Intervention for Reading Problems: Balanced Literacy from a Neuropsychological Perspective

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Reading Instruction: The Big Questions

What should be taught?

"…literacy acquisition is a complex process for which there is no single key to success." NRP Report (2000), page 2-7.

2

Reading

Why we'll never all be on the same page when it comes to reading and reading interventions:

3

Although it is a common belief that men are significantly more likely to be dyslexic than women, this assumed sex imbalance is not substantiated by recent research (54,55). There may be slightly more men than women who have dyslexia, but the difference is not significant. This notion is illustrated by a study (56) of an epidemiological sample of children in grades 2 and 3 in which reading and IQ tests were used to provide a psychometric definition of dyslexia. The investigators found that 8.7% of the boys and 6.9% of the girls were dyslexic in grade 2, and that 9.0% of the boys and 6.0% of the girls were dyslexic in grade 3. However, when they examined the sex differences in referral rates in the dyslexics identified by the teachers, they found that 13.6% of the boys and 3.2% of the girls were identified as dyslexic in the second grade, and that 10.0% of the boys and 4.2% girls were identified as dyslexic in the third grade, indicating a significant referral bias in favour of boys. Although the actual incidence of dyslexia was similar in boys and girls, boys were much more likely to be referred for possible assessment. In general, Shaywitz et al (56) found that the boys were identified because of behavioural difficulties in the classroom, which drew the teacher's attention to them. The girls were much less likely to have behaviour problems and, thus, were not identified as having reading difficulties, although they were almost as likely as boys to have a disability.

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Source:
Pediatric Child Health. 2006 November; 11(9): 581–587.
PMCID: PMC2528651
Perspectives on dyslexia
Linda S Siegel, PhD

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Reading Instruction: The Big Questions

- What should be taught?
- When should it be taught?
- How should it be taught?

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Reading Instruction: The Big Questions

What should be taught?

Although much controversy remains regarding this issue, a general consensus has formed around the concept of Balanced Literacy.

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What is Balanced Literacy?

Balanced Literacy is a term that can be used to define instructional methods and programs that attempt to address ALL (or almost all) of the components defined in a comprehensive, brain-based cognitive neuropsychological model of reading.

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What is Balanced Literacy?

The findings of the National Reading Panel are available at:

www.nationalreadingpanel.org/publications

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What is Balanced Literacy?

According to the National Reading Panel's (NRP, 2000) study of Reading, Balanced Literacy is defined by "The Big Five"

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What is Balanced Literacy?

The NRP's Big Five includes:

1. Phonological Awareness
2. Phonics
3. Fluency
4. Vocabulary
5. Comprehension

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What is Balanced Literacy?

Phonological Awareness (PA)

- The ability to notice, think about, and work with the individual sounds (phonemes) in spoken words.
- Many children require direct instruction to learn how phonemes make up words

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What is Balanced Literacy?

Phonics

- The relationships between the letters (graphemes) of written language and the individual sounds (phonemes) of spoken language.

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What is Balanced Literacy?

Fluency

- The ability to read a text accurately and quickly. Oral reading is effortless and done with expression; when reading silently, words are recognized automatically.

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What is Balanced Literacy?

Vocabulary

- Knowledge of words used to communicate effectively
  - Oral Vocabulary – the words we recognize when listening or use when speaking
  - Reading Vocabulary – the words we recognize or use in print

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What is Balanced Literacy?

Comprehension

- Understanding what is read.

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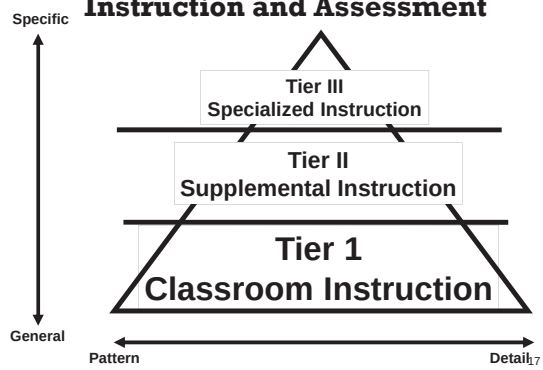
Three Tier Model of Instruction and Assessment



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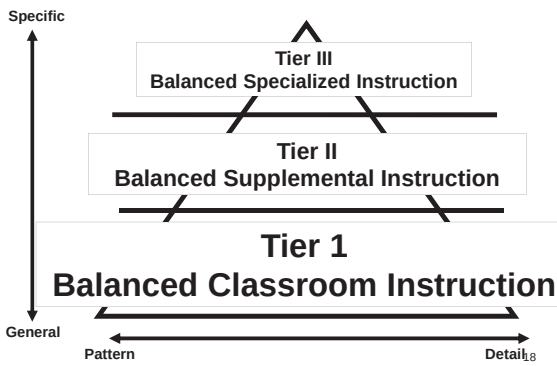
Three Tier Model Balanced Within Tiers



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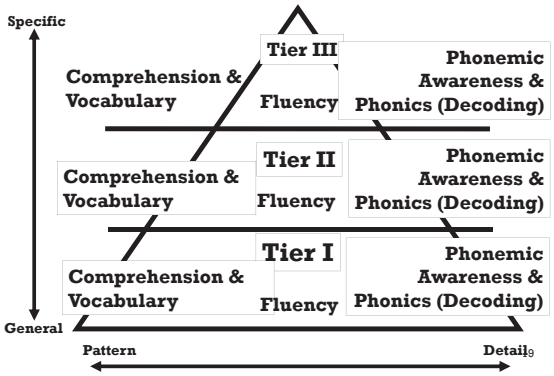
Three Tier Model Balanced Within Tiers



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The Neuropsychology of Balanced Literacy

Neuropsychological models of reading specify the mental constructs used to acquire competence in reading

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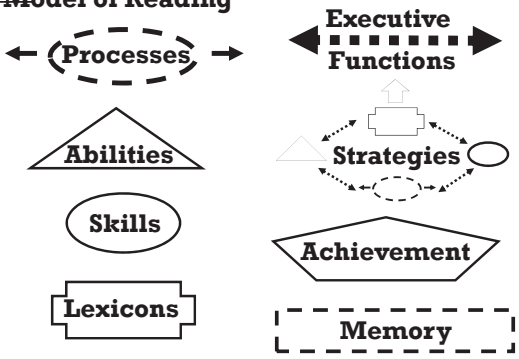
Basic Concepts in a Neuropsychological Model of Reading



Defining Cognitive Processes

- Basic Cognitive Processes are the cognitive capacities used to translate sensory information and perceptions into internal mental representations

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Cognitive Processes

- Processes include:
  - Auditory Perception
  - Auditory Discrimination
  - Visual Perception
  - Visual Discrimination
  - Kinesthetic Perception
  - Kinesthetic Discrimination

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Defining Cognitive Abilities

- Cognitive Abilities are the mental capacities that utilize *internal mental representations* to produce thoughts and actions.

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Cognitive Abilities

- Abilities include:
  - Visuospatial
  - Language
  - Reasoning/Association
  - Ideation/Generation

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Processes vs Abilities

- Processes and Abilities both refer to mental constructs that enable learning and production
- Processes are narrower, more specific mental constructs; Abilities are broader, more overarching mental constructs

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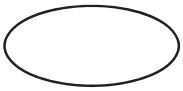
Defining Skills

- Skills are specific, learned routines; skills are utilized in concert with abilities, processes, lexicons and strategies to perform tasks or increase the knowledge store through new learning



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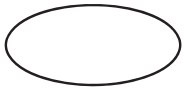
Reading Skills

- Reading Skills include:
  - Sight Word Recognition
  - Word Decoding
  - Fluency
  - Comprehension



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Defining Lexicons

- Lexicons are knowledge bases from which word/subword information can be retrieved and used to inform learning or production.

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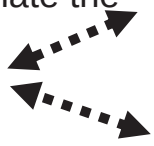
Defining Executive Functions

- Executive Functions are the mental capacities that engage awareness and intention and cue, direct, and coordinate the use of all other mental capacities.



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Defining Strategies

- Strategies are more general learned or newly generated routines that can be applied to increase the efficiency of the use of abilities, processes and/or skills

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Redefining Memory

- Memory represents a time-related state of mind distinct from processes, abilities, lexicons, skills, strategies and achievement; memory states provide the temporal and spatial contexts for perception, emotion, cognition, and action.

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Defining Achievement

Achievement is the end result (product) of the application of abilities, processes, skills and strategies to a contextually meaningful task

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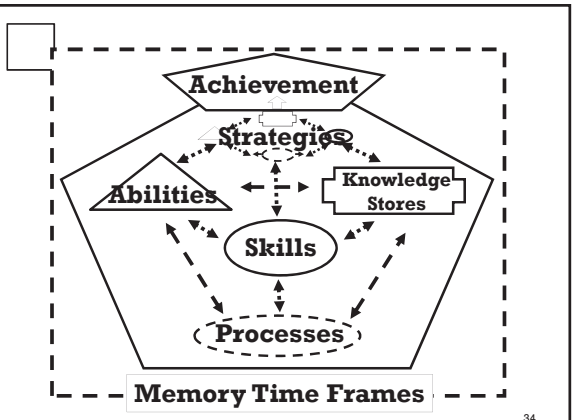

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Process Deficits

- Process deficits obstruct learning and production, but often can be by-passed or compensated for at least to some degree; in some instances their effects can be significantly reduced if addressed during early developmental stages with a good intervention program
- Severe process deficits result in learning disabilities and/or producing disabilities involving slowed and/or inconsistent learning and production

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Ability Deficits

- Ability deficits constrain learning and production; the degree of deficit places an upper limit on learning and production; conventional wisdom suggests that ability deficits usually cannot be altered
- Severe ability deficits result in cognitive impairments, that greatly constrain learning and production, such as severe language impairment or mental retardation

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Cognition and Achievement

- Academic achievement of any type is dependent on multiple cognitive constructs, any one of which may be a constraint on or an impediment to overall level of achievement.

