

**Southern Nevada Regional  
Professional Development Program**  
[www.rpdp.net](http://www.rpdp.net)



# **How the Brain Learns to Read**

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**RPDP Secondary Literacy Regional Trainer**

**“Never let a child think his or her struggles with reading are a reflection of overall ability or intelligence. There is a reader in every child.” Kathie Nunley**

# Research on Reading

Recent research showed that reading to children at an early age does not necessarily make for a good or an early reader. Parents need to watch for the “the broccoli effect.” The two factors that show a strong correlation with good readers are early phonemic awareness and parents who read for pleasure.



# The Importance of Sound

Dr. Paula Tallal

Brainfitnessforkids.com

- Reading, spelling, phonics are based on speech and sound
- Many struggling readers have difficulty hearing at the phonemic level. Can't differentiate between 2 tones at rapid rates, for example, /ba/ and /da/
- Receptive language is our best indicator for reading
- FastForward™



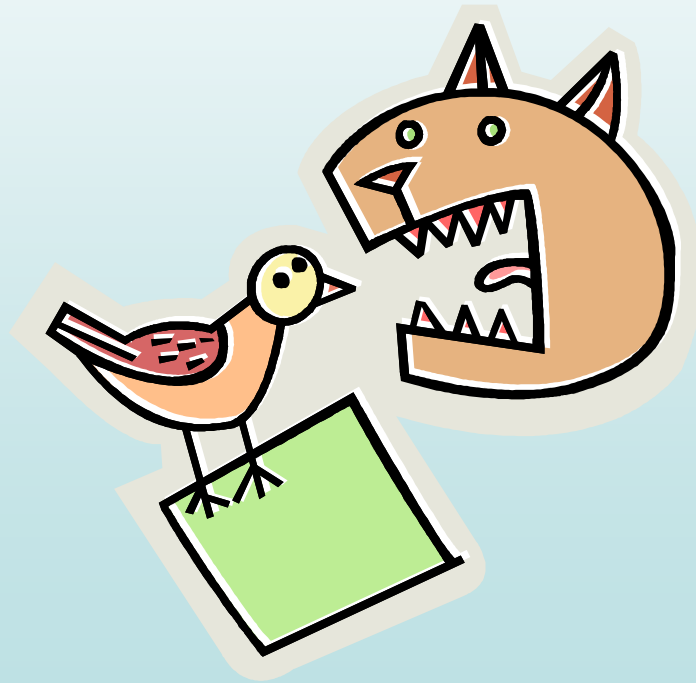
# Language and Literacy Continuum

Dr. Paula Tallal

- Perceptual weakness
- Weak phonological representations
- Oral language weakness
- Reading, writing and spelling problems
- Struggling student

***Single best predictor of HS graduation is  
reading level at grade 3.***

Kids begin in the early years learning letters visually. About 4<sup>th</sup> grade they learn linguistically. Teach letters through pictures then link the art to actual text



