Educator’s Desk Reference

Scientifically-Based Reading Research Reviews

Ohio Department of Education
Center for Students, Families and Communities
Office of Literacy
INTRODUCTION
Scientifically-Based Reading Research Reviews

The National Reading Panel issued a report in 2000 that responded to a congressional mandate to help identify key skills and methods crucial to reading achievement. For more than two years the Panel reviewed thousands of Scientifically-Based Reading Research (SBRR) studies to assess the effectiveness of different approaches used to teach children to read. The No Child Left Behind Act of 2001 (Sec. 1208), defines SBRR as research that:

(A) applies rigorous, systematic and objective procedures to obtain valid knowledge relevant to reading development, reading instruction and reading difficulties; and

(B) includes research that
   i. employs systematic, empirical methods that draw on observation or experiment;
   ii. involves rigorous data analyses that are adequate to test the stated hypotheses and justify the general conclusions drawn;
   iii. relies on measurements or observational methods that provide valid data across evaluators and observers and across multiple measurements and observations; and
   iv. has been accepted by a peer-reviewed journal or approved by a panel of independent experts through a comparably rigorous, objective and scientific review.

The Panel addressed five areas that have become known as the five essential components of reading instruction. They are

- phonemic awareness
- phonics
- fluency
- vocabulary
- comprehension

Reading First, part of the No Child Left Behind Act, requires materials and professional development to include all five essential components. This does not, however, mean that there is only one good way to teach children to read or that there is a prescription for teaching children how to read. There are a variety of successful methods to teach early reading, but they share a common understanding and commitment to the five essential components that are meant to inform teachers’ classroom instructional decisions.

How are districts, school personnel and teachers going to review SBRR? For many classroom teachers, reading current research based practices has been difficult due to access to journals, limited time and other factors. One way to become familiar with research in reading are by becoming familiar with government documents such as Put Reading First and the Report of the National Reading Panel. Both contain excellent overviews, summaries and implications of what researchers have discovered.

In addition to the resources available at the federal level, in Ohio we have worked to compile a compendium of reviews on specific research articles, many which were cited in the National Reading Panel Report. This desk reference was designed to help educators navigate their way through a large number of research studies to apply their findings to multiple situations. They were written with the teacher in mind and with an eye towards what is critical to know to help all children become successful readers. While it is not all-inclusive, it is a sampling of SBRR studies that inform our field. New reviews are continually being added along with additional components, such as writing and oral language.

We hope these reviews, along with other available resources, start you on the road to exploring research that will improve your reading instruction.
**Topic:**
PHONOLOGICAL AWARENESS  

**Age/Grade:**
Kindergarten/Special Ed

**Title:**  
Ladders to Literacy: the Effects of Teacher-Led Phonological Activities for Kindergarten children with and Without Disabilities

**Authors:** O’Connor, R. E., Notari-Syverson, A., Vadasy, P. F.

**Reference:**  
Exceptional Children, 1996, Vol. 63, pp. 117-130

**Scientifically-Based Research**  
Control Group  
Peer Reviewed  
Rigorous Data Analysis  
Valid/Reliable

**Summary:**
The goal of this study was to explore the effects of teaching typical kindergarten personnel (not researchers) to conduct the phonological activities that foster the strong phonological and reading gains in their classrooms rather than under experimental conditions found in more controlled experiments. Studies with strong results were conducted under experimental conditions and required extra personnel unavailable in schools. This study was designed to incorporate routine classroom factors into the conditions of implementation: 1) teachers delivering instruction to whole class, 2) assistance was limited to personnel normally available and 3) the program lasted two-thirds of the school year.  
The children in the study were in three kinds of kindergartens: general (which had children with a few mild disabilities); transition (for children repeating the kindergarten year) and self-contained kindergartens for children with mild disabilities.  
Teachers learned to implement 25 activities that comprised the treatment in short (five to 15 minute) sessions with their whole group of 21 to 25 students. The transition and special ed classes had smaller groups of three to six children. Activities in the first two months stimulated word and syllable awareness, in months three and four the activities stimulated rhyming, first sound isolation, and onset-rime level blending and segmenting (for example, through card games and Elkonin boxes). During the last two months the researchers added letters and sounds to the phonological activities, showed children how to use letter sound to match pictures that start the same, and made the auditory blending games more sophisticated by separating each phoneme. The control classrooms used the same district-wide reading curriculum as the treatment classes, but they did not practice auditory blending, segmenting words beyond the first letter or select words to represent sounds.  
Overall, results suggest that intervention delivered by non-research personnel can be an effective way to improve the literacy outcomes of children with a broad range of ability. Some interesting results include: 1) Across all student types, children who had additional phonological activities in their routine did better on phoneme-level manipulations and reading/writing outcomes than untreated children; 2) Children repeating kindergarten made stronger gains than most children with disabilities; 3) Children with disabilities performed better on the phonological and reading measures in the treated than untreated groups, however, improved performance did not bring them to the level of their typically developing peers. The researchers state that in order to make large and lasting differences for children with disabilities, instruction may need to be much more intense than what can be delivered to large classroom groups.

**Notes:**
Elkonin boxes were used; teacher effects could be an issue in this study; short amount of time (15 minutes) to implement this program; teachers found activities with few materials easiest to implement, such as songs, finger cues and guessing games.
Area: PHONEMIC AWARENESS
Age/Grade Level: Preschool

Title of Study:
Evaluation of a Program to Teach Phonemic Awareness to Young Children

Authors: Byrne, B. & Fielding-Barnsley

Reference:

Scientifically-Based Research Criteria:
- Control Group
- Peer Reviewed
- Rigorous Data Analysis
- Valid/Reliable

Summary:
This program solely only on phoneme identity, whereas most studies combine phoneme identity with phoneme segmentation and/or blending. The researchers reasoned that recognition of shared sounds in words entails segmentation, but that segmentation does not entail identity recognition.

In this program called Sound Foundations, children learned to recognize instances of the same sound in both initial and final positions across different words, with nine phonemes receiving the most attention /s/, /z/ (as in ship), /l/, /m/, /p/, /t/, /g/, /a/ (as in bat), /e/ (as in bet). Children were shown large posters with pictures of objects. They were asked to pick out the objects that had a specified beginning or ending sound on the poster. Next, children were given worksheets with the task of locating and coloring the target items. Two card games were designed to further teach phoneme identity. Stories and jingles were created to repetitively emphasize the sounds.

Children were trained in subgroups of four to six, with training sessions running from 25-30 minutes, one per week for 11 weeks. In each session, one phoneme in one position was taught. An initial consonant was used one week, followed the next week by the same sound in the final position. Each session began with the experimenter reciting short jingles or poems, with the phoneme repeated in the appropriate position. Next, the poster was produced, then the worksheet. In week 12, the final week of training, the card games were introduced. [The control groups used the same materials (posters, worksheets, card games) but without the phonemic training. Instead, children searched for semantic categories such as animals, colors, things that could be eaten, etc.]

The data clearly demonstrated that phoneme identity can be taught with the program used in this study. Children in the experimental group were able to identify substantially more initial and final phonemes in words than control students. They demonstrated superior skill not only identifying sounds, but also unpracticed sounds, indicating that the skill had transferred, thus, eliminating the need to cover all of the phonemes of the language. The data also show that identification of phoneme identity in word-final position can be taught.

Two follow-up studies (Byrne & Fielding-Barnsley, 1993, 1995) were conducted to explore the long-term impact of this training. At the end of kindergarten, trained children were only slightly superior to controls in PA, indicating that learning to read had narrowed the gap in PA between the two groups. At the end of each consecutive grade, the PA trained group read more non-words than the controls, suggesting that PA training benefited children’s decoding skill. At the end of second grade, there was a marginal distinction in comprehension favoring the PA trained students, but no difference in reading real words or in spelling words.

