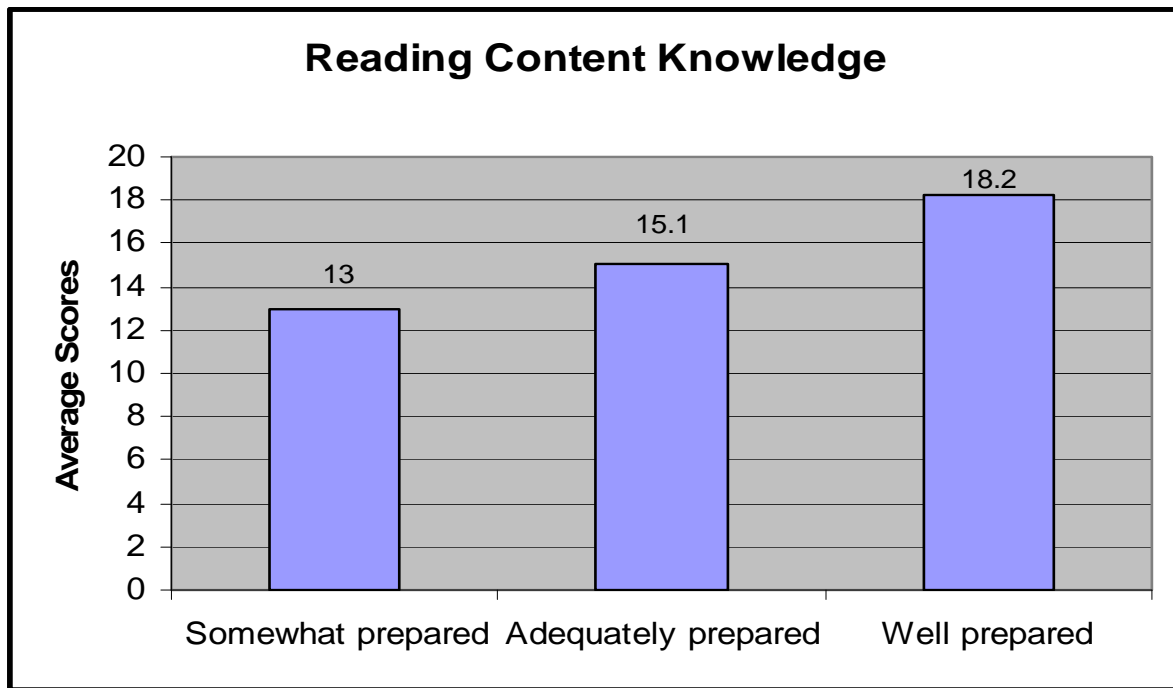


Figure 4. TKA scores by levels of general reading teaching self-efficacy (fall 2007)

### Beliefs about Early Reading Instruction

*Finding #7– Significant changes occurred regarding teacher beliefs in code-based principles of early reading instruction.*

The perceptions section of the teacher knowledge survey contains 15 items asking teachers whether their beliefs about teaching are aligned with meaning-based, code-based, or neutral teaching practices. Figure 5 shows the average ratings for each of the three scales for baseline (summer 2003) and fall 2007 survey administration. Both cross-sections show teachers' perceptions and beliefs are more closely aligned with code-based and neutral practices than they are with meaning-based practices. Teachers appear to "strongly agree" with neutral and code-based practices, but on average, only to "slightly disagree" with meaning-based practices.

An ANOVA was performed to determine whether there were any significant changes in teacher perceptions across time. The results showed no significant differences for



the meaning-based or neutral subscales. However, there was a significant difference on the code-based scale ( $F=4.61$ ,  $df=3,663$ ,  $p=.003$ ). The average Year 1 ratings were significantly lower than those for fall 2007 ( $p=.003$ ) as indicated by the Games-Howell post-hoc test. The latter administration more strongly agreed with code-based principles of reading instruction compared with the baseline group.