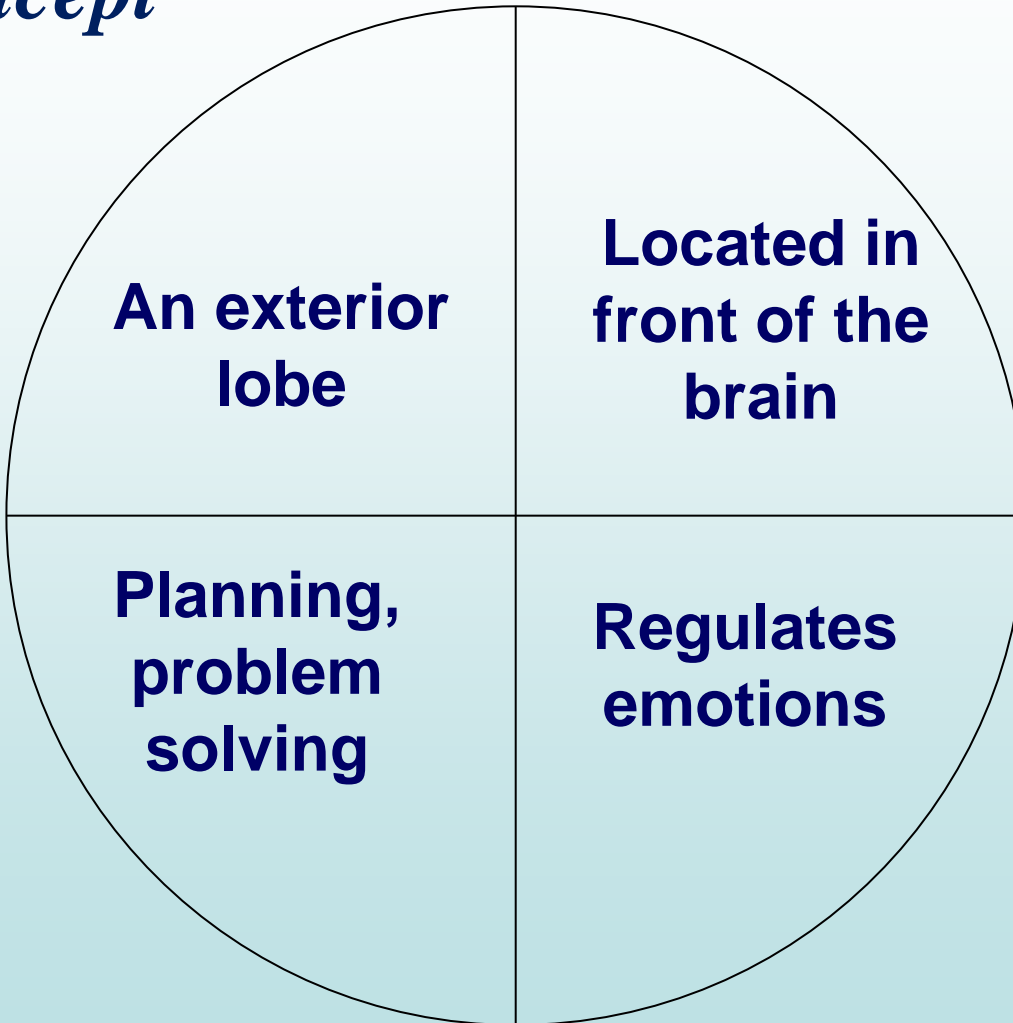
Our brain contain “mirror neurons? That imitate what you see. Revealing the purpose of an activity and then modeling it is effective because of mirror neurons.



# Frontal Lobe

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## *concept*



# Reading Comprehension

- Fluency
  - Prosody—emphasis
  - automatic
  - accuracy—90% for comprehension
  - Decoding
  - Phonemic awareness
- Prior Knowledge
  - Life experiences
  - Content Knowledge
  - Prior knowledge





***There's a bear in a plain brown wrapper doing flip-flops on 78, taking pictures, and passing out green stamps***

Answer the following questions:

- What is this sentence about?
- Is this difficult to read?
- Do you understand the meaning?
- What hinders comprehension?



***“Past experiences always influence new learning.”***

***David Sousa***

***“A student’s prior knowledge is the single most important resource in learning....Reading and learning are constructive processes...we actively draw on prior knowledge and experience to make sense of new information.”***

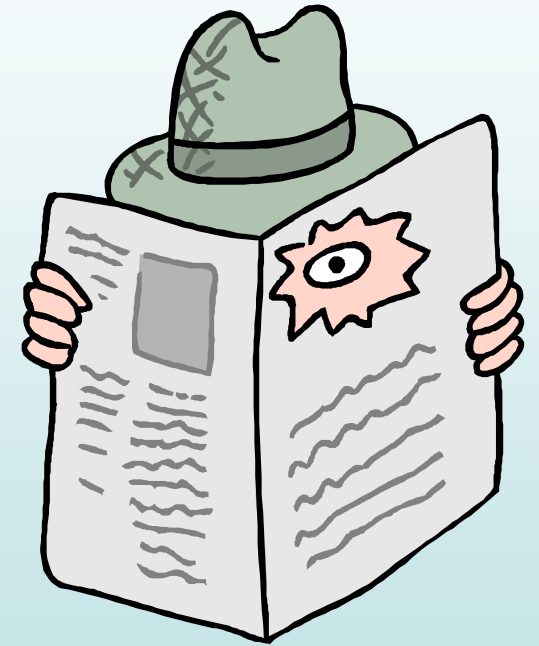
***Vacca & Vacca***

- **Vocabulary knowledge**

- Oral language skills
- Knowledge of language structure
- Culture

- **Metacognition**

- Motivation and engagement
- Active reading strategies
- Monitoring strategies
- Fix-up strategies



