Reading Matters to Maine’s Second Annual Conversation about Reading

Co-sponsored by Reading Matters to Maine & USM Southern Maine Area Resource Team (SMART) for Schools

A Conversation about Reading and the Brain

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Study Guide

This study guide may be used to help guide note-taking while watching A Conversation about Reading and the Brain (originally recorded on October 24, 2011). Additionally, this study guide includes reflection questions, which may be discussed among small groups of educators.

Part One – The Importance of this Topic

• As quoted from the National Research Council, Preventing Reading Difficulties in Young Children (1998):
  
  “Academic success, as defined by high school graduation, can be predicted with reasonable accuracy by knowing someone’s reading skill at the end of

  ______________________  ______________________. A person who is not at least a modest skilled reader by that time is unlikely to graduate from high school.”
• As quoted from *Learning to Read and Write in Elementary School* (Juel, 1994):

  o “Children who fall behind in first grade have a ________________ in ________________ chance of ever catching up to grade level without extraordinary efforts.”

• As quoted from Francis et al. (1996):

  o “__________________% of children who are poor readers in third grade remain poor readers in ninth grade.”

  o Reflection and/or Group Discussion:
    ▪ Think about the statistics presented above. How and when does your school/district identify students who are not proficient with early literacy skills? What types of interventions are available to these students? How effective is this process at your school/district?
Part Two – The Five Pillars of Effective Reading Instruction

- The five pillars of effective reading instruction may also be referred to as the Big Ideas of the National Reading Panel or the Foundational Skills of Reading within the Common Core. Use the graphic organizer below to organize the information presented about the five pillars of effective reading instruction.

- **Phonemic Awareness**
- **Phonics**
- **Fluency**
- **Vocabulary**
- **Comprehension**
Reflection and/or Group Discussion:

- Describe the difference between phonological awareness and phonemic awareness.

Reflection and/or Group Discussion:

- Describe orthographic knowledge/competency. Why might this concept be considered a “sixth pillar” of effective reading instruction?

Reflection and/or Group Discussion:

- Compare and contrast the explicit level of reading comprehension with the implicit/inferential level of reading comprehension.
Part Three – Neurological/Neurocognitive Bases of Reading

• The hemispheres
  
  o The cortical surface (cortex) can be divided into two hemispheres: left and right.
    
    ▪ The left hemisphere of the brain primarily processes information in a factual, ________________, specific manner (explicit processing).

    ▪ The right hemisphere of the brain enables ________________ and synthetic processing (implicit processing).

    ▪ Between these two hemispheres of the brain is the: ________________

    __________________, which facilitates communication between the two hemispheres.

  
  o Reflection and/or Group Discussion:
    ▪ What does “explicit” mean?
    ▪ What does “implicit” mean?
      ▪ Compare and contrast the explicit and implicit processes involved in reading comprehension.
• Input and Output Regions

  o When looking at the brain on the left side, the _________________ sulcus (also known as the _________________ fissure or the _________________ of Rolando) runs down the middle.

• The three lobes within the _________________ cortex (occipital, parietal, and temporal) are wired for **input**. They can be referred to as reception lobes. They are also short-term and long-term information storage centers. Additionally, they are passive processing centers.

  * The _________________ lobe processes auditory information.

  * The _________________ lobe processes visual information.
• The ________________ lobe processes propiosensory information (perception of movement and orientation) and spatial information.

  ▪ The ________________ lobe is programmed for output.

• The prefrontal cortex should work as a conductor. If this area of the brain is strong, then an individual will typically have skills in the following areas:

  focus, ________________, ________________ memory, and self-monitoring.

  o Reflection and/or Group Discussion:
    ▪ If the occipital lobe is not functioning properly, how might the acquisition of literacy skills be impacted? What if the parietal lobe is not functioning properly? How about the temporal lobe?
Reflection and/or Group Discussion

![Image](86x479 to 562x758)

If the prefrontal cortex is not functioning properly, how might literacy skills be impacted?

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How Literacy Occurs Across the Posterior Cortex and the Frontal Lobe

- At the back of the brain, where the occipital (visual) lobe meets the temporal (auditory) lobe, is the occipital-temporal storage center.

  This is also referred to as the brain's __________ box. This is where whole word forms are stored. It is an __________ storage center.