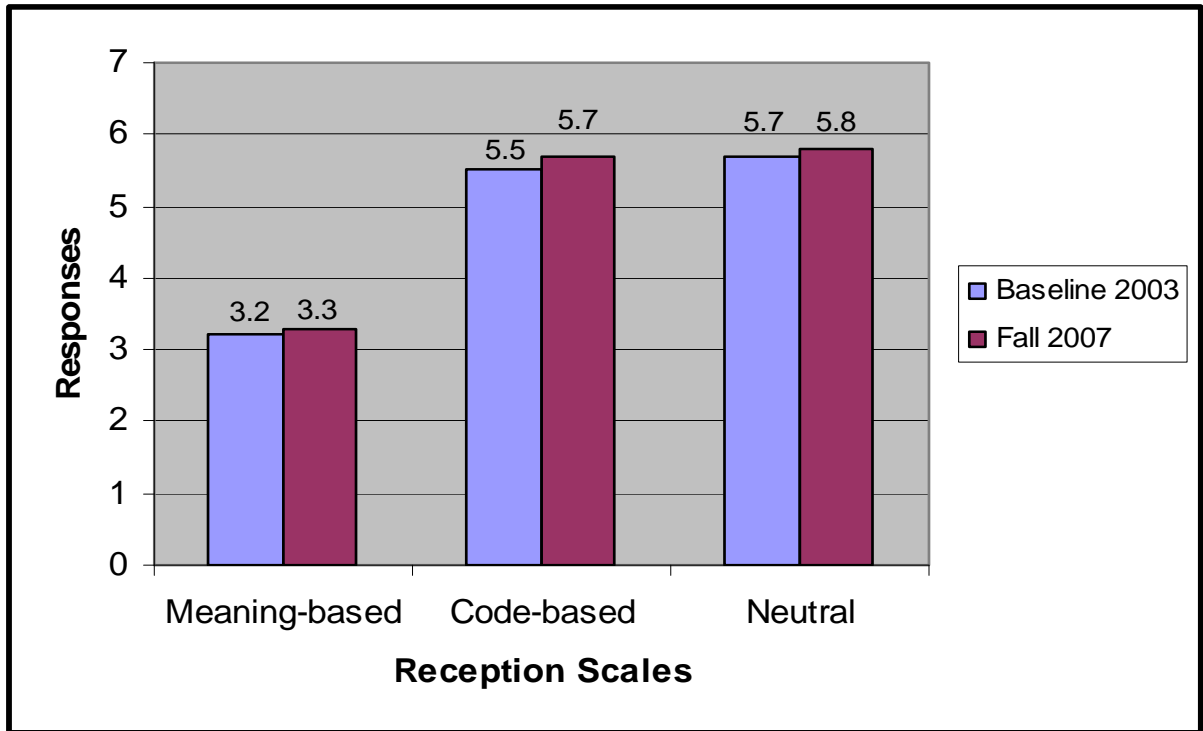


Figure 5. DERF teachers' perceptions and beliefs about reading (1= strongly disagree; 6= strongly agree)

## Discussion

Teachers who participated in this program for four years showed significant increase in their knowledge of the structure of English language at the word and sound levels; however, we do not know if this growth is *large enough* to strategically support emerging readers. If, as research indicates, teacher knowledge matters in early literacy education, what exactly is most important for teachers to *know*?

For Delaware's Reading First program, variations in delivery of this specific content to teachers hired after the summer 2003 and 2004 DERF Literacy Institutes may account for some discrepancies between performances of teacher groups in 2007. However, this difference was not straightforward; in 2007, teachers with zero or 3 years of DERF experience scored significantly lower than those with 4.

Other context-related factors should be considered. What role does coaching play in personalizing on-site professional development for teachers with different levels of content knowledge? What part does school and/or school district expectations play? It may be worth noting that DERF initially proposed to impact systemic expectations with the establishment of a committee to coordinate the inclusion of SBRR content and practices into Delaware's preservice teacher training programs. While the committee was never formed, there is some indication that SBRR content has gained more prominence within the state's elementary teacher education syllabi and course descriptions (Grusenmeyer, L.H., Augustine, A. J., Hampel, R., Scollon, K. Shepperson, B., Coffey, D., Runk, M., Sweetman, H. & Uribe-Zarain, X., 2006).

Finally, more subtle questions arise. While there was no difference in growth related to prior experience in teaching, we found that teachers who reported they did not feel well-prepared tended to score lower on the knowledge assessment. At some level, do teachers recognize and acknowledge their need for more or better information? If so, this seems to fit with beliefs that motivation to learn can be supported when teachers hold stronger doubts about their ability to teach well. How can this program best address these teachers' valid concerns?