The researchers conclude the article by citing Cunningham’s (1990) work with meta-level instruction in phonemic awareness, which emphasizes the application and utility of phonemic awareness for reading. Instruction may not be enough—we need to teach children how to use this knowledge.

Notes: Note link to Cunningham’s work, limited only to phoneme identity.
Scientifically-Based Research
Control Group  Rigorous Data Analysis
Peer Reviewed  Valid/Reliable

Summary:
This research acknowledges the role of phonemic awareness in learning to read and write and uses it as a basis for experimental intervention in this study. Two groups of kindergarten children were compared before and after a 12-week intervention on sets of tasks that assessed phonological processing skills and reading.

In the treatment group, the three lowest scoring children received one-to-one instruction for a total of 30 minutes a week. The next eight lowest children were instructed in pairs for 45 minutes a week. Instruction for these children started with the use of the initial consonant letter-phoneme match to recognize, spell and read words. Once two words had been introduced, children practiced speech-to-print matching through various activities. The four highest-scoring children in the treatment group received small-group instruction once a week for 30 minutes. Lessons for these children started with spelling four to six words of interest, followed by speech-to-print matching, followed by guidance in noticing selected aspects of spellings. Later lessons focused on consonant digraphs, using a similar frame to the Elkonin boxes. This highest group was also introduced to the use of rime analogy.

The control group was divided for instruction in the same way however, emphasis was on the component skills of phonological recording: letter knowledge and phoneme awareness. Children were not explicitly guided or encouraged to use these skills in reading and writing like those in the treatment group. Letter skills were taught using a variety of games, and phoneme awareness included brief, oral practice sessions with initial and final consonants through games. Instruction for the four highest scoring children emphasized different kinds of book reading. Instructional emphasis was on increased reading practice and the use of syntactic and semantic strategies.

The experimental approach emphasized children’s use of phonological recoding to recognize, spell and read words. The experimental group could read more words on the word-learning task, even thought they were not explicitly guided to do so. In the experimental group, gains were significant for all measures of reading. In the control group, gains were significant only for the measure of text reading on the fingerpoint reading task. The results of the study also suggest that supplementary instruction must include an emphasis on using letter-sound correspondences as part of recognizing, spelling, and reading words, rather than on letter naming and sounding in isolation. The effects of the intervention on the development of phoneme awareness were found only in the experimental group, even though the control group also had this training. Overall, the results for the experimental group indicate enhanced performance not only on the measures of phonological processing skills, but also on

Notes: Elkonin boxes
Title of Study:
Effect of Phoneme Awareness Instruction on Kindergarten Children’s Invented Spelling

Author: Tangel, D. & Blachman, B.

Reference:

Summary:
The purpose of this study was to find out if phoneme awareness training for children in kindergarten would have an effect on the quality of invented spelling compared to children who did not receive phoneme awareness training, since invented spelling is an indication that children have started to develop an awareness of the internal structure of words (specifically, an awareness of the phonemic segments or sounds represented by the alphabet).
Children were selected from 18 all-day kindergartens in four low-income, inner-city schools. During March, April and May of the kindergarten year, treatment children participated in an 11-week phoneme awareness intervention that included instruction in letter names and sounds completed by either the kindergarten teacher or the teaching assistant. Children met in groups of four or five, four times a week for 15 to 20 minutes and took part in a lesson that had 1) say-it-and-move-it phoneme segmentation activity (children moved colored disks to represent sounds, then moved to letter tiles), 2) segmentation related activities (e.g., categorizing groups of words); and 3) letter name and letter sound activities (illustrated alphabet cards and letter bingo). Control children participated in a traditional kindergarten curriculum that had whole class instruction in letter names and letter sounds.
Children who participated in the intervention outperformed the control children on phoneme segmentation, letter name and letter sound knowledge, and two of the three measures of beginning word recognition. Treatment children were also able to produce invented spellings that were significantly more developmentally sophisticated to those of the control group in terms of number of phonemes represented, sequencing of phonemes and orthographic features. The activities provided in kindergarten to the treatment group gave them the opportunity to explore the internal structure of words, which was reflected in their invented spellings.

Notes: This is one part of a larger study; states that like previous studies, it is the combination of phoneme instruction and letter-sound awareness (not letter sound instruction alone) that has a positive impact on beginning reading and spelling (Ball & Blachman, 1991).
Area: PHONEMIC AWARENESS
Age/Grade Level: Kindergarten

Title of Study:
Effects of an extensive program for stimulating phonological awareness in preschool children.

Authors: Lundberg, I., Frost, J. & Petersen, O.

Reference:
Reading Research Quarterly, 1988, Vol. 23, pp. 263-284

Scientifically-Based Research Criteria:
- Control Group
- Rigorous Data Analysis
- Peer Reviewed
- Valid/Reliable

Summary:
This study took place in Denmark with two groups of kindergarten children (235 children in the experimental group: 153 in the control group). One of the general goals was to assess the extent to which it’s possible to enhance the development of metaphonological skills by training in kindergarten outside formal reading instruction. From September to May, the experimental group was given a daily training program of metalinguistic exercises and games for 15-20 minutes a day in a whole group (15-20 children) setting.

Teachers practiced and refined skills necessary to teach the program for a full year before to the implementation of the program. The program started with easy listening games and then moved to games that incorporated rhymes. Children would listen to a troll who spoke strangely, syllable by syllable, and then they figured out what he said. Next, sentences and words were introduced, focusing on segmenting sentences into words and exploration of word length. During the second month syllables were introduced by hand clapping, then dancing, walking and marching were added as a means to explore syllable patterns. Initial phonemes were introduced the third month, followed by phonemes within words the fifth month. During the last month, prosodic games were played. Games introduced the first months were maintained over the entire period. Many of the games included activities designed for children’s enjoyment.

This study concluded that phonological awareness can be developed before reading ability and independent of it, and that phonological awareness facilitates subsequent reading acquisition, providing evidence of a causal link. The experimental group benefited considerably from the extensive training, and the effect transferred to new tasks and new formats when tested in Grades 1 and 2. The data indicated that the children in the experimental group had a clear advantage in learning to read and spell.

Notes:
Required a year of training; lots of enjoyable activities built into the program; mentions that maintaining these games on multi-levels required “a lot of careful planning and timing.”
### Scientifically-Based Research Criteria:
- Control Group
- Peer Reviewed
- Rigorous Data Analysis
- Valid/Reliable

### Title of Study:
Explicit versus Implicit Instruction in Phonemic Awareness

### Author:
Cunningham, Anne

### Reference:

### Summary:
In this study Cunningham worked with normally progressing readers in kindergarten and first grade. She was interested in 1) determining if Phonemic Awareness training influenced kindergarten and first grade children’s later reading ability and 2) specifying the components of instruction that would affect the acquisition of phonemic awareness.

There were 10-week training sessions for the three groups: two experimental, one control. Two instructional programs were used with the experimental groups. The core of the two programs was identical, but they differed with regard to the emphasis placed on the relation between phonemic awareness and the activity of reading. One group was taught PA in a decontextualized (skill and drill) manner with only segmentation and blending being taught. The other group received some of this same training plus extra time on metalevel knowledge; they were instructed on the goals and purposes of each PA manipulation, reviewing how the lesson related to the previous lessons and observing and practicing how to use the skill for reading.