# Comprehension and Memory

- 2001 studies from UC and Johns Hopkins
- A person who struggles with reading comprehension may have memory storage and retrieval problems.
- Poor reading comprehenders did not access text information stored in long term memory (refer back to past reading)
- Instruct students on storing info from reading—notes, think-alouds, pair share

# Stop! What are you thinking?

- Do you have any questions?



- Has your thinking changed?



- Are you confused?



# Can you read this?

*I cdnuolt blveiee taht I cluod aulacly uesdnatnrd waht I was rdanieg. The phaonmneal pweor of the hmuan mnid. Aoccdrnig to a rscheearch at Cmabrigde Uinervtisy, it deosn't mttar inwaht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frist and lsat ltteer be in the rghit pclae. The rset can be a taotl mses and you can sitll raed it wouthit a porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe. Amzanig huh?*

# Some Facts on Reading

Research by Dr. Reid Lyon

[www.ReidLyon.com](http://www.ReidLyon.com)

- Only 1 out of 4 words can be predicted from context
- Only 1 out of 8 content words
- Good readers break apart the word (morphemes) and then use context to check if they are correct
- Need 90% reading accuracy for comprehension
- Need to know 95% of the vocabulary for comprehension

- In order for SSI to be effective, kids **MUST** be reading books at their reading level
- Having kids generate their own questions is most beneficial for learning
- Teach them to generate high level questions through modeling
- Rhyming words are best way to teach phonemic awareness
- Most common stumbling blocks:
  - Loss of or no motivation
  - Insufficient vocabulary
  - Poor decoding skills





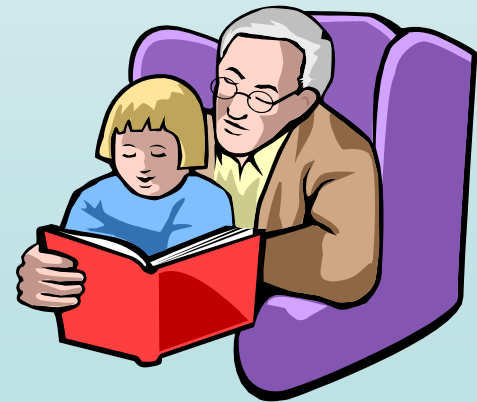
# Stop-Think-Write-Share

How can you use this information to improve the reading comprehension of students in your classroom?



# What Can We Do to Help Struggling Readers?

- Strengthen pathways by giving them practice on problematic skills.
- Look for their strengths and give them assignments that utilize these skills.
- Use larger print and use visual and auditory aids.
- Use colored paper.



- Find an area of interest and provide reading and activities in that area.
- Offer assignments and assessments that access alternative pathways and multiple intelligences.
- Comprehension is dependent on the ability to access information stored in long term memory. Show students how to store and refer back to information. Active reading strategies will do the trick
- Teach visualization.

# What is Imaging?

- The mental visualization of objects, events, and arrays related to new learning
- Includes static representations of objects
- Includes dynamic representations of action sequences and relationships between objects and events

*“Man’s mind cannot understand thoughts without images of them.”*

*~~Thomas Aquinas~~*

- Visualizing is how we process language and thought.
- The brain “sees” in order to store and process information.
- Both thinking and language comprehension are founded on imagery