## Recommendations

When schools or school districts commit to improving teacher knowledge, there are professional development practices which research has shown to be effective— use of assessment data to focus and “calibrate” individual learning; providing opportunities for teachers to observe successful practice; and differentiated or scaffolded training to fit individual teacher needs. These practices are similar in that they value and build upon both teachers’ abilities and their professionalism. While the use of onsite coaching can facilitate delivery of these collaborative forms of professional development, it does not ensure it.

Because federal Reading First funds will be greatly reduced in FY2009, some issues deserve further consideration from Delaware’s literacy program planners and educational policy makers:

- Is DERF’s stated goal— to improve K-3 teachers’ knowledge of SBRR content— an appropriate goal for all of Delaware’s early literacy teachers?
- If it is, what information is most helpful to teachers working to improve student reading achievement?
- How much improvement in teacher knowledge is meaningful enough to be worth the cost of the program?
- Should program resources be spent on expanding the program to more teachers instead of on continued support for teachers already in the program?
- What are some alternative methods of improving literacy content knowledge for teachers in schools where coaching is not available?

## References

- Bos, C. S., Mather, N., Narr, R.F., Babur, N. (1999). Interactive, collaborative professional development in early literacy instruction: Supporting the balancing act. *Learning Disabilities Research and Practice, 14* (4), 227-238
- Delaware Department of Education. (2002). *Delaware's Reading First Grant Application*, p. 4. Available online from [www.doe.k12.de.us/reading/rfof/RF%20Grant/READING%20FIRST%20APPLICATION.pdf](http://www.doe.k12.de.us/reading/rfof/RF%20Grant/READING%20FIRST%20APPLICATION.pdf)
- Grusenmeyer, L.H., Augustine, A. J., Hampel, R., Scollon, K. Shepperson, B., Coffey, D., Runk, M., Sweetman, H. & Uribe-Zarain, X. (2006). *Evaluation of Delaware's Reading First Initiative Year III Report (Revised)*. Newark, DE: University of Delaware. Available online from [www.rdc.udel.edu/reports/t061102.pdf](http://www.rdc.udel.edu/reports/t061102.pdf)
- US Department of Education (2002). *Guidance for the Reading First Program*. Available online from [www.ed.gov/programs/readingfirst/guidance.pdf](http://www.ed.gov/programs/readingfirst/guidance.pdf)

## Appendix A

### K- 3 teacher survey responses: Demographic characteristics by administration date

		Summer 03	Fall 07
<b>Survey N</b>		175	202
<b>Age</b>	24 or under	8.6	6.0
	25-30	27.4	33.2
	31-40	21.1	27.1
	40-50	24.0	16.1
	51 or older	18.9	17.6
<b>Gender</b>	Female	92.6	92.5
	Male	6.9	7.5
<b>Ethnicity</b>	Anglo	76.0	68.9
	Hispanic	.6	2.6
	African-American	14.9	15.3
	Native American	1.1	1.0
	Multiple Ethnicity	NA	1.0
	Other	7.4	11.2

Table A1. Demographic characteristics of DERF participants completing the TKA

		Summer 03	Fall 07
<b>Survey N</b>		175	202
<b>Years of Experience</b>	< 2 years	12.0	7.5
	2-5 years	28.6	23.6
	5-10 years	17.1	38.2
	10-20 years	17.1	15.1
	> 20 years	25.1	15.6
<b>Certificate</b>	EE	93.1	96.5
	Sp. Ed.	33.7	30.2
	ESL	2.9	4.5
<b>Principle Teaching Assignment</b>	Kindergarten	49.7	Not available
	1 <sup>st</sup> grade	27.4	
	2 <sup>nd</sup> grade	9.1	
	3 <sup>rd</sup> grade	13.7	
<b>Degree</b>	AA		
	BA / BS	54.9	50.0
	MA / M. Ed	45.1	50.0
	Ed.D/ Ph. D		
<b>College Courses</b>	One (1)	5.2	.5
	2-3	32.6	20.5
	4-6	40.1	31.0
	7-10	13.4	28.0
	>10	8.7	20.0

Table A2. Teaching characteristics of DERF participants completing the TKA

## Appendix B

### Survey Teacher Assessment of Early Reading and Spelling<sup>1</sup>

#### *Part 1: Teacher Perceptions about Early Reading and Spelling*

*Directions:* As a teacher, think about what you believe about early reading and spelling instruction. Select the response that **best** indicates to what degree you agree with each item and fill in the appropriate circle on the answer/bubble sheet.