Results showed that the two treatment groups outperformed the control group on measures of PA and reading in both grades. In first grade, children who received both the PA and metacognitive training achieved higher reading scores than first graders who received only PA training. They stated that an explanation for this could be that the first graders were receiving formal reading instruction at the same time they were receiving the PA training, possibly applying it on a daily basis. Some first graders even reported this to the experimenter, indicating that a metacognitive factor may be valuable in providing a bridge between PA skills and reading processes. Skill and drill programs are effective for teaching component skills, but the use of these skills may depend in part upon more detailed instruction emphasizing their application as well.

### Notes:
Used a modified version of Williams’ ABD program; trained in small (4-5) groups; 15-20 minute sessions 2X week; the metacognitive piece to this study is important.
Scientifically-Based Research Criteria:
- Control Group
- Peer Reviewed
- Rigorous Data Analysis
- Valid/Reliable

Title of Study:
Teaching Decoding With an Emphasis on Phoneme Analysis and Phoneme Blending

Author: Williams, Joanna P.

Reference:

Summary:
Williams developed and tested the ABD’s (analysis, blending, decoding) program with 7-12 year old children who were learning disabled, and found it to be highly effective at teaching decoding skills. It was evaluated in the field. The program was developed to serve as a supplement to whatever reading program was being used in the classroom. During the first part of the program, children learned to analyze syllables and short words into phonemes and then to blend phonemes into syllables and words. Letters were introduced after proficiency in these tasks was reached, first in the context of individual letter-phoneme correspondences. Next, decoding was taught. Procedures introduced by Elkonin (1963, 1973) were used in this study to provide a visual representation of the syllables. Teachers attended a half-day session to learn about the program, where they were asked to use the program for 20 minutes daily. The second year the program was used, the teachers were not volunteers, but were mandated to use it. The instruction was organized into 12 units, but only a few teachers got through the entire program the first year. During the second year, only half of the units were completed. Each unit began with a story read by the teacher incorporating skills to be mastered in the unit. The teacher followed a script and demonstrated the task, then moved the children towards completing the task independently. Each unit also contained games and worksheets provided for practice of the skills in a variety of contexts.

Pre and post test results for both studies indicated: 1) the mean number of correct responses was significantly greater for the experimental group than for the control group; 2) performance on real words was significantly better than performance on nonsense words; 3) no significant interaction between group and type of item; 4) there was no difference for the experimental group between real and nonsense words, but for the control group, performance on real words was better than on nonsense words; 5) there was significant interaction between the type of item (degree of familiarity) and type of word; On trained items, scores for real words were higher than scores for nonsense words, on transfer items the difference between real and nonsense words was smaller; 6) the interaction between type of item and type of work was seen only in the experimental group.

Data from the study indicates that the ABD program was highly effective at teaching decoding skills to disabled readers. Children performed significantly better on a test of decoding than did the controlled group children. This superiority also was demonstrated on new words, indicating that the instructed children acquired general decoding strategies. The program is cost-effective, takes little teacher training or other classroom support and appears to be a valuable component of a planned, comprehensive reading program.

Notes:
Uses Elkonin boxes; administered to small groups of children or individuals; supplement to any reading program; very little teacher training required.
**Title of Study:**
Getting Ready for Reading: Early Phoneme Awareness and Phonics Teaching Improves Reading and Spelling in Inner-City Second Language Learners

**Author:** Stuart, M.

**Reference:**
British Journal of Educational Psychology, 1999, Vol. 69, pp. 587-605

**Scientifically-Based Research Criteria:**
- Control Group
- Rigorous Data Analysis
- Peer Reviewed
- Valid/Reliable

**Summary:**
In this study, three kindergarten teachers used the Jolly Phonics (JP) program (Lloyd, 1993) and three used Holdaway’s Big Book (BB) approach (Holdaway, 1979). Teachers using the JP program were trained to use the program through a manual, videos and a training seminar. Materials in the program included a phonics handbook, worksheets, workbooks, finger phonics books, puzzles, stencils, and videos. There were five main parts to the program: 1) learning letter sounds, 2) learning letter formations, 3) blending for reading, 4) identifying the sounds in words for writing and 5) tricky, high-frequency words that are spelled irregularly. In the Jolly Phonics program, children were taught hand gestures to help them remember the letter-sound associations.

Teachers using the BB approach met with the researcher and discussed different ways to use the big books and were asked to pay particular attention to words and letters by drawing attention to written words and talking about the letters in words. This was to include the introduction to the letter names and their sounds. They also were encouraged to point out environmental print and continue the activities they were already doing, such as having a collection of bags, each with a different letter, containing small objects whose names begin with the sound of the letter. The BB teachers were allowed to purchase new big books. Teachers were told to plan instruction around these materials for one hour each day for 12 weeks during the second half of kindergarten.

Results showed that the JP at-risk kindergarteners were able to read significantly more words and pseudowords and to write more words that the BB group. A year later, the JP group outperformed the control group in reading and spelling words, but not in reading comprehension. These results “show that phonics instruction in kindergarten is effective in boosting children’s progress in learning to read and write words.” (National Reading Panel, p. 2-125). The researchers report that this study demonstrates that the early intervention was responsible for the differences in reading, writing and phonic skills, and that early, structured, focused and rapid teaching of phoneme segmentation and blending skills and of grapheme-phoneme correspondences does accelerate development of the skills and acquisition of this knowledge in five-year-olds.

**Notes:**
Systematic phonics instruction vs. Holdaway’s approach with Big Books; they point out that the cost of the program was cheaper than the cost of the big books; note how the JP group was ahead of the BB group at pretest—the analyzed gain scores to make up for it; this program is fun and fits in well with a whole language program; the JP program teaches hand gestures which adds the dimension of mnemonics for teaching letter-sound association.
In this study, two different kinds of phonics instruction were compared. The first provided very explicit and intensive instruction in phonemic awareness and phonemic decoding called phonological awareness plus synthetic phonics (PASP). The other provided systematic but less explicit, instruction in phonemic decoding in the context of more instruction and practice in text comprehension called embedded phonics (EP). Children in the study were assigned to either one of these two groups or a no-treatment control (NTC) or the regular classroom support (RCS) condition.

The PASP children received the Auditory Discrimination in Depth program, developed by Lindamood. This program taught children phonemic awareness by leading them to discover and label the articulatory gestures associated with each phoneme. This was followed by activities to build skills in tracking the phonemes in words using mouth pictures, colored blocks and letters to represent phonemes in words. While most of the time was spent building phonemic awareness and developing phonemic decoding skills, they also began reading text as soon as they showed mastery of 10 consonants and three vowels.

The EP program taught children to recognize whole words. Instruction in letter-sounds occurred in the context of learning to read words by sight using word level drill and word games, instruction in letter sound correspondences in the context of the sight words being learned, writing the words in sentences and then reading what they wrote. Phonemic awareness was taught by having children segment the sounds in words before writing them. Once children had a small stock of high-frequency words, they started reading short stories to build their reading vocabulary even further. Emphasis was on acquiring word level reading skills, including sight words and phonemic decoding skills.

The RCS group received individual tutoring in the activities and skills taught in their regular classroom reading programs. The tutor followed the instructional suggestions of the classroom teacher.