- Reflection and/or Group Discussion

  • How Literacy Occurs Across the Posterior Cortex and the Frontal Lobe

  - If the orthographic storage center (the brain's "letter box") is not functioning properly, how might literacy skills be impacted?
o  In the superior temporal cortex (at the top of the temporal lobe, where it meets the parietal lobe), is _________________ Area.

  ▪  This area of the brain is involved in understanding _________________-sound association. This is the most important part of the brain for phonologic and _________________ processing skills.

o  Vocabulary (also known as _________________ processing) occurs in the medial temporal cortex.

o  Toward the back of the frontal lobe, is _________________ Area.

  ▪  This area is involved in processing expressive language.

o  Reflection and/or Group Discussion
  ▪  Amongst children with the most common form of dyslexia, dysphonetic dyslexia, which areas of the brain are mostly likely to have processing difficulties?
The prefrontal cortex is the primary center of ________________ control and the
primary center of ________________ control.

- This area of the brain is essentially the “leader of the symphony.”

Reflection and/or Group Discussion
- Humans are hard-wired or “born to learn” oral language. How does learning to
  read differ? Why is learning to read not a natural process?

Part Four – Dyslexia

- Dyslexia defined
  
  o A disorder manifested by difficulty learning to read despite conventional instruction,
  
  adequate intelligence, and sociocultural opportunity (World Federation of Neurology).
• Four types of developmental reading disorders
  o Use the graphic organizer below to organize the information presented about the four types of developmental reading disorders.

- Dysphonetic Dyslexia
- Orthographic Dyslexia
- Mixed Dyslexia
- Comprehension Deficits
The Matthew Effect

Reflection and/or Group Discussion

- Discuss the “Matthew Effect.” What tends to happen over the course of the elementary school years among students who learn early reading skills quickly? What tends to happen over the course of the elementary school years among students who have difficulty with early reading skills?
Part Five – Comprehension

• Milk Jug of Memory

  o Information enters the brain through __________________________ attention. It then goes into immediate or ______________________-term memory. It then goes into the most important part of neuro-processing for reading comprehension (other than language knowledge): _______________________ memory.

  ▪ Working memory is the ability to hold information temporarily in ______________________-term memory while doing something with it.

  o Reflection and/or Group Discussion
    ▪ How could a working memory deficit impact reading comprehension skills?
Factors that enable reading comprehension

- Use the following graphic organizer to organize the information presented about the factors that enable reading comprehension.

Prior Knowledge

Information from Text

Working Memory

Executive Function
Part Six – Reading Instruction Strategies

• The five “big ideas” written in instructional terms:

1. Teach phonemic awareness ____________________.

2. Provide ____________________ ____________________ phonics instruction.

3. Teach ____________________ ____________________ where letters are converted into phonemes and then blended to form whole words.

4. Use ____________________ ____________________ ____________________ with appropriate error correction and feedback strategies to facilitate reading fluency.

5. Develop ____________________ and use systematic instruction to teach ____________________ reading comprehension.

• Three tier model of reading instruction
At the Universal Level (Tier 1), an evidence-based core reading programs is key.

- Every school should adopt a _____________________, _____________________-based core reading program.

- The program should be taught with fidelity. Fidelity of implementation occurs when a teacher uses the instructional strategies and delivers the content of a program in the same way that it was designed to be used and delivered.

- Students should receive _____________________ minutes of reading instruction using the core program.

- Evidence based core reading programs (K-3)
  - Strong evidence for:
  - Moderate evidence for:
  - Limited evidence for:

- Building oral reading fluency
  - Frequent _____________________ reading practice, solid word reading skills, vocabulary,
    and exposure to fluent reading modeled by peers and adults.
Part Seven – Rewiring the Brain

• “Dyslexic brains can repair themselves!”

  o Research has shown that intensive, systematic phonics/fluency-based programs can

      lead to the emergence of ____________________ side brain systems being used.

  o ____________________ - ____________________% of at-risk and dyslexic children can

      improve to average performance levels.

Part Eight – Comprehension Instruction Strategies

• Teach reading comprehension strategies explicitly.

  o Reflection and/or Group Discussion

    ▪ How do you teach reading comprehension strategies explicitly in your classroom?
• Stages of reading

  - Research has identified core activities that good readers engage in before, during, and after reading. Use the following graphic organizer to organize the information presented about the stages of reading.
• Investigate:
  o Explore one or more of these resources to increase your knowledge on the topic of reading and brain.


• Investigate:
  o Explore one or more of these resources to increase your knowledge on the topic of executive function.