*Scale for questions 1-15:*

*Strongly Agree → Agree → Mildly Agree → Mildly Disagree → Disagree → Strongly Disagree*

1. K-2 teachers should know how to assess and teach phonological awareness (i.e., knowing that spoken language can be broken down into smaller units, words, syllables, phonemes).
2. Literacy experiences in the home contribute to early reading success.
3. Controlling text through consistent spelling patterns (The fat cat sat on a hat.) is an example of an effective method for children who struggle to learn to identify words.
4. Poor phonemic awareness (awareness of the individual sounds in words) contributes to early reading failure.
5. Materials for struggling readers should be written in natural language with little regard for the difficulty of vocabulary.
6. Time spent reading contributes directly to reading improvement.
7. Learning to use context clues (syntax and semantics) is more important than learning to use grapho-phonetic cues (letters and sounds) when learning to read.
8. If a beginning reader reads “house” for the written word “home,” the response should not be corrected.
9. Children should read different types of text for different instructional purposes.

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<sup>1</sup> 2007 version contained additional demographic item # 12

10. K-2 teachers should know how to teach phonics (letter/sound correspondences).
11. Picture cues can help children identify words in the early stages of reading.
12. It is important for teachers to demonstrate to struggling readers how to segment words into phonemes when reading and spelling.
13. Adult-child shared book reading enhances language and literacy growth.
14. Phonic instruction is beneficial for children who are struggling to learn to read.
15. All children can learn to read using literature-based, authentic texts.

## **Part 2: Teacher Knowledge of Language Structure**

*Directions: Select the correct answer and fill in the appropriate circle on the answer sheet.*

16. Which word contains a consonant digraph?  
 a. flop                    **b. bang**                    c. sink                    d. box                    e. none  
 of the above   f. I don't know
17. How many morphemes are in the word "unhappiness"?  
 a. Two                    **b. three**                    c. four                    d. one  
 f. I don't know
18. A phoneme refers to:  
 a. a single letter                    **b. a single speech sound**                    c. a single unit of  
 meaning   d. a grapheme
19. A pronounceable group of letters containing a vowel sound is a:  
 a. Phoneme                    b. grapheme                    **c. syllable**                    d. morpheme
20. A combination of two or three consonants pronounced so that each letter keeps its own identity is called a:  
 a. Silent consonant                    b. consonant digraph                    c. diphthong  
**d. consonant blend**                    e. I don't know
21. An example of a voiced and unvoiced consonant pair would be:  
 a. /t/ - /f/                    **b. /p/ - /b/**                    c. /g/ - /j/                    d. /b/ - /d/  
 e. /c/ - /s/



22. Two combined letters that represent one single speech sound are a:  
a. Schwa            b. consonant blend    c. phonetic    **d. digraph**  
e. diphthong
23. How many speech sounds are in the word “think”?  
a. Two    b. three    **c. four**    d. five    e. I don’t know
24. If *tife* were a word, the letter “i” would probably sound like the “i” in  
a. If            b. beautiful            **c. find**            d. ceiling            e. sing
25. How many speech sounds are in the word “box”?  
a. One            b. two            c. three            **d. four**
26. How many speech sounds are in the word “grass”?  
a. two            b. three            **c. four**            d. five
27. How many speech sounds are in the word “eight”?  
a. **Two**            b. three            c. four            d. five
28. What is the **second sound** in the word “queen”?  
a. U            b. Q            c. K            d. **W**
29. Mark the statement that is false:  
a. Phonological awareness is a precursor to phonics.  
b. Phonological awareness is an oral language SKILL.  
c. **Phonological awareness is a method of reading instruction that begins with individual letters and sounds.**  
d. Many children acquire phonological awareness from language activities and reading.
30. A reading method that focuses on teaching the application of speech sounds to letters is called:  
a. **Phonics**            b. language experience            c. orthography  
d. morphology            e. phonological awareness    f. I don’t know
31. A soft c is in the word :  
a. Chicago            b. cat            c. chair            d. **city**  
e. none of the above