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Cognition and Achievement

- Deficits in Abilities, Lexicons, Complex Skills and Memory constrain academic achievement.
- Deficits in Processes, Basic Skills, Strategies, Memory, and Executive Functions impede academic achievement.

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Executive Functions and Achievement

- Although other mental constructs (processes, abilities, skills, and knowledge bases) may be well-developed, difficulties with the use of executive functions to cue, direct, coordinate and integrate the use of these other mental constructs may result in achievement far below what may be expected.

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Learning vs Producing

- Producing difficulties are different from learning difficulties;
- Producing difficulties are more likely to reflect poor use or disuse of executive functions.

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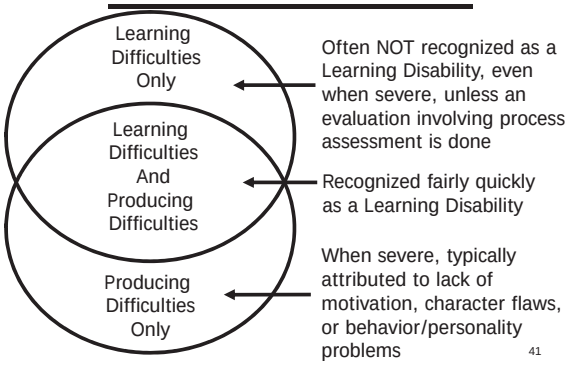
A General Model for Conceptualizing Learning and Producing Difficulties



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Cognition and Achievement

- Impediments and constraints greatly reduce the likelihood that a correlation coefficient will accurately characterize the relationships between performance on tests of academic achievement and performance on tests of abilities, lexicons, processes, and skills.

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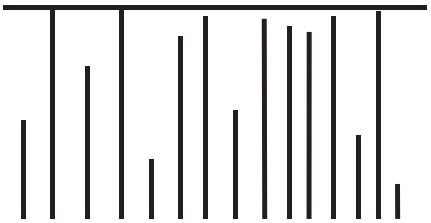
Cognition and Academic Achievement

Score level on a test of reasoning with verbal information



Score levels on a test of reading comprehension

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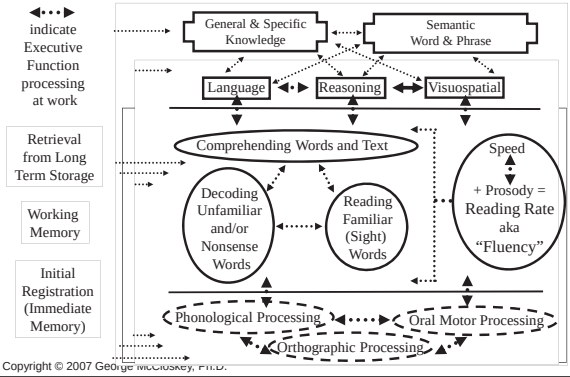
An Integrative Model Specifying Processes, Abilities, Lexicons, Skills, Memory and Achievement in Reading



Neuropsychology of Dyslexia

- Dyslexia is associated with narrow-band deficits in basic processing/functioning (phonologic, orthographic, oral motor) at the word and/or subword processing levels
  - Phonological Dyslexia
  - Surface Dyslexia
  - Deep Dyslexia

Neuropsychology of Dyslexia

- There is no neuropsychological classification of "Comprehension Dyslexia; Reading Comprehension depends on the interaction of all processes, abilities, skills, and lexicons and all three memory time frames.
- However…

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Neuropsychology of Reading Comprehension Deficits

- Laurie E. Cutting, Amy Clements-Stephens, Kenneth R. Pugh, Scott Burns, Aize Cao, James J. Pekar, Nicole Davis, Sheryl L. Rimrodt. **Not All Reading Disabilities Are Dyslexia: Distinct Neurobiology of Specific Comprehension Deficits**. *Brain Connectivity*, 2013; 3 (2): 199
- Inferior frontal gyrus abnormalities when attempting to process the meaning of low frequency words

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The Neuropsychology of Balanced Literacy

How do the Big Five match-up with a Neuro-Cognitive Model of Reading?

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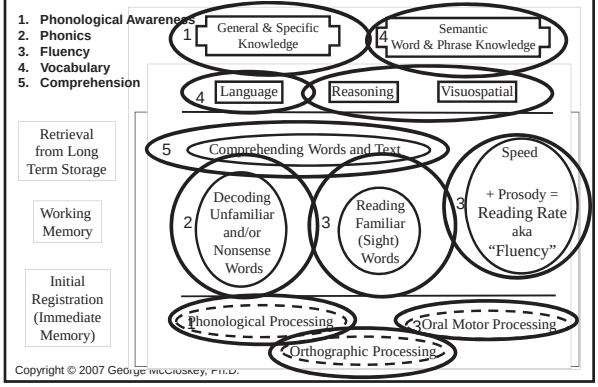
An Integrative Model Specifying Processes, Abilities, Lexicons, Skills, Memory and Achievement in Reading



Neuro Model clarification of NRP Big 5

- Phonemic Awareness and Phonics are part of a three stage progression of acquiring decoding knowledge and skill:
  - Phonemic Awareness (preK-1)
  - Phonics (Alphabet Principle) (K-2)
  - Decoding (Synthetic Phonics) (2-12)
- Orthographic Awareness/ Processing should be recognized and addressed as a separate instructional component.

Neuro Model clarification of NRP Big 5

- Reading Rate should replace the NRP term "Fluency" because the NRP definition is actually restricted to oral reading speed and prosody and does not refer to the broader use of the term fluency meaning reading quickly and accurately with good comprehension.
- While vocabulary and comprehension are included in the NRP Big 5, their precursor, reasoning with language, is not.

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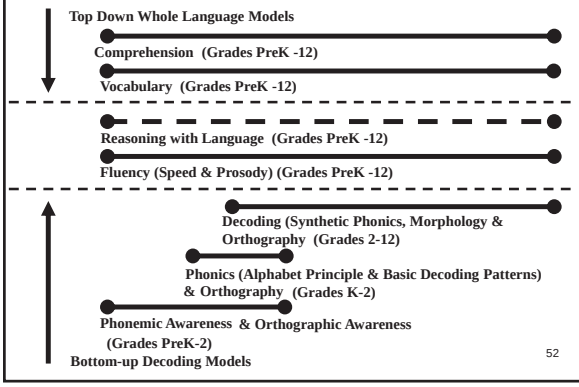
Balanced Reading Instruction Includes:



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Neuro Model Balanced Literacy Instructional Components

- Build Lexicons (Phono & Ortho, Vocabulary, General Information)
- Model/Teach How to Process Text (Apply Phono & Ortho Lexicons) while seeing, hearing and speaking
- Teach Reading Skills (Decoding, Word Recognition, Reading Rate [aka Fluency], Comprehension)

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Neuro Model Balanced Literacy Instructional Components

- Model Use of Abilities (Language, Reasoning, Visuospatial) to enhance reading comprehension
- Cue, Model & Teach Use of Executive Functions (Cueing & Coordinating)
- Model & Teach Reading Strategies (Word, Sentence, Text Levels)
- Work within All Memory Contexts (IR, WM, LTR)

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Language Abilities

- Children use receptive and expressive language abilities to make meaning of the world around them.
- Effective use of language abilities reflects an understanding of grammar, syntax and morphology.

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Language Abilities

Listening to and telling stories, acting in plays, and engaging in social interactions enhances students' effective use of language abilities.

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Lexicons

Lexicons are knowledge bases from which information about words can be retrieved and used to inform learning and/or production

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Pronunciation Lexicon

The pronunciation lexicon is a child's store of all the words he or she has ever heard spoken.

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Semantic Lexicon

The semantic lexicon is a child's store of all the meanings of words he or she knows.

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Phonologic Lexicon

The phonologic lexicon is a child's store of all the different sounds they hear in spoken words.

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Orthographic Lexicon

The orthographic (graphemic) lexicon is a child's store of the visual images of letters, letter clusters, words and numbers.

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Early Intervention

The components most frequently over-looked in early education programs are:

- orthographic awareness
- oral-motor functioning
- visual-spatial representation of language
- reasoning with language

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Phonological Awareness (PA)

- PA is the ability to notice, think about, and work with the individual sounds (phonemes) in spoken words.
- Many children require direct instruction to learn how phonemes make up words.
- PA leads to the development of the phonologic lexicon.

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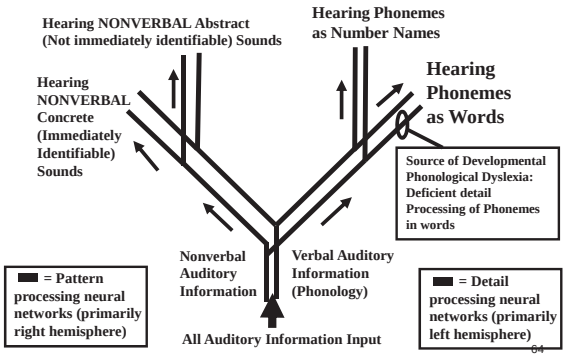
Auditory Information Processing Neural Networks



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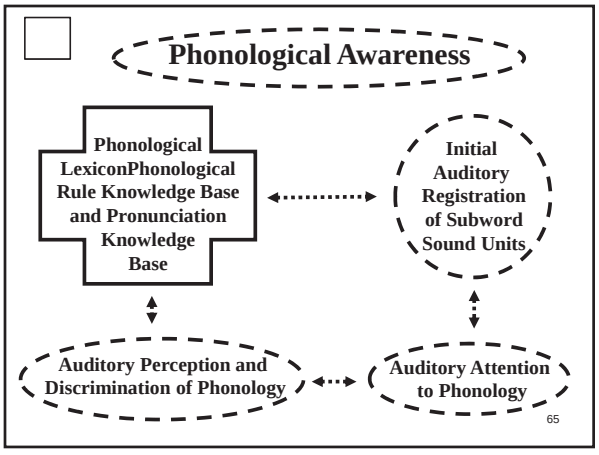

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Phonological Processing and Working Memory

- The role of working memory in processing information while learning and producing is widely acknowledged.
- Most tasks used to assess working memory do not directly reflect how working memory is used during the act of reading.
- Many tasks thought to measure specific processes or abilities are assessing the use of these processes or abilities within the working memory time frame.