**Visualization enhances comprehension and memory.**

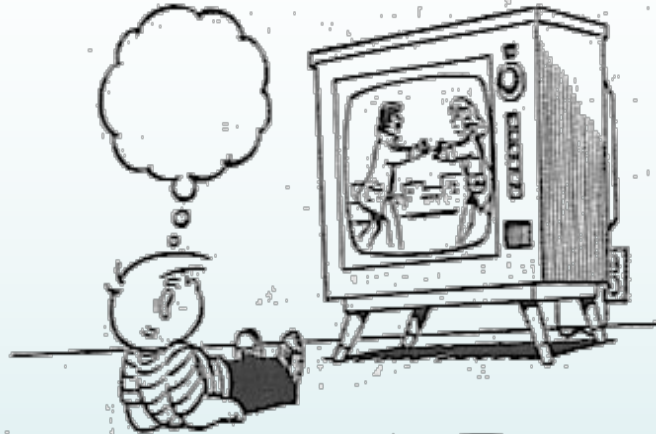
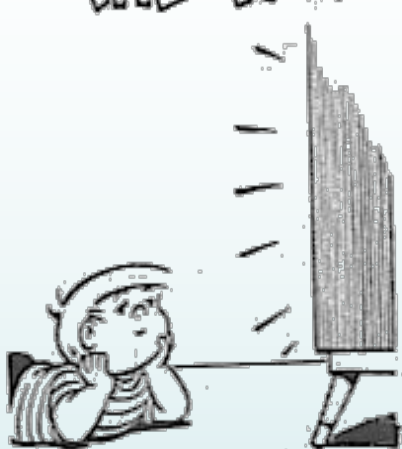
**“If I can’t picture it, I can’t understand it.” Albert Einstein**



**“We remember images, not words.”  
Eric Jensen**

# THE FAMILY CIRCUS

By BILL KEENE



TV  
PUTS PICTURES  
IN YOUR EYES  
BUT BOOKS PUT  
THE PICTURES RIGHT  
INSIDE YOUR  
MIND!



4-8

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# Language Comprehension and Gestalt Imagery

- How we process language and thought
- Gestalt is more than the sum of its parts
- The brain “sees” to store and process information
- Thinking and language comprehension depend on the ability to visualize
- When images break down reading comprehension fails



"Readers or listeners construct mental models of the situation a writer or speaker is describing. This is the basis of language comprehension." Bower, 1990

- Read aloud and describe your images
- Ask questions: What do you see? Color? Size? Be specific
- Have them draw/sketch what they see
- Have them sketch sequences

# Television in the mind— A strategy for imaging

- Teach students to watch the TV screen in their minds while reading
- Use think-alouds to talk about the pictures on our mental screens
- Emphasize how the picture must match the words
- Discuss what happens when there is static/fuzzy picture
- Teach active reading/fix-up strategies
- Monitor their comprehension by having them draw each day.

# Helpful Tips....

- **Prompting**—use questioning to prompt students to visualize
- **Modeling**—model imager by describing your images/pictures/film
- **Reinforcement**—have students share and discuss their images
- **Interaction**—if you have two or more images, have them interact
- **Add Context**—add context to the interaction to increase retention and recall
- **Assessment**—lack of ability to create images or ineffective images show breakdown in comprehension and/or background knowledge

# Reading the Brain

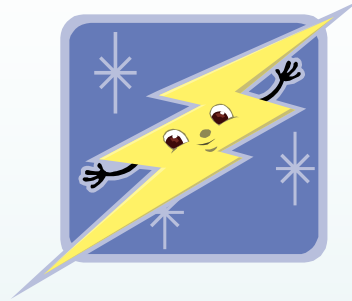
- Scientists once thought the brain used parallel processing when reading.
- They now know we toggle from one activity to the next.
- When reading, the brain uses schemas formed in the past.
  - Phonological awareness and phonemics
  - Sight words
  - Contextual and pictorial clues
  - Text repetition



- The brain attends to wholes and parts.
- Left and right hemispheres process differently, but continually interact.
- Left reduces information into parts.
- The right prefers the whole
- Phonics, vocabulary, spelling and grammar should be taught, the pieces must be embedded in real language.

**How does this transfer to your classroom?**

# Ticket Out the Door



Ideas that "struck" you



Questions you still have



Thoughts, connections or suggestions

Reflect on what we have discussed  
today and...

**Write about HOW you will use what  
you've learned.**