Results showed that the PASP group read significantly more real words and non-words and spelled more words than one or both of the control groups. The EP group did not outperform the control groups on any of the measures. Comparison of the EP and PASP groups showed superior performance by PASP on measures of phonological awareness, phonemic decoding accuracy and efficiency and word reading accuracy. In addition, intensive training in phonics produced superior word reading skills compared to embedded phonics training or training given to control groups.
**Topic:** PHONICS  
**Age/Grade:** First Grade

**Title:**
Effects of Three Orthographic/Phonological Units on First-Grade Reading

**Authors:** Haskell, D. W., Foorman, B. R. & Swank, P. R.

**Reference:**

**Scientifically-Based Research**
- Control Groups  
  - Rigorous Data Analysis  
- Peer Reviewed  
  - Valid/Reliable

**Summary:**
This study was based on the following hypothesis: 1) training at the onset-rime level will facilitate first-graders’ word reading more than training at the phoneme level; 2) either the phoneme level or onset-rime level training will be more easily facilitated than the whole-word level training or not training. To test these hypothesis, a six-week training program was designed to focus on three phonological/orthographic units: phonemes, onset-rimes and whole words.

The treatment plan for the three training groups was essentially the same, the only difference being the independent variable. The sessions followed the basic pattern of 1) presentation of letters, onsets and rimes, or words, 2) phonological awareness training for the phoneme and onset-rime groups and the use of words in sentences for the whole-word group, 3) individual use of letter sets to practice either construction or identifying the same set of practice words and 4) final review of all of the letters, rimes, or words presented in all the previous sessions.

Data analysis showed no significant differences in post-test accuracy between the phoneme and onset-rime groups or between the two control groups (whole word and untrained controls). The researchers found that students who received training at either the phoneme or onset-rime level were more accurate on a word reading test consisting of words that were different from their practice words, but shared the same spelling patterns, and were able to transfer their knowledge of letter-sound correspondence to new words.

Students in the experimental groups appeared to benefit from explicit instruction on how letters and sounds are linked, but there was no significant difference between the two groups, making it difficult to distinguish which experimental treatment was most effective. However, the researchers state that the tendency for students receiving phoneme-level training to read more regular words correctly on the post-test, and the tendency for the onset-rime students to be more accurate that the phoneme group on exception words may hint at where the relative onset-rime and phoneme advantages could lie.

**Notes:**
Study shows that 15 minutes can improve word reading accuracy.
<table>
<thead>
<tr>
<th>Area:</th>
<th>PHONICS/MODIFYING READING RECOVERY</th>
<th>Age/Grade Level:</th>
<th>Primary</th>
</tr>
</thead>
</table>

**Title of Study:**
Effects of Rime-Based Orthographic Analogy Training on the Word Recognition Skills of Children with Reading Disability

**Authors:** Greaney, K. T., Tunmer, W. E., & Chapman, J. W.

**Reference:**
Journal of Educational Psychology, 1997, Vol. 89, 645-651

**Scientifically - Based Research Criteria:**
- Control Group
- Rigorous Data Analysis
- Peer Reviewed
- Valid/Reliable
- One-Year Follow-up

**Summary:**
**(This study is from New Zealand, where they have Resource Teachers of Reading (RTR). The authors say RTR follows a format very similar to Reading Recovery (RR), but is more flexible. The National Reading Panel only referred to Reading Recovery when summarizing this report, not RTR).**
This study was designed to supplement the Reading Recovery program with more systematic work in phonics, providing explicit instruction in letter-phoneme patterns. It was an attempt to determine if procedures could be developed to help disabled readers make use of rimes, and if so, would the positive effects generalize to other reading skills and materials?
There were two treatment groups; the *rime analogy*-training group and the *item-specific* training group (control group). Students in the rime analogy-training group were trained in the use of rime spelling units to identify words during the 30 minute RR lesson. Children were taught to read pairs of nouns containing common spelling of rimes and then words with the rime embedded in it. Then they practiced reading and writing words with these larger rime units, which they called “eggs” because the rime unit was written in an egg-shaped space. This work took five minutes of the 30-minute RTR program, substituting for the letter segment of the lesson. During the final book reading segment of each RTR session, children were encouraged to use their newly-acquired strategic knowledge to help them identify unfamiliar words. They were also encouraged to develop a “set for diversity” to allow them to make use of polyphonic rime spelling units, like *ear* as in *bear* and *hear, own* as in *clown* and *flown*.
The item-specific training group followed the same RTR format and read the same words, but no attention was drawn to rime units in the words, and the words were mixed up instead of taught in sets with the same rimes.
Results showed that the children who received rime training outperformed control children who received item-specific learning and sentence-level strategies, specifically on of tests of word and pseudoword reading, but not on tests of reading comprehension.

**Notes:**
Researchers felt this was an important first step in getting these disabled readers more aware of medial information in words, helping them to overcome their tendency to focus on beginning and ending letters only.
**Title of Study:**
Comparing the Effectiveness of Two Oral Reading Practices: Round-Robin Reading and the Shared Book Experience

**Authors:** Eldredge, J.L., Reutzel, D. R., & Hollingsworth, P. M.

**Reference:**
Journal of Literacy Research, 1996, Vol. 28, pp. 201-225

**Scientifically-Based Research Criteria:**
- Control Group
- Peer Reviewed
- Comparative Study
- Rigorous Data Analysis
- Valid/Reliable

**Summary:**
The researchers maintain that while the Shared Book Experience was in wide use at the time of this study and before its inclusion in today’s basals, there were no experimental studies to support it. This study compared the effectiveness of two oral reading practices on second-graders’ reading growth: shared book reading and round-robin reading. Round robin reading is still a widely used practice, even though newer basals didn’t support its use, and we have “no understanding of its role in reading development.”

Four teachers took part in this study; two were assigned to the round robin reading group (RRR), and two were assigned to the shared book experience group (SBE). The same books were used in both classrooms (A House is a House for Me, If you give a Mouse a Cookie, etc.) and the SBE group also received big books and a cassette tape of each story, in addition to the small books provided to both groups. Both groups devoted 30 minutes to oral reading activities each day, from September to December. Students in the RRR group were divided into 3 achievement groups for oral reading. Teachers met with each group for 10 minutes, then they would go back to their seat and read with a partner and/or practiced orally by themselves. The SBE group was engaged with the teacher for 20 minutes, then they had an individual buddy-reading component for 10 minutes. They also had audiotapes that were available to the children as they read independently. Favorite big books were read and re-read often.

Data analysis scores were presented in four categories: word analysis, comprehension, vocabulary and fluency. Students in the SBE group outperformed children in the RRR group on all measures of reading growth. There were no significant differences in performance between the SBE group and the RRR group on the number of self-corrections students made while reading and the number of words read per minute. Average and low-achievement students in the SBE group significantly outperformed average and low achievement students in the RRR group in word recognition ability. One of the biggest differences was the SBE children’s ability to answer text-explicit and text-explicit questions, and their vocabulary knowledge/schemata. Since the goal of reading is comprehension, and these are comprehension-related skills, this is important. Students in the SBE experience were continually immersed in holistic, connected reading experiences.

**Notes:**
Notice in the big book group the children had the audio tape; the big book group was encouraged to re-read the familiar text often; today’s “reading around the room” activity; SBE developed comprehension related skills and had many benefits beyond just oral reading.
Area: FLUENCY

Age/Grade Level: Second Grade

Title of Study:
Effects of Fluency Training on Second Graders’ Reading Comprehension

Authors: Reutzel, D. R. & Hollingsworth, P.M.