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Phonological Processing and Working Memory

- A case in point: The assessment of phonological processing must be considered in the context of working memory use.
- The NEPSY Phonological Processing Subtest is composed of two sections: Part A Word Segment Recognition and Part B Phonological Segmentation Recognition
- Part A is administered to children ages 3-8
- Part B is administered to children ages 9-12

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Phonological Processing and Working Memory

Directions for NEPSY Phonological Processing Part A:

Look at these three pictures. I will say a word that goes with each picture. Then I will say part of one of the words. Listen carefully because I can only say it once. Point to the picture that goes with it.

Dog … Doll Duck … "og"

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Phonological Processing and Working Memory

Directions for NEPSY Phonological Processing Part B:

I am going to say a word and I want you to say it after me. Say inside. Now I want you to say the word leaving out a part. Say inside. Now say it again, but don't say side. [in]

This time I am going to say a word and you say it after me. Then I'll ask you to change a sound in the word to make a new word. Say bike. Now change the /i/ in bike to /a/.
The new word is ___ [bake].

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Phonological Processing and Working Memory

It is clear that NEPSY Phonological Processing Part A assesses very basic phonological processing (phonological awareness) with only immediate memory demands while Part B assesses phonological processing combined with gradually increasing working memory demands (complex Phonological processing).

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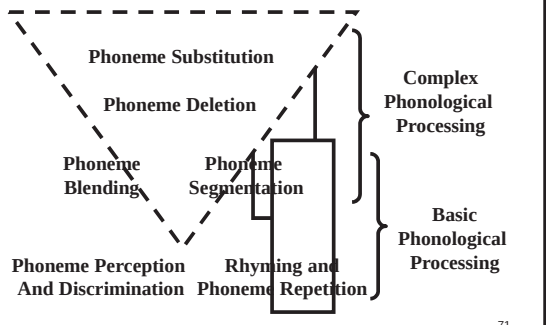
Working Memory and Phonological Processing



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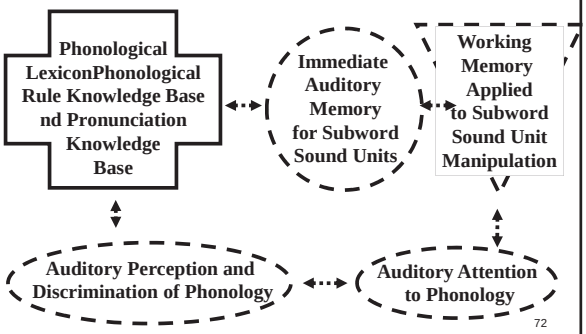
Phonological Processing



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PA Instruction: Yes, It Works

The NRP's review of the research literature led to the following conclusions about PA instruction:

- "The results clearly show that PA instruction is effective in teaching children to attend to and manipulate speech sounds in words." page 2-5
- "Results of the meta-analysis showed that teaching children to manipulate sounds in language helps them learn to read." page 2-5

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PA Instruction: Yes, It Works

The NRP's review of the research literature led to the following conclusions about PA instruction:

- "Effects of PA training lasted well beyond the end of training." page 2-5
- "PA instruction produced positive effects on both word reading and pseudoword reading, indicating that it helps children decode novel words as well as remember how to read familiar words." page 2-5

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PA Instruction: Yes, It Works

The NRP's review of the research literature led to the following conclusions about PA instruction:

- "PA training was effective in boosting reading comprehension, although effect size was smaller than for word reading." page 2-5
- "teaching with letters is important because this helps children apply their PA skills to reading and writing." page 2-6

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PA Instruction: How and When?

PA instruction works best when:

- children understand the connection between pa and reading
- Focused, explicit instruction of 1-2 pa skills is most effective approach
- Phoneme manipulation with letters (e.g. segmenting words into phonemes and representing each with a grapheme) is more effective than segmenting without letters

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PA Instruction: How and When?

- Small group instruction is better than 1-1 or large class
- PA instruction does not need to consume large amounts of time; 5-18 total hours of instruction produced greatest gains
- PA instruction done by classroom teachers can be very effective
- Computer-based PA instruction can be effective

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PA Instruction: How and When?

- Effect sizes greater for beginning readers than for older disabled readers
- Children in lowest grades (pre-K, K) showed larger gains in acquiring pa than students in 1st grade & above
- Most effective with children learning to read English
- SES level exerted no impact on pa training effect size

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PA Instruction: How and When?

- Essential to keep in mind that "one size does not fit all"
  - Children will differ in their PA capacities; some will need more instruction than others; some will not require instruction at all.
  - Children will differ in the time they need to acquire PA. Instruction will need to be flexible in order to assure that sufficient time has been devoted to PA instruction for those children who need it.

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PA Instruction: How and When?

- Essential to keep in mind that "one size does not fit all"
  - Best approach to PA instruction involves assessing students' PA capacities before beginning instruction and then tailoring instruction to meet the varying needs of different children within the class (i.e., a differentiated instruction model).

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PA Instruction: How and When?

- Essential to keep in mind that "one size does not fit all"
  - There are many programs and techniques for teaching PA; some are better suited than others for teaching specific children.
  - "teachers need to evaluate the methods they use against measured success in their own students." NRP, 2000, page 2-7.
  - Teachers need to take account of motivational aspects of programs – for themselves as well as for students.

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Phonological Awareness Instruction Programs

Some commercially available programs that have been constructed taking into account the literature on phonological awareness instruction best practices:

- Phonemic Awareness for Young Children
- Earobics (PA Component)
- Fast Forword (PA Component)
- Road to the Code
- Lindamood Phonemic Sequencing (LIPS)

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Orthographic Awareness (OA)

- OA is the ability to notice, think about, and work with the individual visual representations (aka letters or graphemes) that comprise written words.
- Some children require direct instruction to learn how to attend carefully to the graphemes that make up words.

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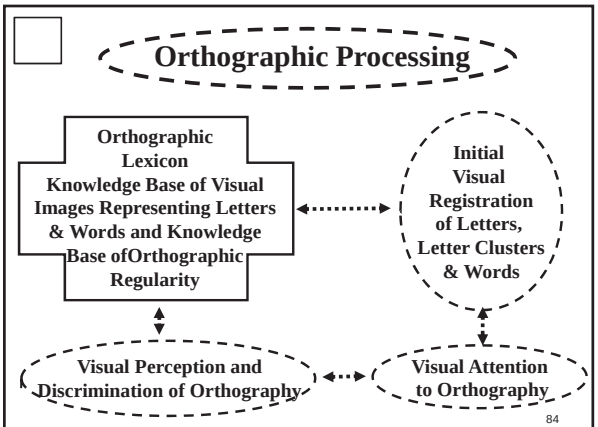

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Non-orthographic Visual Processing

Perception of this image varies depending on whether you are engaging pattern-oriented perceptual processes or detail-oriented perceptual processes. Patter-oriented processing leads to perceiving the visual image of a young girl. Detail-oriented processing leads to perceiving the visual image of an old woman. Many viewers can consciously or nonconsciously alter the perception process at will, first seeing a young girl, then an old woman or vice versa.

Orthographic Processing

bread

beard

When viewing orthography, detail processing should be the preferred mode for visual processing rather than pattern processing. Although pattern processing can easily distinguish between "rea" and "ear" because the outer contours are different, pattern processing cannot distinguish "bread" from "beard" because the outer contours are the same. Good readers perceive all of the details of every word, thereby avoiding perceptual errors when reading similar words.

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Understanding Eye Movements in Reading

- Rayner (1997) summarized 25 year of research on eye movements:
- Reading involves eye movements called saccades during which the eyes move very rapidly. Saccades are necessary because of the acuity limitations of the visual system.
- Saccades are separated by fixations (periods of time when the eyes are relatively still).
- The purpose of eye movements is to place the foveal region on that part of the text to be processed next.
- The typical saccades travel about 6-9 letter spaces and generally are not affected by the size of print.

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Understanding Eye Movements in Reading

- The perceptual span (area in which letters can be processed) extends 14-15 character spaces to the right of the fixation point and 3-4 character spaces to the left.
- The word identification span is smaller than the total perceptual span, typically not exceeding 7-8 letter spaces to the right of fixation.
- Even though 20-30% of words in a text are not the target of a fixation, saccadic movement spacing combined with perceptual span length assure that every letter of every word enters the visual field for accurate processing.

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Assessing Visual Processing Related to Reading

To maintain the close connection to reading skills and reading achievement, assessment must focus on visual processing of orthography rather than visual processing of nonverbal visual images

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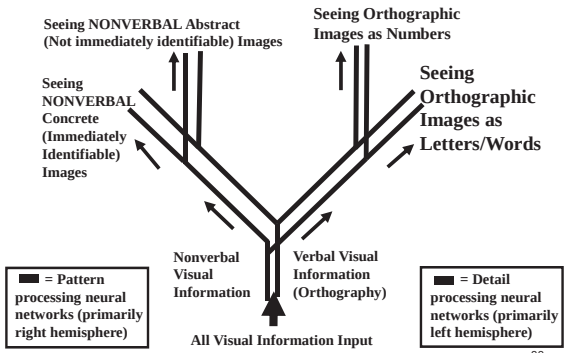
Visual Information Processing Neural Networks



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Assessing Orthographic Processing

An example of an assessment of nonverbal visual processing unrelated to reading: Rey Complex Figure Test (RCFT) Design Copy and Immediate Recall Trials

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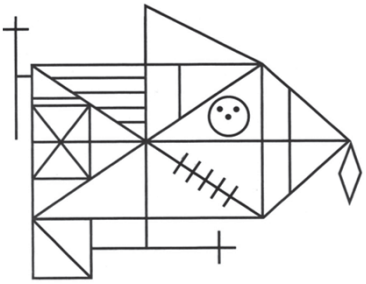
RCFT directions: Look at this figure. I would like you to copy that figure onto this sheet of paper. Copy it so that I would know that this is the figure you drew. Do a good job.



