




Using the Nonverbal Reading Approach to Promote Literacy



Knox
County
Schools
9/30/10



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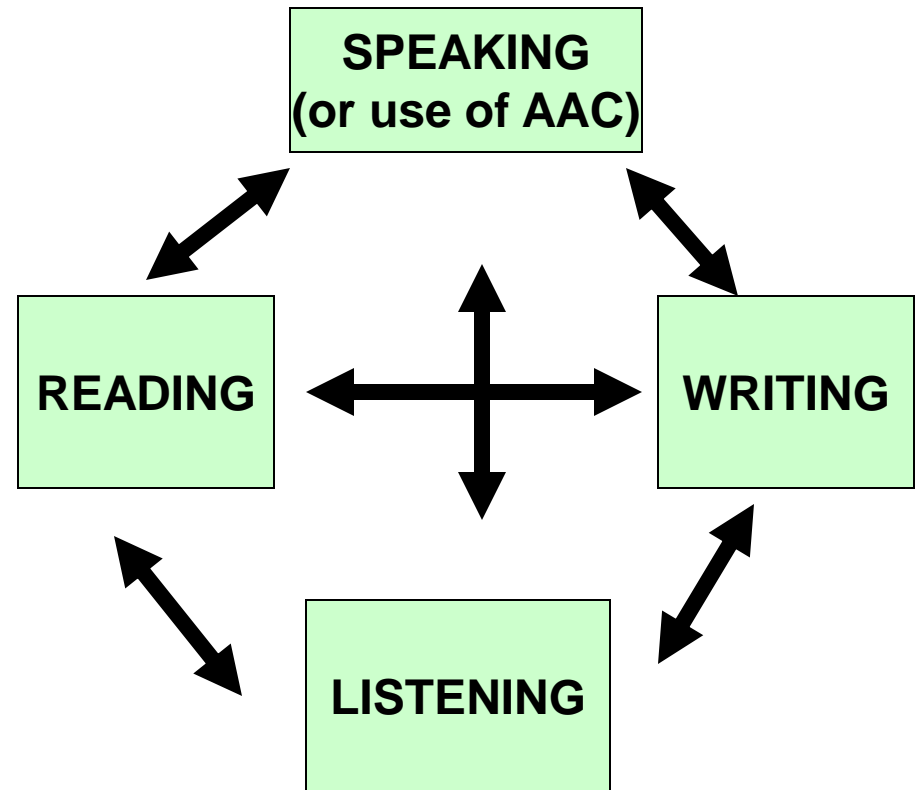


***Literacy unlocks the doors to
accurate communication and
true self-expression***



Learning Literacy Skills

- Literacy learned through interaction with all types of literacy experiences (listening, speaking, reading, writing).
- Skills are interrelated and develop concurrently
- Begins at birth
- Emergent literacy behaviors are variable depending on text, task, & environment





Literacy, cont.

- **Children learn literacy skills through active engagement with their world**

- **Children without disabilities**
 - **Years manipulating books, making sounds**
 - **Learning print has meaning**

- **Barriers to literacy for students with complex communication needs**



Barriers to Literacy for Students with Complex Communication Needs

- **Restricted language and participation**
 - **Limits in subvocal rehearsal**
- **May have concomitant disabilities (e.g. physical disabilities or autism)**
- **Lack of experiences**
- **Decreased time spent in literacy activities**
- **Augmentative and Alternative Communication (AAC) may not allow for sufficient interactions in literacy experiences**



Specialized Strategy: The Nonverbal Reading Approach

- **Developed by Dr. Kathy Heller at Georgia State University**
- **Systematic instructional strategy for teaching reading decoding to students with severely dysarthric or anarthric speech and a method for evaluating if the student has learned target words**



NRA

- **Based on Vygotsky's principle of inner speech for self-regulation of learning**
- **Used with any phonics-based program**
- **Should be combined with multiple types of literacy experiences: reading connected text, spelling, writing**
- **Research-based**



Research Supporting the Effectiveness of the NRA

- **Heller, Fredrick, & Diggs (1999)**
 - **NRA effective for teaching words to students with severe speech and physical impairments**

- **Heller, Fredrick, Tumlin, & Brineman (2002)**
 - **NRA effective in teaching decoding strategy – strategy generalized to unknown words**



Research, cont.

- **Coleman-Martin, Heller, Cihak, & Irvine (2005)**
 - **NRA is effective when used in conjunction with Computer-Assisted Instruction**

- **Swinehart-Jones & Heller (2009)**
 - **NRA is effective when used with motoric indicators**



Research, cont.