Reference:

Scientifically - Based Research Criteria:
Control Group: Rigorous Data Analysis
Peer Reviewed: Valid/Reliable

Summary:
This study started with an excellent overview of the fluency research available to date. The Oral Recitation Lesson (ORL) was recommended as an important means of developing fluency in several studies and a way to help at-risk readers make substantial gains in reading achievement. The researchers state that while there are some studies on the ORL, its effectiveness for developing fluency and, as a consequence, its impact upon improved comprehension have not been put to a test in a controlled study. This study explored the impact of using the ORL as a means for developing second-grade students’ oral reading fluency and assessing the impact of this training upon their reading comprehension. In addition to using retellings, comprehension questions and comprehension standardized tests, this study measured fluency by combining reading rate or time with decoding accuracy in a measure of errors per minute. Next, they attempted to look at the effects of fluency training on second graders’ oral reading fluency comprehension. They used a standardized test of reading comprehension, an oral retelling score using story grammar analyses, answers to text-explicit and text-implicit questions as comprehension measures.
Subjects were randomly assigned to either the ORL group or the traditional, round-robin reading group. The four teachers who took part in the study were trained independently by the researchers on either the ORL or round-robin style of oral reading. Teachers and students spent 30 minutes each day in the assigned fluency conditions for four months.
The data for this study indicated that the ORL is an effective means of developing second-grade students’ oral reading fluency, as measured by errors per minute. In addition, the performance of students in the ORL group was superior to that of the RR group in three out of the four comprehension measures, showing a strong effect of fluency development on second-graders’ reading comprehension.
It also indicated that ORL is a superior method to the questionable practice of round robin reading, still used by many today.

Notes: Good review of past fluency studies.
Area: FLUENCY

Age/Grade Level: Grades Second – Sixth Grade

Title of Study:
Sustained Silent Reading Periods: Effect on Teachers’ Behaviors and Students’ Achievement

Author: Collins, C.

Reference:

Scientifically - Based Research Criteria:
- Control Group
- Rigorous Data Analysis
- Peer Reviewed
- Valid/Reliable

Summary:
At the time Collins published this research, she said that while many were advocates of Sustained Silent Reading (SSR), there was no empirical evidence that it could produce the benefits that advocates claimed: sharpened word recognition and comprehension, as well as an increased interest in reading for pleasure.

Instruments (Gates-MacGinit, Iowa, etc.) were used to assess achievement. The Attitude Assessment and Lyman Hunt’s How I Feel About Reading were used to assess attitude toward reading. The project began at mid-year and ran daily for 15 weeks. Second graders began with reading 10 minutes each day and ended by reading 30 minutes daily, third graders read for 15 minutes, fourth graders for 30 minutes, and fifth and sixth graders for 15-25 minutes daily. The control group worked on spelling while the experimental group was reading. The SSR procedures led to no significant differences in vocabulary or comprehension as measured by various standardized tests, although the SSR groups appeared to move more quickly through the basal reader during this time period.

Notes:
Teachers in the experimental group knew much more about their students as readers, and were able to provide more anecdotal information about their students; SSR did not retard the growth of negative attitudes toward reading of the 126 children in the experimental group.
Scientifically - Based Research Criteria:
Control Group    Data Analysis
Peer Reviewed    Valid/Reliable

**While this study met the National Reading Panel (NRP) requirements, it isn’t reported in much detail.**

Summary:
The authors report that when this study took place (1975), SSR was being implemented in both elementary and secondary classrooms, taking the place of other practice activities and materials. They wondered if this trade-off was beneficial or not. The present study compared the effect of SSR on reading achievement with that of having students complete various reading skills exercises with commercial materials, such as worksheets in two fourth-grade classrooms. All of the students were given one hour of reading instruction using the activities in a Ginn reading program. Following the daily instruction time, students were regrouped for 20 minute practice sessions. The experimental group practice consisted entirely of SSR: one book was selected and read each session, there were no interruptions, everyone was supposed to read, including the teacher, for a set amount of time. The control group used commercially available materials for practice and reinforcement of skills taught. Reading gains were identical for both groups of second-graders at the end of the 10 weeks, indicating the SSR as a form of practice is neither more nor less effective than a multi-material form of practice.

Notes:
SSR or independent reading time today looks a lot different than it did when this study took place. Today, children can move around the room, read with partners and read numerous books that are on their independent reading level—things that foster not only fluency, but a love of reading.
Scientifically-Based Research Criteria:
- Rigorous Data Analysis
- Peer Reviewed
- Valid/Reliable

**This study met the requirements for the NRP but did not provide sufficient information to be included in the meta-analysis and had a very small sample size (n=20).**

Summary:
This study on cross-age reading is based on previous studies that have outlined the importance of reading aloud to children during their early years. Acknowledging that being read to helps a child build an excellent foundation for continued reading growth, the researchers wondered about the potential of storybook reading for helping older children become a better reader. It was hypothesized that the process would give the fifth-graders a genuine purpose for engaging in repeated readings because they would perform their oral reading for a real audience, and it would help them build additional strategies for effective reading.

The fifth-grade children were put into three groups: cross-age reading group, art partners and the traditional basal reading group, who acted as the control group. The art partners were included to determine if the possible effects of the program were because of the social interaction with the younger children.

The program took place for eight weeks, with the fifth-graders visiting the kindergarteners four times a week. Before the visits, students met with a teacher for 10-15 minutes. The teacher offered support and students were given the opportunity to practice in front of the group and receive feedback on their oral reading. During the cross-age visits, the fifth-graders assumed the role of expert readers. After reading, the fifth-graders met with the teachers to provide an opportunity for the students to reflect on the quality of the storybook reading interactions. Mental modeling was one way the teacher externalized for the students the mental processes involved in reading, like how she relates personal experiences and background knowledge at different stages of her own storybook reading. The students then were encouraged to use these mental modeling techniques with the kindergarten students by asking before, during and after reading strategies that would activate background knowledge.

A post analysis showed that the readers scored significantly higher than the art partners, who, in turn, scored significantly higher than the basal group. The researchers believe that this is because of the framework: children were encouraged to improve upon reading and focus on comprehension. Using repeated reading and the mental modeling allows them to become more effective at reading books to the kindergarteners.

Notes:
Very small sample size; appears to be a good way for older students to practice reading in a context; the mental modeling piece makes sense
## Scientifically - Based Research Criteria:
- Control Group
- Peer Reviewed
- Rigorous Data Analysis
- Valid/Reliable

## Summary:
Based on the knowledge that good readers decode text automatically, giving more attention to comprehension, while poor readers give all of their attention to decoding, leaving nothing left for comprehension, this study examined the effects of a “group-assisted” teaching strategy designed to help poor readers read material that is too difficult for them to read by themselves. One teacher taught both groups of students daily in 15-minute pullout sessions over eight weeks. There were three groups receiving the assisted reading treatment and three groups receiving the unassisted-reading treatment. The students in the assisted reading treatment read orally during the 15-minute period. The students were grouped in two’s and each had a copy of the text being read for the day. The teacher and the students read the story together, with the teacher setting the pace for reading, modeling expressive oral reading by reading in phrase units, emphasizing correct stress, pitch and juncture. The students read the story several times until they could read it expressively without teacher assistance. At the end of each session, the students practiced with their partner. New books were introduced as old ones were read fluently.

Students in the unassisted reading treatment read literature books silently during this same period of time. The teacher made herself available to help them with any words that they could not read. The children in the assisted reading group outperformed the students in the unassisted-reading group, making greater achievement gains in reading comprehension and vocabulary.

The researcher offers several explanations for the achievement differences, such as the cooperative learning situation the children took part in, the holistic and meaningful reading experiences the treatment group was part of and the social setting where children had the opportunity to interact with adults.