James Age 10,
Rey Complex Figure Copy:

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Assessing Orthographic Processing

- James' reading scores:
  WIAT-II Basic Reading 111
  WIAT-II Reading Comprehension 102

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Assessing Orthographic Processing

Example of assessment of verbal visual (orthographic) processing directly related to reading:

Process Assessment of the Learner (PAL) Receptive Coding task

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Assessing Orthographic Processing

PAL Receptive Coding directions:

I will show you two words one at a time.

If the words are exactly the same, say "yes." If the words are not exactly the same, say "no."

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Intervention for Orthographic Awareness Difficulties

- Should be addressed directly in early intervention (Pre-K-1)
- Intervention involves transfer of visual images to long-term storage, usually through repetition drills
- Unremediated difficulties result in chronic illiteracy
- Typically not the primary factor in most reading problems

97

Improving Orthographic Awareness

"Circle all the letters on this page"

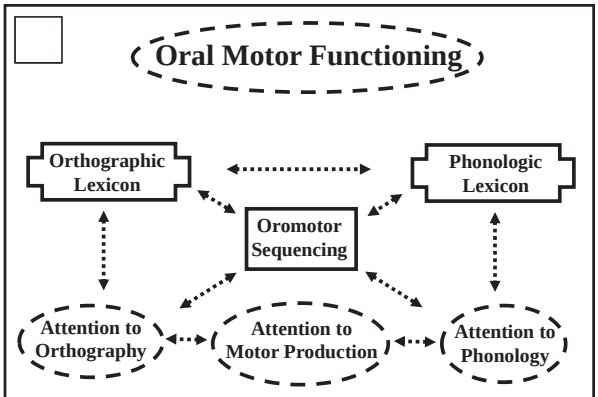
a $ d k & * z b ц

p # n u q m l @ #

б j & * w r ^ s x

$ y o # % v g ^ h

98



99

Interventions for Poor Oral Motor Functioning

- Letter naming fluency strengthens the neural pathways responsible for sight word recognition automaticity
- Sound fluency strengthens the neural pathways responsible for decoding automaticity

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Assessing Oral Motor Functioning Related to Reading

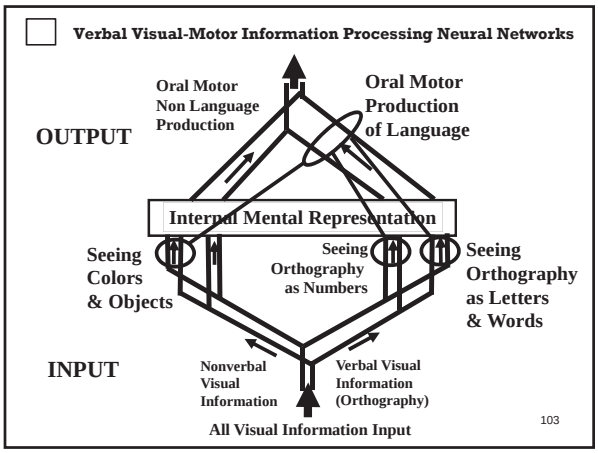
- Oral motor functioning assessment and intervention should focus on the fast and accurate integration of phonology and orthography rather than the naming of colors or objects.

101

Assessing Oral Motor Functioning Related to Reading

- Measures of oral language fluency that focus on rapid retrieval of words starting with specific letters/letter sounds, words from specific semantic categories, or rapid discourse are not appropriate measures for assessing the specific oral motor production processing used in the fast and accurate reading of words and connected text

102



Assessing Oral Motor Functioning Related to Reading

Examples of assessments of oral motor production processing less directly related to reading:

- NEPSY Speeded Naming
- WJ-III Rapid Picture Naming
- CTOPP Rapid Naming for Objects
- CTOPP Rapid Naming for Colors

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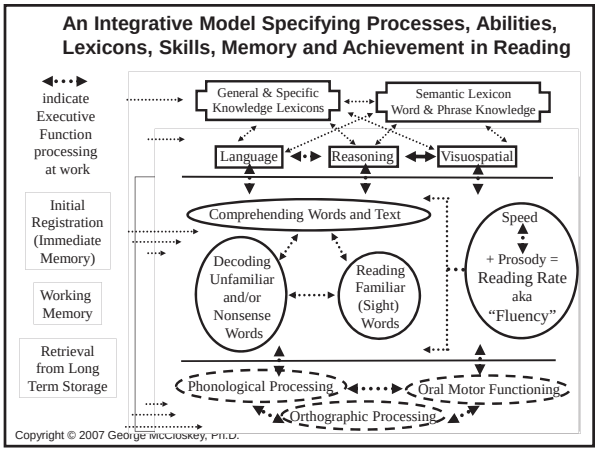

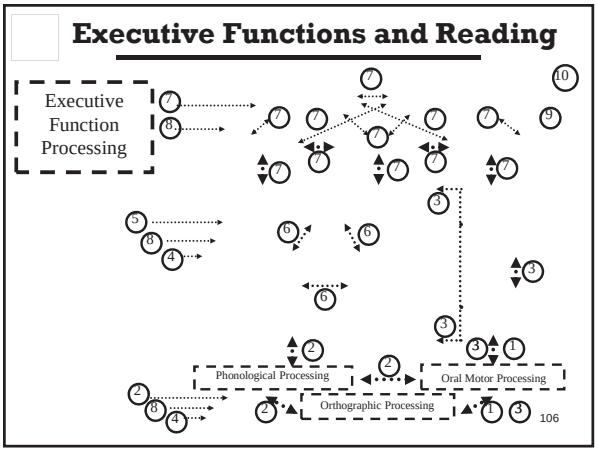

Executive Functions and Reading

① Cueing immediate and sustained attention to orthography for accurate letter/word perception and discrimination

② Cueing and coordinating the use of phonological and orthographic processes for accurate word pronunciation

③ Directing efficient oral motor production, prosody, and rate for reading words and connected text

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Executive Functions and Reading

④ Cueing and directing the use of attention and immediate memory resources for reading words and connected text

⑤ Cueing retrieval of information from various Lexicons to read words and connected text

⑥ Cueing and coordinating the use of word recognition, word decoding, and reading comprehension skills

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Executive Functions and Reading

⑦ Cueing and coordinating the use of abilities and the retrieval of knowledge from Lexicons to create meaning for text comprehension

⑧ Cueing and sustaining the use of working memory resources while reading words and constructing meaning from text

⑨ Cueing and directing the oral expression of meaning derived from text comprehension

⑩ Cueing and directing the use of strategies for reading words and deriving meaning from text

109

Cascading Production Decrement

PAL-II Rapid Automatic Naming

PAL-II Rapid Automatic Switching

Progressive deterioration of performance is observed as executive function demands (+ EF) become greater.

Cascading Production Decrement

Process: D-KEFS Color & Word Naming

Process + EF: D-KEFS CWI Inhibition

Process + + EF: D-KEFS Inhibition/ Switching

Progressive deterioration of performance is observed as executive function demands (+ EF) become greater.

Learning vs Producing

Producing difficulties are different from learning difficulties; producing difficulties are more likely to reflect poor use or disuse of executive functions.

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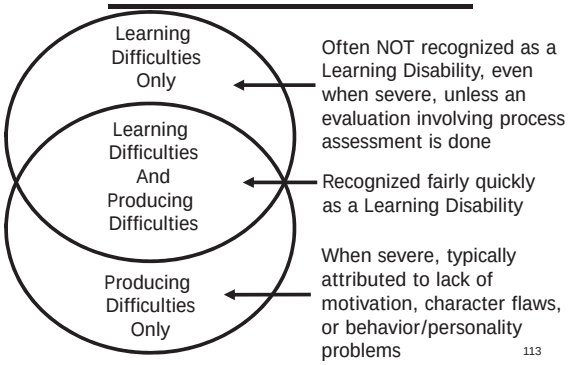
A General Model for Conceptualizing Learning and Producing Difficulties



113

Intervention for Difficulties with Direction of Attention to Orthography

- Typically not addressed specifically in intervention programs
- Intervention involves focusing attention on characteristic visual features of letters; learning to attend carefully and quickly to all the letters of every word

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Intervention for Difficulties with Directing Attention to Orthography

Interventions for executive functions difficulties with word reading miscues:

1) Increase awareness of and use of all of the steps in the word recognition process.

115

Intervention for Difficulties with Directing Attention to Orthography

- For a student who appears to be having a lot of difficulty with substituting visually similar highly familiar words, talk with the student about how words can be illusions in that they can fool us into believing that they look like other words we know.

116

Intervention for Difficulties with Directing Attention to Orthography

- Script for increasing awareness and use:
- "Look" (Perceive cue)
- "at each word" (Focus cue)
- "carefully." (Monitor cue)

117

Intervention for Difficulties with Directing Attention to Orthography

- "See the letters and words that **are** on the page, not the letters and words you **believe to be** on the page." (Inhibit cue)
- "Quickly" (Pace cue)
- "figure out if you know the word or don't know the word." (Gauge cue)

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Intervention for Difficulties with Directing Attention to Orthography

- "Quickly" (Pace cue)
- "say the word if you know it." (Retrieve cue)
- "Pause if you don't know it." (Interrupt cue)
- "Shift to decoding mode." (Shift cue)

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Intervention for Difficulties with Directing Attention to Orthography

- "and quickly" (Pace cue)
- "use your decoding skills to sound out the word." (Retrieve cue)
- "Ask yourself if what you sounded out matches a word you've heard before." (Monitor & Retrieve cues)

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Intervention for Difficulties with Directing Attention to Orthography

- "Use your decoding skills again if you don't recognize what you sounded out or if the word doesn't make sense in the sentence." (Correct cue)

121

Intervention for Difficulties with Directing Attention to Orthography

- Follow the discussion with word recognition drills and oral reading of passages that emphasize the use of the first four cues in the sequence ("Look / at each word / carefully./ See the letters and words that **are** on the page, not the letters and words you **believe to be** on the page.")