32. Which word contains the same sound as the last sound in the word “rouge”?
- Jam
  - cage
  - c. treasure**
  - aggressive
  - none of the above
33. According to the rules of syllable division, which one of these words is incorrectly divided?
- Un bro ken
  - un der stand
  - c. un i form**
  - un til
  - I don’t know
34. Identify the pair of words that begins with the same sound.
- joke – goat
  - b. chef – shoe**
  - quiet – giant
  - chip – chemist
35. Which of the following statements is false?
- Coarticulation means phonemes are being produced together in words.
  - b. Coarticulation leads children to develop correct spelling.**
  - Coarticulation can make phonemes difficult to perceive or identify
  - Coarticulation causes phonemes to vary in pronunciation.
  - I don’t know
36. Research suggests that difficulties with rapid automatic naming are predictive of problems with:
- Reading comprehension
  - answering wh-questions
  - phonemic fluency
  - reading fluency
  - e. all of the above**
  - I don’t know
37. Which is the best numerical relationship among letters, phonemes, and graphemes?
- 26:26:26
  - b. 26:44:170**
  - 26:44:26
  - 55:52:52
  - 52:26:104
  - I don’t know
38. This item involves saying a word and then reversing the order of the sounds. For example, the word “back” would be “cab.”
- If you say the word, and then reverse the order of the sounds, **ice** would be:
- easy
  - sea
  - size
  - d. sigh**
39. If you say the word, and then reverse the order of the sounds, **enough** would be:
- Fun
  - phone
  - c. funny**
  - one

40. Which of the following words does NOT contain an open syllable:  
 a. Open                      b. table                      c. fever                      **d. market**                      e. she  
 f. I don't know
41. The part of the syllable that precedes the vowel is known as:  
 a. Grapheme                      **b. onset**                      c. consonant                      d. rime  
 e. morpheme
42. What phonological confusion underlies these spelling errors? Gyp – drip, train – chain  
 a. Nasalization                      **b. affrication**                      c. aspiration                      d. vowel reduction  
 e. voicing
43. A diphthong is:  
 a. A vowel sound comprised of two parts that glide together  
 b. **A vowel sound spelled with two vowel letters**  
 c. A set of two or three consonant letters pronounced together  
 d. Two consonant letters that represent one consonant sound  
 e. A spelling pattern with a silent letter  
 f. I don't know
44. All of the following nonsense words have silent letters, except:  
 a. Bamb    b. wrin                      c. shipe                      d. knam                      **e. phop**  
 f. I don't know
45. Which of the following demonstrates phoneme segmentation?  
 a. Say this word slowly. Listen for all the sounds. Caaaaaaassst  
 b. Say "catnip" without "cat"  
 c. Let's break this word down, stem -- /st-em/  
 d. **Let's say the sounds in place: /p – l – a – s/**  
 e. Put these sounds together and tell me the word: /f – i – sh/ -- fish  
 f. I don't know
46. Which of these words ends with a phoneme that never begins an English word?  
 a. **Stung**                      b. bathe                      c. wrench                      d. charge                      e. Porsche  
 f. I don't know
47. Which of the following words contains the short "a" sound?  
 a. Ball                      b. talk                      **c. has**                      d. above                      e. all of the above  
 f. I don't know

### ***Part 3: Background Information***

1. Gender
  - a. Female
  - b. Male
2. Age
  - a. 24 or under
  - b. 25-30
  - c. 31-40
  - d. 41-50
  - e. 51 or older
3. Ethnicity
  - a. Anglo
  - b. Hispanic
  - c. African American
  - d. Asian/Pacific Islander
  - e. Native American
  - f. Other
4. Do you speak more than one language proficiently?
  - a. yes
  - b. no
5. Are you working toward an Elementary Education teaching certificate?
  - a. yes
  - b. no
6. Are you working toward a Special Education teaching certificate/endorsement?
  - a. yes
  - b. no
7. Are you working toward a Bilingual Education/ESL teaching certificate/endorsement?
  - a. yes
  - b. no
8. Highest degree earned:
  - a. High school
  - b. AA
  - c. BA/BS
  - d. MA/Med
11. Years of teaching experience:
  - a. less than 2 years
  - b. 2 to 5 years
  - c. 5 to 10 years
  - d. 10 to 20 years
  - e. more than 20 years