## Notes:
- Low cost; easy to implement; has social interaction component; Zone of Proximal Development (ZPD) between the teacher and the child; study was reviewed by both the Fluency and Vocabulary subgroups for the National Reading Panel Report.
Topic: VOCABULARY

Age/Grade: Preschool

Title:
Long-term Effects of Preschool Teachers’ Book Readings on Low-income Children’s Vocabulary and Story Comprehension

Authors: Dickinson, D. K. & Smith, M. W.

Reference:

Scientifically-Based Research
Control Group  Rigorous Data Analysis
Peer Reviewed  Valid/Reliable

Summary:
The authors of this study looked at patterns of talk about books in 25 classrooms that had low-income, four-year-old children. They studied the relationships between these book reading experiences and children’s vocabulary growth and story understanding in an effort to answer their two questions: Are there identifiable patterns of teacher-child interaction during book reading in preschool classrooms? Do the ways teachers read books to four-year-olds have effects on children’s language and literacy development that can be detected one year later? The primary data source was transcriptions of videotaped book-reading sessions that were coded for specific kinds of talk. Three distinct approaches to book reading emerged from the data:

1) *co-constructive*, where teachers and children engage in high amounts of analytic talk during the book reading, but little talk before and after the reading;

2) *didactic-interactional*, where interaction based on immediate recall consisted of either “chiming in” on a repeated phrase or a familiar text, or answering simple recall questions based directly on the text of the book;

3) *performance-oriented*, where there is little talk during the book reading and the most talk before and after the reading. Before reading, teachers often prefaced the reading with “This is my favorite” or “I like this story.” When teachers in this group discussed stories, they were likely to discuss characters, make predictions or personal connections, or analyze vocabulary. Following the reading they usually reconstructed the story or they linked the book to the children’s life experiences.

Results revealed larger gains by children in the performance-oriented classrooms than by those in the didactic-interactional rooms. Talk before and after reading is important. There was a strong association between child-involved analytical talk and vocabulary development, which suggests teachers should support children’s literacy growth by engaging them in analytical discourse. Lower vocabulary development was associated with being in classrooms where the didactic-interactional approach was used.

Notes:
The caution about “too much chiming in” types of books due to the limited text that does little to “nourish children’s literacy related language growth” is important; changing *when* discussions take place and *what kinds* of discussions occur is simple to implement, requiring teachers to make just minor adjustments.
Topic: VOCABULARY

Age/Grade: Pre-Kindergarten

Title: The Effect of Sign Language on Hearing children’s Language Development

Author: Daniels, M.


Scientifically-Based Research
- Control Group
- Peer Reviewed
- Rigorous Data Analysis
- Valid/Reliable

Summary:
This study examined the effect of teaching American Sign Language (ASL), to pre-school children. It hypothesized that the addition of ASL to the regular classroom curriculum would increase vocabulary in hearing children.
In the two treatment classes, teachers started the year using sign language with spoken English words and phrases (sit, stand, line up, etc.). During lessons and stories, signs were introduced and taught first, then the teacher continued on with the story or lesson. As the year went on the children learned a lot of signs for words and phrases and used it with each other at center activities.
The scores of both classes were 15 points higher than those from the classes with no sign language instruction—a dramatic increase in these students’ vocabulary.
When used together, sign and spoken language gives children optimum cues to use. The combination creates multiple imprints on the learner’s memory and a richer language base.
Prior research shows that languages are categorically coded in separate memory stores, so sign is stored differently than English, giving two sources for recall and searching.

Notes:
Cites Piaget’s premise that “gesture and mime-language in movement is the real social language of the child;” creates a natural way to aid language development.
Summary:
This study was designed to assess whether children learned new vocabulary from a single storybook reading episode, and to assess the relative contribution of specific teaching behaviors that parents use when they read to their children.
In the first condition group, children were asked to point to a named item. If children hesitated to respond or said that they did not know the word, the experimenter encouraged them to try and didn’t proceed until they made a selection. Next, a different experimenter entered the room, read a book and pointed to illustrations corresponding with each target word every time it appeared.
In a second group, the questioning condition group, the experimenter asked a what or where question after the first mention of each target word, followed by a repetition of the word. In the word repetition group, the first mention of the target word was followed by a repetition of the sentence with the target word.
Results showed that requesting active participation in the book reading interactions did not boost children’s vocabulary learning; reading the book verbatim was just as effective as asking questions or recasting new vocabulary learning. Both age groups were able to recognize about the same number of words on the pre-test, but the five-year-olds remembered more words than the four-year-olds.
The study support earlier, non-empirical studies by finding that there is a difference between the acquisition of expressive vocabulary (words children can produce when speaking) and receptive vocabulary (words children can understand, but not necessarily produce) during shared reading. It also shows that a single reading of a storybook boosted young children’s receptive vocabulary.

Notes:
This study was done with predominately Caucasian, middle and upper SES families. Shared reading does teach new vocabulary, but if you’re looking for SBR, I’m not sure two sessions with a stranger testing four-year olds seems most reliable-too many factors involved; it was difficult to understand the conditions of each group, not easy to follow the method of the study.
Title: Reading Storybooks to Kindergarteners Helps Them Learn New Vocabulary Words

Authors: Robbins, C. & Ehri, L.C.


Scientifically-Based Research
- Post-test only design
- No Delayed Post-test
- Control Group
- Rigorous Data Analysis
- Peer Reviewed
- Valid/Reliable

Summary:
Fifty-one English-speaking kindergarteners (all non-readers) took part in this study. The students listened to a story with 11 target words on two different occasions, two to four days apart. The story was discussed briefly, with no discussion of word meaning. Following the story, a multiple choice vocabulary test was given. The test was presented in the form of a detective game. The results showed that the number of days intervening (two to four) did not affect performance. In addition, it showed that listening to a story only two times did expand the vocabularies of kindergarteners. However, the children with larger vocabularies before the study learned more words than children with smaller vocabularies. There is a caution, that while story reading benefits vocabulary, it is not enough to have only these words imbedded in stories; there needs to be more direct, explicit instruction.

Notes:
Suggests discussing new words (in addition to reading them) for even better results; points out that books with rich vocabulary must be used, but the text cannot be too hard that it would limit comprehension; this goes along with the study that cautions using text that is too easy or text that is repetitive all of the time—a fine balance; also eludes to the “Matthew Effect,” mentioned in some of the other studies.
There were children from three dissimilar schools involved in this study:
School A: white, suburban, standard English speaking
School B: inner–city African American, dialect speaking
School C: semi-rural, economically disadvantaged, Asian students, “pidgin” English
The children were given a multiple choice (56 item) test with a ________ representing the test word and then four alternatives. Interview prompts for each word consisted of a card with a word typed on it. The examiner had the child read the word. If it was correct, the interviewer proceeded by asking for a definition, then requested that the child use the word in a sentence. Words were judged as either known, unknown, or unscorable.
Results showed an impressive growth size for all students.
School A had larger vocabularies, decoded more words and knew more meanings than schools B or C, with the gap being the largest for the most unfamiliar words.
While they state that this doesn’t settle the debate regarding socio-economic status (SES) and reading ability, it does highlight its importance. Further, they suggest that minority students be taught some words directly, be encouraged to read more, and provide motivational ways for helping them develop strategies for learning more words on their own.
Scientifically-Based Research Criteria:
- Control Group
- Peer Reviewed
- Rigorous Data Analysis
- Valid/Reliable

**Title of Study:**
Effects of Instruction on Beginning Reading Skills in Children at Risk for Reading Disability

**Authors:** Brown, I., & Felton, R.

**Reference:**

**Summary:**
This study investigated the role of instruction on the acquisition of word identification and decoding skills. Children who were identified in kindergarten as being at-risk for reading disability were taught in grades one and two using either a structured phonics code-emphasis approach or an approach emphasizing the use of context. The two approaches differ primarily in the emphasis each places on the type of clues that are given to facilitate word recognition.