122

Intervention for Difficulties with Directing Attention to Orthography

- Attention to orthography difficulties also should be addressed in conjunction with fluency instruction.
- The following strategy can be used:

123

Intervention for Difficulties with Directing Attention to Orthography

- Note the words that are mispronounced during a "cold" read of a fluency practice passage.
- Identify those words that have been read correctly in word decoding lessons but that were mispronounced during the cold read.

124

Intervention for Difficulties with Directing Attention to Orthography

- On a copy of the practice passage, place an asterisk in front of every mispronounced word that had been pronounced correctly during decoding instruction.

125

Intervention for Difficulties with Directing Attention to Orthography

- Instruct the student as follows: "When you see an asterisk in front of a word, that means that this is a word that you don't always read correctly but that you know how to decode. The asterisk is there to remind you to use your decoding skills to sound out that word so that you will be sure to read it correctly."

126

Intervention for Difficulties with Directing Attention to Orthography

- Computer-based interventions that emphasize attention to orthographic regularity have demonstrated improvements in students' decoding skill application and overall reading achievement levels.

127

Intervention for Difficulties with Directing Attention to Orthography

- Many programs available today, such as Read 180 and Lexia, have the reading with orthographic and speech support components that have been shown to improve decoding skills.

128

Phonics

Phonics teaches the relationships between the letters (graphemes) of written language and the individual sounds (phonemes) of spoken language.

129

What is Phonics Instruction?

The NRP defined Phonics Instruction (PI) as delineating a planned, sequential set of phonic elements that are taught explicitly and systematically. The goal of all PI is to enable learners to acquire knowledge of the use of the alphabetic code.

130

What is Phonics Instruction?

NRP-identified approaches to PI:

- **Synthetic Phonics** – converting letter/letter combinations into sounds then blending the sounds together to form recognizable words.
- Analytic Phonics – analyzing letter-sound relationships in previously learned words; sounds are not produced in isolation.

131

What is Phonics Instruction?

NRP-identified approaches to PI:

- Analogy-Based Phonics – using parts of already-known word families to identify unknown words that have similar parts.
- Phonics Through Spelling – segmenting words into phonemes and making words by writing letters for phonemes.

132

What is Phonics Instruction?

NRP-identified approaches to PI:

- Onset-Rime Phonics – identifying the sound of the letter/s before the first vowel (onset) and the sound of the remaining part of the word (Rime).
- Embedded Phonics – letter sound relationships are taught during the reading of connected text (not considered systematic or explicit).

133

What is Phonics Instruction?

Embedded Phonics (nonsystematic and non-explicit) is the form of phonics typically used in whole language programs.

- "In whole language programs, the emphasis is upon meaning-based reading and writing activities. PI is integrated into these activities but taught incidentally as teachers decide it is needed" NRP 2000, page 2-90

Phonics Instruction: Does it Work?

The NRP's review of the research literature led to the following conclusions about PI:

- "Findings provided solid support for the conclusion that systematic PI makes a bigger contribution to growth in reading than alternative programs providing unsystematic or no phonics instruction." page 2-92

135

Phonics Instruction: Does it Work?

The NRP's review of the research literature led to the following conclusions about PI:

- "The effect size for synthetic programs was d= .45, for larger-unit programs, d= .34, and for miscellaneous programs, d= .27. The conclusion supported by these findings is that various types of systematic phonics approaches are significantly more effective than non-phonics approaches in promoting substantial growth in reading." page 2-93

136

Phonics Instruction: Does it Work?

The NRP's review of the research literature led to the following conclusions about PI:

- "These findings should dispel the belief that teaching phonics systematically to young children interferes with their ability to read and comprehend text. Quite the opposite is the case." page 2-94

137

Phonics Instruction: How and When?

- PI is effective when delivered through tutoring, through small groups, or through classroom instruction.
- "…systematic PI in kindergarten and 1st grade is highly beneficial and that children at these developmental levels are quite capable of learning phonemic and phonics concepts." page 2-93

138

Phonics Instruction: How and When?

- PI produced substantial reading growth among younger children at risk of developing future reading problems. Page 2-94
- PI also "significantly improved the reading performance of disabled readers (i.e., children with average IQs but poor reading)" page 2-94

139

Phonics Instruction: How and When?

- "PI failed to exert a significant impact on the reading performance of low achieving readers in 2nd through 6th grades (i.e., children with reading difficulties and possibly other cognitive difficulties explaining their low achievement)" page 2-94
- Possible reasons might be that the PI provided was not sufficiently intense or reading difficulties arose from sources not treated by PI such as poor comprehension. Page 2-94

140

Phonics Instruction: How and When?

- PI produced much growth in spelling among Kindergarten and 1st grade children, but not among students beyond 1st grade. (But it is pointed out that studies of students in 2nd grade and above focused on poor readers known to have great difficulties with spelling).
- "Another factor may be that as children move up in the grades, remembering how to spell words requires knowledge of HIGHER LEVEL REGULARITIES NOT COVERED IN PHONICS PROGRAMS." (???)

141

Phonics Instruction: How and When?

- "…remembering how to spell words requires knowledge of HIGHER LEVEL REGULARITIES NOT COVERED IN PHONICS PROGRAMS."
- The above statement fails to differentiate between the various types of PI and does not acknowledge the full scope and sequence of most synthetic phonics programs.

142

Phonics Instruction: How and When?

- Systematic PI helped children at all SES levels to make significantly greater gains in reading than did non-phonics instruction. Page 2-95
- Caution is needed in giving a blanket endorsement to all kinds of phonics programs. Programs that focus too much on the teaching of letter-sounds relations and not enough on putting them to use are unlikely to be very effective.

143

Phonics Instruction: How and When?

- "In implementing systematic phonics instruction, educators must keep the end in mind and ensure that children understand the purpose of learning letter-sounds and are able to apply their skills in their daily reading and writing activities." Page 2-96
- "Knowing that all phonics programs are not the same brings with it the implication that teachers must themselves be educated about how to evaluate different programs, to determine which are based on strong evidence and how they can most effectively use these programs in their own classrooms." Page 2-96

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Phonics Instruction: How and When?

Unfortunately, the NRP was not able to establish clear guidelines for PI, noting: "Questions needing further answers are…":

- How many months or years should a phonics program continue?
- If phonics has been taught systematically in K and 1st grades, should it continue in 2nd grade and beyond?
- How long should single instructional lessons last?
- How much ground should be covered in a program, i.e., how many letter-sound relations should be taught and how many different ways of using these relations to read and write words should be practiced for maximum benefit?

Phonics Instruction: How and When?

It is essential to keep in mind that "one size does not fit all"

- Children will differ in their phonics capacities; some will need more instruction than others; some will not require instruction at all.
- Teachers need to assess their students' phonics needs and select the types and amounts of phonics suited to those needs.
- "However, it is common for many phonics programs to present a fixed sequence of lessons scheduled form the beginning to the end of the school year." Page 2-97

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Phonics Instruction: How and When?

It is essential to keep in mind that "one size does not fit all"

- Best approach to PI instruction involves assessing students' phonics capacities and then tailoring instruction to meet the varying needs of different children within the class (i.e., a differentiated instruction model).

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Phonics Instruction: How and When?

As is the case with PA instruction,

- There are many programs and techniques for teaching phonics; some are better suited than others for teaching specific children.
- "teachers need to evaluate the methods they use against measured success in their own students." NRP, 2000, page 2-7.
- Teachers need to take account of motivational aspects of programs – for themselves as well as for students.

Systematic Decoding (Phonics) Instruction Programs

Some commercially available programs that have been constructed taking into account the literature on phonics/decoding instruction best practices:

- Wilson Reading System (K-12)
- Sonday System (2-12)
- Phonics for Reading
- Explode the Code

149

Fluency

Fluency is defined as the ability to read a text accurately and quickly. Oral reading is effortless and done with expression; when reading silently, words are recognized automatically.

150

NRP on Fluency

The NRP noted that:

- Fluency depends upon well developed word recognition skills, but such skills do not inevitably lead to fluency.
- While it is generally acknowledged that fluency is a critical component of skilled reading, it is often neglected in classroom instruction.

151

NRP on Fluency?

The NRP summarized the research on eye movements and fluency:

- Fluent readers come to fixate on function words (of, the, to, etc.) less often than on content words.
- Fluent readers do not skip function words – their facility with such words enables them to see these words adequately at the edge of the visual field while fixating on other words.
- Fluent readers get better at seeing words in a single fixation thereby evidencing fewer refixations on the same words and fewer short regressions (look-backs).

152

NRP on Fluency?

The NRP summarized the research on eye movements and fluency:

- Fluent readers develop a broader perceptual span allowing them to take in more information about words in a single fixation.
- Fluent readers improve the efficiency of the placement and overlap of fixations, allowing them to integrate more effectively information from each fixation.

153

NRP on Fluency

The NRP noted that:

- Skilled readers read words accurately, rapidly and efficiently. Children who do not develop reading fluency, no matter how bright they are, will continue to read slowly and with great effort." Page 3-3

154

Fluency Instruction

The NRP identified two very distinct approaches to Fluency Instruction (FI):

- The use of guided oral reading procedures such as repeated reading
- The use of techniques designed to encourage students to read more

155

Fluency Instruction

The NRP identified several approaches to repeated oral reading or guided oral reading practice:

- Repeated reading
- Neurological Impress
- Radio Reading
- Paired Reading
- "a variety of similar techniques aimed at developing fluent reading habits."