12. How many years have you taught K to 3rd grade in the Delaware Reading First Program (including Special education and ELL)?

a. 0 (I am beginning my first year)      b. 1      c. 2      d. 3 e. 4

13. Number of college-level courses have you taken in teaching reading and language arts

a. 1      b. 2-3      c. 4-6      d. 7 - 10      e. > 10

14. How well do you think you are prepared to teach **children** how to read?

a. not prepared    b. somewhat prepared    c. adequately prepared    d. well prepared

15. How well do you think you are prepared to teach **struggling readers** how to read?

a. not prepared    b. somewhat prepared    c. adequately prepared    d. well prepared

16. How well do you think you are prepared to use **phonological awareness and phonics** in teaching early reading?

a. not prepared    b. somewhat prepared    c. adequately prepared    d. well prepared

17. How well do you think you are prepared to use **guided reading/reading recovery** in teaching early reading?

a. not prepared    b. somewhat prepared    c. adequately prepared    d. well prepared

18. How well do you think you are prepared to use **whole language** in teaching early reading?

a. not prepared    b. somewhat prepared    c. adequately prepared    d. well prepared

## Appendix C

### Teachers with four years program experience: Percent correct responses fall 2007

Quartile	Teacher's Knowledge Items/ <b>Correct response is bolded</b>	Correct (%)
75%-100%	31. A soft <u>c</u> is in the word: 1) Chicago 2) cat 3) chair 4) <b>city (phonetic application)</b> 5) None of the above	98.8
	34. Identify the pair of words that begins with the same sound. 1) joke – goat 2) <b>chef - shoe (phonemic awareness)</b> 3) quiet – giant 4) chip – chemist 5) I don't know	97.6
	27. How many speech sounds are in the word "eight"? 1) <b>two (phoneme counting)</b> 2) three 3) four 4) five 5) I don't know	94
	18. A phoneme refers to a: 1) single letter 2) <b>single speech sound (phoneme)</b> 3) single unit of meaning 4) grapheme 5) I don't know	93.9
	24. If <i>tife</i> were a word, the letter "i" would probably sound like the "i" in: 1) if 2) beautiful 3) <b>find (phonetic application)</b> 4) ceiling 5) sing 6) I don't know	91.7
	39. If you say the word, and then reverse the order of the sounds, <b>enough</b> would be: 1) fun 2) phone 3) <b>Funny (sound reversal)</b> 4) one 5) I don't know	82.1
	38. If you say the word, and then reverse the order of the sounds, <b>ice</b> would be: 1) easy 2) sea 3) size 4) <b>sigh (phonemic awareness, sound reversal)</b> 5) I don't know	81
	47. Which of the following words contains the short <i>a</i> sound? 1) ball 2) talk 3) <b>has</b> 4) above 5) all of the above 6) I don't know	78.3
	46. Which of these words ends with a phoneme that never begins an English word? 1) <b>stung</b> 2) bathe 3) wrench 4) charge 5) Porsche 6) I don't know	78.3

50%- 74%	41. The part of the syllable that precedes the vowel is known as: 1) grapheme 2) <b>onset (syllable)</b> 3) consonant 4) rime 5) morpheme 6) I don't know	71.4
	26. How many speech sounds are in the word <i>grass</i> ? 1) two 2) three 3) <b>four (phoneme counting)</b> 4) five 5) I don't know	67.9
	20. A combination of two or three consonants pronounced so that each letter keeps its own identity is called a: 1) silent consonant 2) consonant digraph 3) diphthong 4) <b>consonant blend (consonant blend)</b> 5) I don't know	65.5
	45. Which of the following demonstrates phoneme segmentation? 1) Say this word slowly. Listen for all the sounds. caaaaaassssst 2) Say 'catnip' without 'cat'." 3) Let's break this word down. stem -- / st -em / 4) <b>Let's say the sounds in place: / p - l - a - s /</b> 5) Put these sounds together and tell me the word: / f - i - sh / -- fish 6) I don't know	61.7
	30. A reading method that focuses on teaching the application of speech sounds to letters is called: 1) <b>phonics (definition)</b> 2) language experience 3) orthography 4) morphology 5) phonological awareness 6) I don't know	58.3
	22. Two combined letters that represent one single speech sound are a: 1) schwa 2) consonant blend 3) phonetic 4) <b>digraph (diagraph)</b> 5) diphthong 6) I don't know	56.6
	40. Which of the following words does NOT contain an open syllable? 1) open 2) table 3) fever 4) <b>market (open syllable)</b> 5) she 6) I don't know	53
	33. According to the rules of syllable division, which one of these words is incorrectly divided? 1) un bro ken 2) un der stand 3) <b>un i form (phonemic awareness)</b> 4) un til 5) I don't know	51.2
	23. How many speech sounds are in the word <i>think</i> ? 1) two 2) three 3) <b>four (phoneme counting)</b> 4) five 5) I don't know	51.2