- The meaning emphasis approach allows the beginning reader to emulate skilled reading by processing words and sentences for meaning. The Houghton-Mifflin (1986) program was used as the meaning emphasis (Context) approach in this study since there was a major emphasis on the acquisition of an extensive sight vocabulary. Children were taught to first attempt to identify unknown words by using context (see if the word made sense) and then examine the word to see if it had the “right” sounds.

- The code-emphasis approach taught the beginning reader to learn the relationships between letters and sounds in our written language system. The Lippincott Basic Reading program (1981) was used for the code-emphasis (Code) approach. It taught, in a systematic manner, how to use the alphabetic code to go from printed words to oral language. It started by teaching children to phonetically decode regular words, then proceeded to long vowels and irregular spellings.

Children in the Code group earned higher mean scores than the Context group on all achievement tests at the end of both first and second grades. This includes word attack, word identification, nonsense word reading, passage comprehension and spelling of predictable and unpredictable words. Significant differences were found between groups on nonsense word reading and spelling of phonetically regular words at the end of first grade. At the end of second grade, the Code group scored higher than the Context group on reading of phonetically regular polysyllabic nonsense words, and on decoding both single and polysyllabic nonsense words.

The researchers point out that both reading programs had a phonics component to them, so the crucial difference was not the presence or absence of phonic instruction, but in the methods used in teaching decoding skills. They state that the significance of this study could be that children who are at risk for reading failure may be children for whom the problem is primarily a mismatch between their cognitive processing abilities and the instructional program used to teach them to read. They report that this study, along with previous scientific studies, proves that direct phonics instruction is a potent positive influence on the development of the very skills that constitute the core of a reading disability.

**Notes:**
Both approaches had a phonics component.
**Topic:** COMPREHENSION  
**Age/Grade:** First Grade

**Title:**  
Story Map Instructions Using Children’s Literature: Effects on First Graders’ Comprehension of Central Narrative Elements

**Authors:** Baumann, J. F., Bergeron, B. S.

**Reference:**  

**Scientifically-Based Research**  
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<thead>
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<th>Control Group</th>
<th>Rigorous Data Analysis</th>
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**Summary:**  
This study sought to discover the effect of instruction in story mapping had on first graders’ recognition and recall of narrative elements by using popular children’s literature. Three previously unanswered questions drove this study: 1) Can young children be taught to use story structure to enhance their ability to identify and recall central story elements, 2) Will instruction in story structure be effective when the text is regular children’s literature (not adaptations or passages written for research), and 3) Will instruction in composition using story structure enhance the efficiency of teaching students to understand central story elements? To address these three questions, a study was designed with four different groups. The first group, the Story Mapping 1 group (SM1) were taught to map stories as a means to develop a schema for story and promote recognition and recall of central narrative elements. Students in a second story-mapping group (SM2) had the same instruction, but they were also taught how to write stories from a story map. The third group was included to provide a strategy against which the story mapping approach could be compared. The DR_TA was selected for this group because it is an interactive reading strategy that involves a lot of predicting, which is known to promote story comprehension. The fourth group was the instructed Control group (IC) and read the same stories as everyone else, but followed a DRA, which did not involve any explicit or implicit instruction in narrative comprehension.

Some of the results were as follows:

- **Effect of instruction:** Some form of interactive intervention - be it story mapping or DR-TA- was more effective than the DRA for enhancing students’ comprehension of central story elements.
- **Effect of mapping instruction:** Instruction in story mapping promoted students’ narrative comprehension.

Story mapping is a useful, effective technique that primary grade teachers should add to their repertoire of comprehension instructional strategies. It can be done using children’s literature that is readily available.

**Notes:**  
Teachers should be cautioned about not teaching story structure for the sake of teaching story structure, but as a means to provide a framework for children to comprehend text.
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<th><strong>Area:</strong></th>
<th><strong>Age/Grade Level:</strong></th>
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<tr>
<td>COMPREHENSION</td>
<td>Second Grade</td>
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| **Title of Study:** | The Use of Imagery Training to Improve Reading Comprehension of Second Graders |

| **Author:** | Borduin, B. J., Borduin, C. M. & Manley, C. M. |


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<th><strong>Scientifically-Based Research Criteria:</strong></th>
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<tr>
<td>Control Group</td>
<td><strong>Small Sample Size</strong></td>
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<tr>
<td>Rigorous Data Analysis</td>
<td>Peer Reviewed</td>
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| **Summary:** | This study examined the effects of imagery training (defined as a metacognitive strategy involving visual and verbal meaning and construction of text) on second graders’ memory for detail and the ability to make logical inferences. Both are aspects of reading comprehension and previously had been shown to improve the comprehension of children in upper grades. While this is a scantly reported study (barely three pages) it describes the study as having four groups: the imagery training group (IT) where students in the group were taught how to make mental images of each text page and how to make visual and verbal representations of the mental images before reading the next section of text. Two corrective feedback groups (CF) were given corrective feedback in a directed reading group discussion. All three groups received 30 minutes of instruction once a week for six weeks. The fourth group of students received no instruction as they read text independently. Children in the IT group had higher inference scores than did the children in the other three groups, showing that second graders’ inferential reasoning about written text can be improved through planned instruction in the use of imagery, which are consistent with the findings from the previous studies with older children. The results also showed that corrective feedback (CF) in directed reading lessons has an effect on inferential reasoning, although the effect varies widely by teacher and may decrease without continued feedback. |

| **Notes:** | This one is proven at younger and older grades- might be a good basic one for all. |
The goal of this study was to investigate developmental changes in comprehension monitoring. Two studies were conducted and reported on in this paper. In the first study, children in first, second and third grade were presented with instructions on how to play a game and how to perform a magic trick with crucial information missing which was necessary to complete the task. For example, the researcher explained a game, left out an important detail, and then asked probes such as “What do you think?” “Do you have any questions?” Did I tell you everything you need to know to play the game?” Results showed that first-graders differed significantly from third-graders, indicating that older children realize that the information is incomplete before younger children do. In addition, the first graders needed a great deal of probing before they even realized anything was wrong, which has implications for the classroom. The conclusion was drawn that young children are processing the material at a relatively superficial level, and that the youngest children in the study were failing to execute the instructions mentally, not noticing problems; it is not until they try to perform the task and run into problems that they realize they failed to understand.

In the second study, children were assigned to one of two conditions; the demonstrate condition, where they were shown the task and then be told how to do it, or the verbal condition, where the child was told they would hear what the game looked like and how they played it. The basic findings from the first study were replicated.

In both studies, the youngest children gave little indication of being aware that their comprehension was poor, especially since the children were explicitly instructed to check the material for its comprehensibility. The researcher further hypothesizes that poor performance could be due to children processing material at a superficial level. She goes on to say that if children are willing to tolerate such gaps in their knowledge, it is unlikely that they would be moved to search for clarification of material when reading, since an awareness of one’s comprehension failure provides a basis for initiating appropriate remedial procedures.