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Fluency Instruction

Put Reading First (2001) describes FI methods:

- Model fluent reading, then have students reread the text on their own
- Have students repeatedly read passages aloud with guidance
  - Student-adult reading
  - Choral reading
  - Tape-assisted reading
  - Partner reading
  - Reader's theatre

157

Effectiveness of Fluency Instruction

The NRP's review of the research literature led to the following conclusions about FI:

- "An extensive review of the literature indicates that classroom practices that encourage repeated oral reading with feedback and guidance leads to meaningful improvements in reading expertise for students – for good readers as well as those who are experiencing difficulties." Page 3-3

158

Effectiveness of Fluency Instruction

The NRP's review of the research literature led to the following conclusions about FI:

- "…a range of well-described instructional approaches to encouraging repeated oral reading result in increased reading proficiency." Page 3-3
- "In contrast, the NRP did not find evidence supporting the effectiveness of encouraging independent silent reading as a means of improving reading achievement." Page 3-4

159

Effectiveness of Fluency Instruction

- "The results of the analysis of programs that encourage students to read more were much less encouraging. Despite widespread acceptance of the idea that schools can successfully encourage students to read more and that these increases in reading practice will be translated into better fluency and higher reading achievement, there is not adequate evidence to sustain this claim." Page 3-28

160

Effectiveness of Fluency Instruction

- Repeated reading without additional support was as effective as repeated reading with phrasing support for 5th grade students. NRP Page 3-15
- Repeated reading with feedback or guidance was superior to repeated reading alone for 3rd grade students. NRP Page 3-15

161

Effectiveness of Fluency Instruction

- "The studies found clear improvements across multiple readings regardless of students' reading levels or age levels although greater gains were sometimes attributed to poor readers."
  NRP 2000, Page 3-15

162

Effectiveness of Fluency Instruction

- A mean weight effect size of .35 was apparent in studies using comprehension testing as an outcome.
- A mean weighted effect size of .44 was found with studies using fluency measures to assess outcomes.
- A mean weighted effect size of .55 was found when studies used measures of word recognition to assess outcome.
- A mean weighted effect size of .50 was found when aggregate reading achievement scores were the outcome.

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Effectiveness of Fluency Instruction

- "These effect sizes, weighted or not, suggest that guided oral reading procedures have a moderate impact on the reading achievement of the types of students who participated in these studies." Page 3-17
- "Again, the conclusion is that repeated reading and other related oral reading procedures have clear value for improving reading ability." Page 3-19

164

Effectiveness of Fluency Instruction

- "There were not enough comparisons of guided repeated oral reading procedures to allow for a systematic determination of best procedures." Page 3-19
- "The lack of clear differences among procedures…suggests the robustness of these procedures for stimulating reading improvement." Page 3-19

165

Effectiveness of Fluency Instruction

- It is possible that good and poor students benefit differentially from fluency instruction with poor readers learning more about the words and good readers developing better command of prosody.
- For very poor readers, the first thing that is probably learned from repeated reading is the words; use of passages that contain many of the same words likely facilitates reading growth for poor readers.

166

Fluency Instruction: What Works

- Study results indicated that teachers with little or no extra training could successfully use these procedures.
- Several special education studies demonstrated that students could provide peer tutoring to their classmates under the direction of a teacher.
- Teachers, parents, or peer tutors at most were provided with only 1 to 4 hours of training and usually the procedures did not require special materials.

167

Fluency Instruction: What Works

- FI that has students reading passages orally multiple times while receiving guidance or feedback from peers, parents, or teachers are effective in improving a variety of reading skills.
- "These procedures help improve students' reading ability, at least through grade 5, and they help improve the reading of students with learning problems much later than this." p. 3-20

168

Fluency Instruction: What Works

- In most studies, fluency work was relatively brief (15 to 30 minutes per lesson
- Fluency develops from practicing reading with a high degree of success; students should be reading text that is reasonably easy for them – at the student's independent reading level
- Text passages should be relatively short; 50-200 words in length
- Content type should vary – stories, nonfiction, poetry, etc.

169

Fluency Instruction

Some commercially available programs that have been constructed taking into account the literature on reading fluency instruction best practices:

- Read Naturally (K-7 supplement)
- Great Leaps (K-12 supplement)
- Quick Reads (grades 3-5)
- Fluency Formula (Tier I)

170

Reading Achievement

The reading research literature makes reference to "the fourth grade slump" the frequently observed drop in reading assessment scores that occurs for many students in the spring of the fourth grade year.

171

Reading Achievement

Big Question:

Why do reading achievement scores drop in 4th grade?

172

Reading Achievement

Reading researchers hypothesize that the 4th grade slump is due to a lack of adequate accumulation of vocabulary knowledge and a lack of adequate instruction in the use of reading comprehension strategies.

173

Reading Achievement

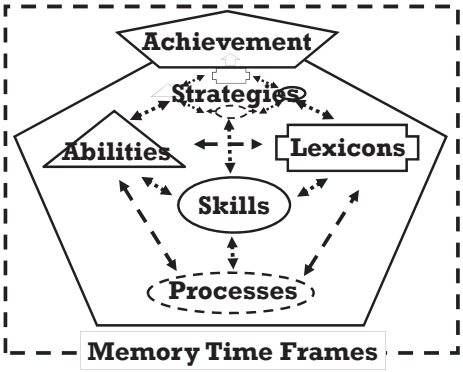
Additionally, measurement of reading achievement up to the 4th grade often is done mostly with progress monitoring measures that track words read correctly per minute.

174

Reading Achievement

- In some school districts, the documented slump cannot be attributed primarily to a lack of adequate exposure to vocabulary or good reading instruction.
- In these situations, what other factor could be contributing to the 4th grade slump?

175



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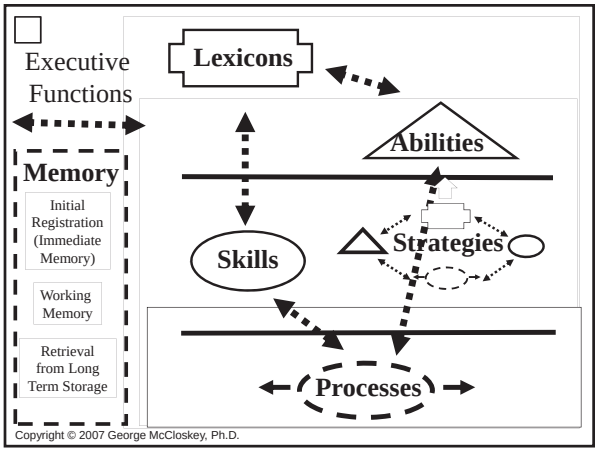

Cognition and Achievement

- Some cognitive constructs constrain academic achievement while others may impede academic achievement.
- Academic achievement of any type is dependent on multiple cognitive constructs, any one of which may be a constraint on overall level of achievement.

178

Cognition and Achievement

- Deficits in Abilities, Lexicons, Complex Skills and Memory constrain academic achievement.
- Deficits in Processes, Basic Skills, Strategies, Memory, and Executive Functions impede academic achievement.

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Cognition and Achievement

- Impediments and constraints greatly reduce the likelihood that a correlation coefficient will accurately characterize the relationships between performance on tests of academic achievement and performance on tests of abilities, lexicons, processes, and skills.

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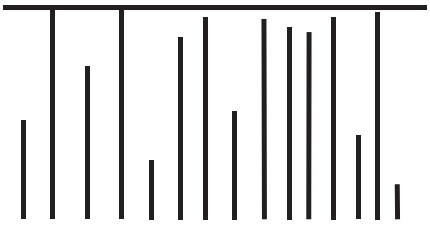
Cognition and Academic Achievement

Score level on a test of reasoning with verbal information



Score levels on a test of reading comprehension

Ability Deficits

- Ability deficits constrain learning and production; the degree of deficit places an upper limit on learning and production; conventional wisdom suggests that ability deficits usually cannot be altered
- Severe ability deficits result in cognitive impairments, that greatly constrain learning and production, such as severe language impairment or mental retardation

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Ability Deficits

- The conventional wisdom regarding ability deficits represents a fixed mindset.
- What is needed is a new perspective that embraces a growth mindset.
- A growth mindset suggests that abilities are not innate; they can be changed.

183

From Ability to Skill

The most critical shifts in educational thinking involve:

1) engendering a strong belief in the growth mindset that asserts that ability IS malleable.

184

From Ability to Skill

2) implementing and refining the techniques needed to change abilities into skills so that they are taught instead of merely measured.

185

From Ability to Skill

Marzano, Pickering & Pollock provided a blueprint for turning abilities into skills in their book "Classroom Instruction That Works: Research-based Strategies for Increasing Student Achievement." (2001)

186

From Ability to Skill

Strategies discussed include:

- Teaching Similarities and Differences
- Teaching Hypothesis Testing
- Teaching Vocabulary

187

From Ability to Skill

If these research-based strategies have been shown to work, why would it not be commonplace to expect to be able to increase "verbal ability" with good teaching practices?

188

Changing Abilities to Skills

Big Idea: Really good vocabulary and reading comprehension instruction are really good ways to improve the skill of thinking with language.

189

Changing Abilities to Skills

Big Question:

If good instruction can improve thinking with language, why aren't more students increasing their verbal ability scores and passing reading achievement tests?

190

From Ability to Skill

To answer this question, two factors must be considered:

- Teachers' ability to provide really good instruction
- Students' motivation to benefit from instruction

191

Vocabulary and Comprehension Instruction

- Applying the findings of the NRP will require a major change in the perspectives of teachers and administrators and a significant investment in training teachers in the methods of strategy instruction.

192

Vocabulary and Comprehension Instruction

The NRP cites historical studies on comprehension instruction:

- Studies found that teachers spent little time on comprehension instruction.
- Teachers did not show or teach the students skills, strategies, or processes that they could use in their efforts to comprehend what they read.

193

Vocabulary and Comprehension Instruction

The NRP's observations on teacher preparation for CI:

- "The preparation of teachers to deliver comprehension strategy instruction is important to the success of teaching reading comprehension." Page 4-7
- "…implementation in the context of the actual classroom of this promising approach to comprehension has been problematic." Page 4-7

194

Vocabulary and Comprehension Instruction

The NRP's observations on teacher preparation for CI:

- "Thus, teachers must be skillful in their instruction and must respond flexibly and opportunistically to students' needs for instructive feedback as they read. To be able to do this, teachers must themselves have a firm grasp not only of the strategies that they are teaching the children but also of instructional strategies that they can employ to achieve their goal. Many teachers find this type of teaching a challenge, most likely because they have not been trained to do such teaching." Page 4-7

195

Vocabulary and Comprehension Instruction

Block & Duffy (2008, p. 23) summarize studies on improving teacher's teaching of comprehension:

"Data … suggested that it took at least 4 months of professional development before teachers' explicit comprehension strategy instruction resulted in significant growth for less able readers.".