	19. A pronounceable group of letters containing a vowel sound is a: 1) phoneme 2) grapheme 3) <b>syllable (syllable)</b> 4) morpheme 5) I don't know	51.2
	44. All of the following nonsense words have silent letters, except: 1) bamb 2) wrin 3) shipe 4) knam 5) <b>phop (silent letters)</b> 6) I don't know	50.6
25% - 49%	37. Which is the best numerical relationship among letters, phonemes, and graphemes? 1) 26:26:26 2) <b>26:44:170 (letters, phonemes, graphemes, relationship)</b> 3) 26:44:26 4) 52:52:52 5) 52:26:104 6) I don't know	48.8
	16. Which word contains a consonant digraph? 1) flop 2) <b>bang (digraph)</b> 3) sink 4) box 5) none of the above 6) I don't know	36.3
	29. Mark the statement that is <i>false</i> . 1) Phonological awareness is a precursor to phonics. 2) Phonological awareness is an oral language skill 3) <b>Phonological awareness is a method of reading instruction that begins with individual letters and sounds. (definition)</b> 4) Many children acquire phonological awareness from language activities and reading. 5) I don't know.	34.9
	32. Which word contains the same sound as the last sound in the word <i>rouge</i> ? 1) jam 2) cage 3) <b>treasure (phonemic awareness)</b> 4) aggressive 5) None of the above 6) I don't know	34.1
	42. What phonological confusion underlies these spelling errors? gyp – drip, train – chain 1) nasalization 2) <b>affrication</b> 3) aspiration 4) vowel reduction 5) voicing 6) I don't know	33.3
	36. Research suggests that difficulties with rapid automatic naming are predictive of problems with: 1) reading comprehension 2) answering wh- questions 3) phonemic awareness 4) reading fluency 5) <b>all of the above</b> 6) I don't know	32.9



	25. How many speech sounds are in the word <i>box</i> ? 1) one 2) two 3) three 4) <b>four (phoneme counting, speech sound)</b> 5) I don't know	28.9
	17. How many morphemes are in the word <i>unhappiness</i> ? 1) two 2) <b>three (morpheme)</b> 3) four 4) one 5) I don't know	26.5
	21. An example of a voiced and unvoiced consonant pair would be: 1) /t/ - /f/ 2) <b>/p/ - /b/ (voiced/unvoiced consonant pairs)</b> 3) /g/ - /j/ 4) /b/ - /d/ 5) /c/ - /s/ 6) I don't know	26.2
0 – 24%	43. A diphthong is: 1) <b>a vowel sound comprised of two parts that glide together (definition)</b> 2) a vowel sound spelled with two vowel letters 3) a set of two or three consonant letters pronounced together 4) two consonant letters that represent one consonant sound 5) a spelling pattern with a silent letter 6) I don't know	23.5
	35. Which of the following statements is <i>false</i> ? 1) Coarticulation means phonemes are being produced together in words 2) <b>Coarticulation leads children to develop correct spelling. (definition)</b> 3) Coarticulation can make phonemes difficult to perceive or identify 4) Coarticulation causes phonemes to vary in pronunciation. 5) I don't know	13.1
	28. What is the <b>second sound</b> in the word <i>queen</i> ? 1) /u/ (short <i>u</i> ) 2) /e/ (long <i>e</i> ) 3) /k/ 4) <b>/w/ (phonemic awareness)</b> 5) I don't know	1.6