Notes:
While this didn’t offer a specific strategy for comprehension monitoring, it lays the groundwork for the importance of comprehension monitoring with very young children since they may not be developmentally ready on their own.
**Area:** COMPREHENSION

**Age/Grade Level:** Second – Eighth Grade

**Title of Study:**
Improving Reading Comprehension of Disabled Readers Through Semantic Mapping

**Authors:** Sinatra, R. C., Stahl-Gemake, J., Berg, D. N.

**Reference:**
The Reading Teacher, October, 1984, pp. 22-29

**Scientifically - Based Research Criteria:**
Control Group                  Peer Reviewed

**Summary:**
This study involved 27 children from second to eighth grade. The condition group used the verbal readiness approach where teachers followed the traditional directed reading lesson for silent reading of basal reading texts. After silently reading, children answered 10 multiple-choice questions. The alternative group used three types of maps: an episodic web, a thematic or descriptive map, and a classification map. The type used was dictated by the way the text was organized. The episodic web was for narrative content and showed how the story unfolded. The thematic or descriptive web related elements and details about people, places or things around a central theme, with associations and connections stemming from the main concept. The classification map was mainly for expository text and demonstrated how a class of concepts and properties or attributes related.

Results showed that 19 of the 27 children in the mapping group had higher total comprehension scores. There was a significant difference between the number of comprehension questions the mapping students got correct over the students in this verbal approach group.

The authors suggest reasons for the mapping procedure’s success: it visually represents all major points of the content and the connective links bind the information in a conceptual and organized way.

They go on to suggest that the strategy provides mental organization for children that may remain in the “mind’s eye,” helping poor readers organize new content as it is being read. They also mention that it appears to integrate the verbal (which is recalled poorly) with the nonverbal, which is a strength in mental functioning for many disabled readers.

**Notes:**
Area: COMPREHENSION

Age/Grade Level: Grade 3

Title of Study:
Self-Generated Questions as an Aid to Reading Comprehension

Author: Cohen, R.

Reference:
The Reading Teacher, 1983, Vol. 36, pp. 770-775

Scientifically-Based Research Criteria:
- Control Group
- Peer Reviewed
- Rigorous Data Analysis
- Valid/Reliable (Had two independent judges to check the reliability of the scoring system)

Summary:
Before this study, all of the research conducted on questioning was either on the use of questions by the teacher (Boker, 1974, Bruning, 1968) or studies done with high school or college students on student-generated questions on learning (Manzo, 1970, Singer & Donlan, 1982). The goal of this study was to determine if similar self-questioning strategies, proven to work with older learners, would be effective with younger or less able learners. Specifically, the authors wondered if it was possible to train elementary school students to generate questions while reading short stories, then determine if this self-questioning strategy would enhance reading comprehension.

For this study the researcher designed programmed instructional material for training grade school children to generate questions of the who, when, where, what, how, why category for short stories. There were two parts to the training program that came in the form of six separate booklets. First, there was training in question generation. Students had to discriminate between questions and non-questions, between good questions and poor questions, then produce good questions for short paragraphs. The second part of the training consisted of the application of questioning skills. Students were required to read a story and answer, “What is the story about?” Next, they had to generate two good questions for the story, read to answer the questions, then for each question that could not be answered by the story, generate a new, good question.

Significant gains in all three experimental groups indicated that it was possible to train third graders to generate literal level questions while reading short stories and increase comprehension. The discussion of the results suggests that it would be wise to teach younger children to use self-questioning strategies, and should start as early as the primary grades to improve reading comprehension.

Notes:
Only literal level questions were used-- no evidence on higher level questioning.
**Topic:** DIRECT INSTRUCTION

**Age/Grade:** Kindergarten

**Title:** Effectiveness of a Direct Instruction Academic Kindergarten for Low-income Students

**Reference:**

**Scientifically- Based Research**
Control Group
Peer Reviewed
**Long term study: K-3rd grade**
Rigorous Data Analysis
Valid/Reliable
**Quasi-experimental**

**Summary:**
The authors of this study cite that since the link between poverty and school failure is strong; early, intensive intervention is necessary. This article describes a particular approach called the Direct Instruction Model (DISTAR) that promotes acquisition of knowledge in reading, language and math. There were two experimental groups in the study, each with their own comparison group. The first experimental group received a Direct Instruction program from kindergarten through third grade. The second received Direct Instruction program from first through third grade, but did not receive an academic kindergarten experience. The primary interest of this study was to compare the achievement levels of the Direct Instruction students who received the kindergarten program with those who did not.

The Direct Instruction kindergarten day was devoted to building reading, language and math skills. Students worked in groups of six to ten with a teacher or aide for 20-30 minutes. Each session had six or seven three minute teaching sequences that covered a wide range of activities and had teachers moving quickly from one activity to the next, accommodating the short attention span of the students for the 20-30 minute lesson. Game-like activities were integrated with the content of the small-group sessions and provided practice and mastery of key concepts. New letter-sound correspondences were carefully controlled and slowly introduced. Students were allowed as much time as necessary to learn each new sound before the next was introduced. Students were taught how to systematically blend sounds before they were asked to sound out simple words.

Students spend about 30 minutes a day in “academically related” independent activities; practicing writing numbers and letters, coloring pictures related to the stories they’ve read, writing words, and then later, independent silent reading with short, paperback books. In addition to the DISTAR program, teachers read out loud to students daily and gave children opportunities to use language to describe their world. The remainder of the full-day kindergarten day consisted of traditional kindergarten activities—playing with dolls, blocks, music, etc., and providing social interactions.

The first through third grade DI program was more effective than the district’s program in the areas of math and language, but students who had the additional year of academic kindergarten outperformed the first grade group on all areas with a significant difference. In fact, the kindergarten group performed at or near the national median in all academic measures and maintained this advantage though third grade, with the strongest effect being in reading—or at least what they measured as reading. The results of this study indicated that the benefits of an academic kindergarten were detected nine years after the program had ended, when the children were in ninth grade.

**Notes:**
Pretty small groups (four schools, 28 in experiment, 26 control); this is simple to implement; training is minimal; other testing instruments might be useful for more information.
### Scientifically-Based Research Criteria:
- Control Group
- Peer Reviewed

** Rigorous Data Analysis
- Valid/Reliable

** Used John’s Basic Reading Inventory for pre/post testing

### Title of Study:
Effects of Fluency Development on Urban Second-Grade Readers

### Authors:
Rasinski, Padak, Linek, Sturtevant

### Reference:

### Summary:
The researchers in this study developed a model on fluency instruction that 1) can be readily integrated into the regular reading curriculum; 2) employs an extensive array of principles implemented over the course of a school year and; 3) uses several quantifiable measures of reading performance to evaluate the treatment. Known as the fluency development lesson (FDL), it incorporates several key principles of effective literacy instruction and takes about 10-15 minutes. It was implemented into the regular reading curriculum of two urban second grades. Treatments were administered during the first 15 minutes of each day. The teacher administered the FDL to the experimental group. Steps in the FDL:

1. students are provided a 50-150 word text for reading. The teacher introduces the text and invites predictions;
2. teacher models by reading orally to the whole class;
3. teacher leads the class in discussion of the text, but also her oral reading: the rate, pitch, phrasing and intonation during reading;
4. class chorally reads text several times with teacher;
5. children pair up, then read the text orally several times to their partner, who provides feedback on the other’s reading;
6. teacher invites pairs or individuals to read to perform for the class and 7) students are encouraged to read the text on their own or for parents.

The control group worked with the same texts for the same periods of time, but participated in activities like oral and silent reading, discussion, rewriting and summarizing and discussing words in the text.

The control teachers were asked to minimize multiple readings of the text.

Analysis of data indicated that many children benefited from the instruction: they gained greater improvement in their overall reading achievement, word recognition and fluency. Those who read the poorest at the onset of the study made the greatest gains.

### Notes:
Uses a systematic, synthetic approach, “breaking all skills into small steps; seems to really dissect the process; demonstrates that kindergarten children do benefit from direct instruction (even if this program is not used) and has implications for long-term.