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Vocabulary and Comprehension Instruction

Block & Duffy (2008, p. 23):

"…without professional, development, teachers had difficulty implementing explicit comprehension explanations. Even as late as 1999, many educators reported that they did not know how to provide effective comprehension instruction; others believed that students could learn how to comprehend merely by reading a lot.

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Comprehension Instruction

Block & Duffy (2008) on the comprehension strategy of think-alouds:

" Although virtually all children profit from explicit think alouds about some aspects of reading comprehension at one time or another, we have learned several things about the nature of such explanation. First, powerful explanations cannot be scripted. Teachers must have the professional expertise to modify their explanations from moment to moment based on student responses…Second we have learned that teachers must be "relentless." When an explanation does not work the first time, teachers must adjust it and try again. Teachers cannot give up on students. They must give students "multiple opportunities to use what they've learned while in the pursuit of real reading.

198

Vocabulary and Comprehension Instruction

Block & Duffy (2008, p. 28) summarize studies on improving teacher's teaching of comprehension:

"In summary, we now understand that teaching teachers to teach comprehension is much more difficult than we anticipated. It requires much time and effort, and it must be collaborative, gradual, and sensitive to the changing contextual conditions from classroom to classroom."

199

Vocabulary and Comprehension Instruction

Block & Duffy (2008) state that Several crucial characteristics explain effective comprehension instruction:

- Thoughtful, adaptive, and responsive teachers
- Reteaching of material
- Depth of comprehension lessons
- Quality of the learning environments
- How teachers relate to and motivate students

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Motivating Students to Read

Block & Duffy (2008) on student motivation:

"…students must first have in place solid conceptual understandings that relate to conditional knowledge – the why and when issues of comprehension (i.e., why are we learning to comprehend? When will it be useful to us? Why should we expend energy on learning to do this?). In short, instruction in comprehension strategies is most effective when students are given authentic reasons for reading in the first place…teaching comprehension strategies simply to have students learn comprehension strategies is seldom effective."

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Motivating Students to Read

Malloy & Gamble (2008) summarizing the research on student motivation to read:

- Students are more engaged in tasks that permit them to choose materials for reading and set their own goals.
- Students report a higher level of interest and enjoyment in books they have personally chosen and in reading tasks that are personally relevant.

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Motivating Students to Read

Malloy & Gamble (2008) on student motivation:

- Create situational interest in the learning domain by presenting enough information to make the topic familiar and relevant to students.
- Encourage development of curricula that tie learning outcomes to students' lives.
- Once curricular goals are set and learning targets are established, teachers need to create an optimally mediated learning experience – connecting the learning outcome to students' lives and to previous learning.

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Motivating Students to Read

Helping students become motivated to read requires an understanding of how students' brains function.

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Vocabulary

Vocabulary is defined as knowledge of words used to communicate effectively

- Oral Vocabulary – store of words recognized when listening or used when speaking
- Reading Vocabulary – store of words recognized or used in print

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Vocabulary: Instructional Approaches

The NRP identified 5 main vocabulary instruction (VI) methods:

- Explicit Instruction: providing students with definitions or attributes of words
- Implicit Instruction: exposing students to words or providing reading opportunities
- Multimedia: going beyond text to include other mediums for presentation of word meanings
- Capacity Method: practicing to make reading automatic
- Association Method: drawing connections between what is known and new words

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Effectiveness of Vocabulary Instruction

The NRP's review of the research literature led to the following conclusions about VI:

- "There are age and ability effect learning gains that occur from vocabulary instruction. These findings point to the importance of selecting age- and ability-appropriate methods." Page 4-4

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Effectiveness of Vocabulary Instruction

The NRP's review of the research literature led to the following conclusions about VI:

- "Vocabulary instruction leads to gains in reading comprehension"
- "Vocabulary can be learned incidentally in the context of storybook reading or from listening to the reading of others" Page 4-4

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Effectiveness of Vocabulary Instruction

The NRP's review of the research literature led to the following conclusions about VI:

- "Repeated exposure to vocabulary items is important for learning gains. The best gains were made in instruction that extended beyond single class periods and involved multiple exposures in authentic context beyond the classroom." Page 4-4

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Effectiveness of Vocabulary Instruction

The NRP's review of the research literature led to the following conclusions about VI:

- "Pre-instruction of vocabulary prior to reading can facilitate both vocabulary acquisition and comprehension."
- "Computer vocabulary instruction shows positive learning gains over traditional methods." Page 4-4

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Effectiveness of Vocabulary Instruction

The NRP's review of the research literature led to the following conclusions about VI:

- "The restructuring of the text materials for procedures facilitates vocabulary acquisition and comprehension, for example, substituting easy for hard words." Page 4-4

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Vocabulary Instruction

Put Reading First (2001) offers VI suggestions:

What words should be taught directly?

- Explicit teaching can help most students learn about 8-10 new words per week.
- Explicit teaching should focus on three types of words:
  - Important Words – those critical to understanding new text
  - Useful Words – those words likely to be used often
  - Difficult Words – e.g., words with multiple meanings

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Vocabulary Instruction

Put Reading First (2001) offers VI suggestions:

Teach Word Learning Strategies:

- How to use dictionaries and other reference aids
- How to use word parts to deduce meaning – knowledge of common prefixes and suffixes, base words, and word roots
- How to use context clues to deduce meaning (but note that not all contexts are helpful to deducing word meaning)

Vocabulary Instruction

Put Reading First (2001) offers VI suggestions:

Teach Vocabulary Implicitly by:

- Reading aloud to students; discuss the reading material before, during, and after you read; talk about new vocabulary and concepts and help students relate words to prior knowledge and experience.
- Encourage students to read extensively on their own outside of school.

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Vocabulary Instruction

Recent studies on vocabulary instruction:

- VI still does not have an important enough role in early elementary education.
- Poor and minority students continue to struggle with vocabulary achievement.
- Poor vocabulary knowledge (poorly developed semantic lexicon) is linked to poor reading comprehension
- Low income children may start school with 10,000 fewer words and are exposed to reading programs that introduce fewer than two new words per week. Wright & Neuman, 2013.

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Vocabulary Instruction

Big Idea: Reading Curricula should have core vocabulary word lists similar to the Dolch and Fry sight word recognition lists.

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Comprehension

- Understanding what is read.

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What is Comprehension?

"Comprehension is a complex process. There exist as many interpretations of comprehension as there are of reading. This may be so because comprehension is often viewed as 'the essence of reading' (Durkin, 1993)."

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What is Comprehension?

- Davis (1942) provided evidence that comprehension comprises two "skills": word knowledge and reasoning.
- Reading comprehension involves "intentional thinking during which meaning is constructed through interactions between text and reader"(NRP, 2000 citing Durkin, 1993).
- Meaning is influenced by the reader's knowledge and experience in addition to the content of the text.

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Comprehension Instruction

Effective Comprehension Instruction shares three features:

- Allowing student choice of books to be read for guided independent reading practice.
- Reading more than 7 pages of continuous text from fiction and non-fiction trade or "little" books
- 20 minutes of silent reading combined with specific teacher actions:

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Comprehension Instruction

Effective Comprehension Instruction shares specific teacher actions:

- Teacher-monitored silent reading periods with direct, explicit scaffolds to assist students to overcome comprehension challenges
- Teacher-monitored selection of non-fiction texts with the requirement of reading two non-fiction books on the same topic
- Teacher provided books on a class-wide theme from which students may make selections
- Five minutes of the 20-minute silent reading period is spent in open-ended discussion about student insights into their reading.

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Comprehension Instruction?

- "The idea behind explicit instruction of text comprehension was that comprehension could be improved by teaching students to use specific cognitive strategies or to reason strategically when they encountered barriers to comprehension in reading." NRP 2000, page 4-5

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Comprehension Instruction

The NRP identified 8 kinds of CI that "appear to be most effective and most promising for classroom instruction":

- Comprehension Monitoring
- Cooperative Learning
- Graphic and Semantic Organizers
- Story Structure
- Question Answering
- Question Generation
- Summarization

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Comprehension Instruction

- The NRP identified 8 kinds of CI that "appear to be most effective and most promising for classroom instruction":
  - Multiple-Strategy – teaching students to use several of the other 7 strategies while interacting in discussions of the text

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Comprehension Instruction

The NRP's review of the research literature led to the following conclusions about CI:

- "The empirical evidence reviewed favors the conclusion that teaching of a variety of reading comprehension strategies leads to increased learning of the strategies, to specific transfer of learning, to increased retention and understanding of new passages, and, in some cases, to general improvements in comprehension." Page 4-6

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Comprehension Instruction

The NRP's review of the research literature led to the following conclusions about CI:

- "The focus on what we know about cognition has led to the development of practical strategies for improving students' comprehension." Page 4-41
- "The cumulative result of nearly 3 decades of research is that "there is ample extant research supporting the efficacy of cognitive strategy training during reading as a means to enhance students' comprehension." Baumann, 1992

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Comprehension Instruction

The NRP noted the evolution in thinking about CI over the last 30 years:

- Initial studies focused on the teaching of one comprehension strategy at a time.
- Subsequent studies focused on teaching several strategies in combination.
- Most recent studies have focused on ways to prepare teachers to deliver instruction of multiple comprehension strategies in the context of general education classrooms. (Note: Current research indicates that this trend has continued over the last decade.)

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Comprehension Instruction

The NRP's conclusions about CI:

- Strategies for active comprehension are normally acquired informally
- Explicit or formal instruction of strategies leads to improvement of comprehension
- When the strategies have been acquired, students can apply the strategies independently
- Students who are not explicitly taught these strategies are unlikely to learn, develop, or use them spontaneously

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Comprehension Instruction

The NRP's cited two major approaches to comprehension strategy instruction:

Direct Explanation (DE) – teachers help students view reading as a problem-solving task that requires the use of strategic thinking and help them learn to think strategically about solving reading problems. DE focuses on developing teachers' capacities for explaining the reasoning and mental processes involved in successful reading comprehension in an explicit manner.

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Comprehension Instruction

The NRP's cited two major approaches to comprehension strategy instruction:

- Transactional Strategy Instruction (TSI) – also views reading as a problem-solving task, but focuses on teacher's capacities to facilitate discussion in which students collaborate to form joint interpretations of text and explicitly discuss the mental processes and cognitive strategies involved in comprehension of text.

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Comprehension Instruction

Typically, Comprehension Strategy Instruction involves:

- Developing of an awareness and understanding of one's own cognitive processes that are amenable to instruction and learning
- Guiding and modeling the actions that a reader can take to enhance the comprehension processes used during reading
- Practicing strategies with teacher assistance until students internalize them and use them independently

Comprehension Instruction

Research on Reading Comprehension since 2000 has validated 9 comprehension strategies:

- Predicting
- Monitoring
- Questioning
- Imaging
- Look-backs, rereads, fix-its
- Inferring
- Finding main ideas, summarizing, concluding
- Evaluating
- Synthesizing

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Comprehension Instruction

Block & Duffy (2008) state that research on Reading Comprehension since 2000 has validated 9 comprehension strategies:

- "Predict – Size up a text in advance by looking at titles, text features, sections, pictures, and captions, continuously updating and repredicting what will occur next in a text."

Comprehension Instruction

Block & Duffy (2008) state that research on Reading Comprehension since 2000 has validated 9 comprehension strategies:

- "Monitor – Activate many comprehension strategies to decode and derive meaning from words, phrases, sentences, and texts."

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Comprehension Instruction

Block & Duffy (2008) state that research on Reading Comprehension since 2000 has validated 9 comprehension strategies:

- "Question – Stop to reread and initiate comprehension processes when the meaning is unclear."

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Comprehension Instruction

Block & Duffy (2008) state that research on Reading Comprehension since 2000 has validated 9 comprehension strategies:

- "Image – Construct meanings expressed in text by wondering, noticing, and generating mental pictures."

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Comprehension Instruction

Block & Duffy (2008) state that research on Reading Comprehension since 2000 has validated 9 comprehension strategies:

- "Look-backs, rereads, and fix-it strategies – Continue to reflect on the text before, during, and after reading, continuously deciding how to shape the knowledge base for personal use."

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Comprehension Instruction

Block & Duffy (2008) state that research on Reading Comprehension since 2000 has validated 9 comprehension strategies:

- "Infer – Connect ideas in text based on personal experiences, knowledge of other texts, and general world knowledge, making certain that inferences are made quickly so as not to divert attention from the actual text but to help the reader better understand it."

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Comprehension Instruction

Block & Duffy (2008) state that research on Reading Comprehension since 2000 has validated 9 comprehension strategies:

- "Find main ideas, summarize and draw conclusions – Make sure to include information gained from story grammar or textual features; if students can't make a valid summary of information, read to-date, this is the signal to go back to reread."

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Comprehension Instruction

Block & Duffy (2008) state that research on Reading Comprehension since 2000 has validated 9 comprehension strategies:

- "Evaluate – Approach a fictional text expecting to (and making certain that students do) note the setting, characters, and story grammar early on, with problems, solutions, and resolutions to occur thereafter."

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Comprehension Instruction

Block & Duffy (2008) state that research on Reading Comprehension since 2000 has validated 9 comprehension strategies:

- "Synthesize – Approach an informational text watching for textual features, accessing features, unique types of information, sequences of details and conclusions, and combining all of these to make meaning."

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Comprehension Instruction

Block & Duffy (2008) indicated that these 9 strategies replaced no fewer than 45 strategies that had been suggested in reading curricula prior to 2000:

- Knowing the most important ideas attached to an author's goals
- Relating what one read to prior knowledge
- Seeing a purpose
- Interpreting text structures
- Being alert to main ideas
- Asking questions
- Drawing conclusions

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Comprehension Instruction

Block & Duffy (2008) indicated that these 9 strategies replaced no fewer than 45 strategies that had been suggested in reading curricula prior to 2000:

- Changing the hypothesis
- Adding to themes as the meaning of a text unfolds
- Predicting
- Creating mental imagery
- Making conscious images that relate to what is read in the text
- Identifying the gist
- Interpreting author's intentions

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Comprehension Instruction

Block & Duffy (2008) indicated that these 9 strategies replaced no fewer than 45 strategies that had been suggested in reading curricula prior to 2000:

- Learning to choose which strategy would be helpful
- Paraphrasing
- Pausing to reflect
- Interpreting and generating insights using fix-up strategies
- Monitoring while reading
- Rereading when something isn't clear

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Comprehension Instruction

Block & Duffy (2008) indicated that these 9 strategies replaced no fewer than 45 strategies that had been suggested in reading curricula prior to 2000:

- Evaluating the text as to how well or how poorly it is written
- Noting whether one should recommend a text to others
- Consciously constructing a summary
- Self-regulating one's own comprehension
- Internalizing text

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Comprehension Instruction

Block & Duffy (2008) indicated that these 9 strategies replaced no fewer than 45 strategies that had been suggested in reading curricula prior to 2000:

- Independently engaging one's own metacognition
- Being retrospective about text
- Corroborating text
- Contextualizing text
- Actively listening
- Using mnemonics
- Organizing text

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Comprehension Instruction

Block & Duffy (2008) indicated that these 9 strategies replaced no fewer than 45 strategies that had been suggested in reading curricula prior to 2000:

- Using study skills while reading
- Constructing self-explanations
- Completing content analyses
- Being aware of and using the 7 parts of story grammar
- Elaborating on one's self-understanding
- Reorganizing text
- Clarifying meanings

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What is Comprehension?

- "…comprehension is a strategic process…good readers proactively search for meaning as they read, use text cues and their background knowledge in combination to generate predictions, to monitor those predictions, to repredict when necessary, and generally to construct representations of the author's meaning."
  Block & Duffy, 2008.

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What is Comprehension?

- "..the awareness that comprehension is more a matter of being strategic than of learning individual strategies is reflected in the shrinking list of strategies. Whereas we used to think that there were dozens of strategies, we see that more current programs list only a few, because of a growing realization that comprehension is mainly a fluid process of predicting, monitoring, and repredicting in a continuous cycle."
  Block & Duffy, 2008.

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What is Comprehension?

- "This strategic process is basically what good readers do for all strategies. For instance, imagery is really a matter of using text cues in combination with background knowledge to predict the image that the author wants the reader to see, with the reader modifying that image as subsequent monitoring reveals new text cues requiring new predictions about that image."
  Block & Duffy, 2008.

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What type of Comprehension should be emphasized?

- "…rather little attention is given to expository text in the elementary school classroom. Only a very small amount of expository text has been included in basal readers. Teachers rarely read such books aloud to students… this lack of experience with expository text contributes to the commonly observed fourth-grade slump in reading achievement."
  Williams, 2008.

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What type of Comprehension should be emphasized?

- Smolkin, McTigue & Donovan (2008) noted that elementary school discussions of science topics tended to emphasize description over explanation, limiting the extent to which these lessons addressed higher order thinking.

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What type of Comprehension should be emphasized?

Descriptive Science Text:

A glacier moves a few inches to several yards each day. Snow gathers at its higher end. The leading edge of the glacier is the end that is at a lower elevation. This part of the glacier often starts to melt. As glaciers advance, they get wider and thicker.

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What type of Comprehension should be emphasized?

Explanatory Science Text:

A glacier moves a few inches to several yards each day. Whenever more snow gathers at its higher colder end, the added weight helps push the glacier down the mountainside. The leading edge of the glacier is the end that is at a lower elevation where the temperature is warmer. This part of the glacier often starts to melt. If snow is added to the higher end of the glacier faster than it melts from the leading edge, the glacier advances. It gets wider and thicker, and its leading edge moves further downhill. Winner, 1999, p. 15

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What type of Comprehension should be emphasized?

Reading Comprehension Instruction Example Modeling the Use of Multiple Strategies

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The Cerebral Cortex

The cerebral cortex is the outermost layer of the brain. Despite a thickness of less than 0.2 inch (5 mm), it is responsible for most higher brain functions, including language, memory, and consciousness. The cerebral cortex is folded in on itself in complex grooves to aid and quicken brain activity. If the cerebral cortex were to be removed and unfolded, it would cover several yards or meters. The grooves that condense the cerebral cortex are called sulci, and the ridges formed by this process are called gyri. This structure allows more mental processing power in a smaller space and also allows neurons involved in similar brain functions to communicate information more quickly. A brain with more grooves and ridges is smarter; that is, it can retain more information and process it faster.

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Summary of Approaches to Early Reading Comprehension (from Reading Rockets):

Before reading, teachers can establish the purpose for the reading, review vocabulary, activate background knowledge, and encourage children to predict what the story will be about. During reading, teachers can direct children's attention to difficult or subtle dimensions of the text, point out difficult words and ideas, and ask children to identify problems and solutions. After reading, children may be asked to retell or summarize stories, to create graphic organizers (such as webs, cause-and-effect charts, or outlines), to put pictures of story events in order, and so on. Children can be taught specific metacognitive strategies, such as asking themselves on a regular basis whether what they are reading makes sense or whether there is a one-to-one match between the words they read and the words on the page.

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Comprehension Instruction

Some commercially available programs that have been constructed taking into account the literature on reading comprehension instruction best practices:

- Comprehension Plus
- Read 180
- Comprehension Tool Kit

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Reading Comprehension Instruction

- For substantive information about reading instruction programs and the literacy components they address, go to The What Works Clearinghouse website.
- FCRR no longer posts reviews of reading programs but offers good tips on instructional practices.

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