- **Participants**
 - **Limited verbal abilities: severely dysarthric speech or anarthria**
 - **Diagnoses: cerebral palsy, paralysis resulting from stroke, Holt-Oram Syndrome, hypoplastic left heart syndrome, autism**
 - **Ages: early elementary school through high school**
 - **Reading: significantly below grade level**



NRA: Components

1) GUIDED PRACTICE

- Teach student the strategy to decode words using inner speech / modeling of sounds

2) EVALUATION

- Use diagnostic distractor arrays, error analysis, error correction

3) EXPANSION

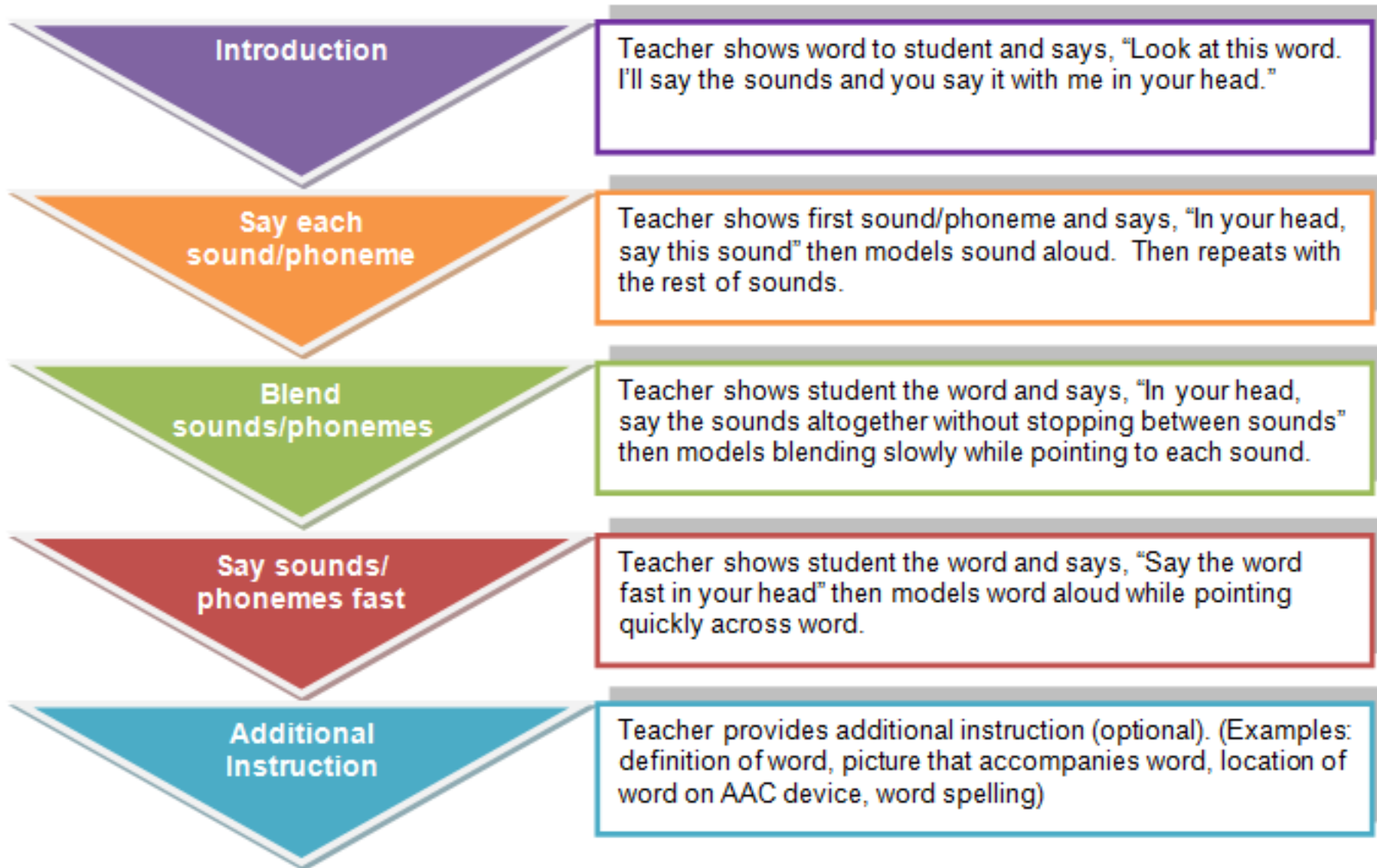
- Word level: Decode, automaticity, sound out larger words
- Read line of print, check accuracy & comprehension
- Spell & write target words



Before you begin

- **Establish a reliable means of response (RMR)**
- **Teach the student to use inner speech**

Nonverbal Reading Approach: GUIDED PRACTICE





Clip of Guided Practice



Practice time!

- **Work with a partner to practice the script of the guided practice component of the NRA using the following words:**

- ****Be careful not to add a schwa sound!**

- **man**
- **set**
- **chop (show & say “ch” as one sound)**

Introduction

SAY:

1) “Look at this word. I will say the sounds in this word. Say them with me in your head.”

DO:

2) Point to each sound while you say it.

Teach Each Phoneme

SAY:

3) “Now, in your head, say this sound.”

DO:

4) Cover all but the first phoneme on the flashcard with your hand. Model the first sound.

5) “In your head, say this sound.”

6) Uncover the next phoneme (leaving the first one visible). Model the second phoneme.

7) Repeat 5 & 6 for all sounds.

Blend Slowly

SAY:

8) “In your head, say the sounds altogether. Don’t stop between sounds.”

DO:

9) Point to each sound as you say it slowly. As you model this, do not stop between the sounds!

Blend Quickly

SAY:

10) “In your head, say it fast.”

DO:

11) Quickly slide your finger beneath each sound as you model saying the word.

Nonverbal Reading Approach: EVALUATION

Teacher

Student

Introduction

Teacher says, "I am going to test you on some words. Sound them out first in your head using the three steps and then I will give you choices." Shows student the word and says, "Sound out this word." (Provide guidance of steps but not model of sounds- optional).



Student uses inner speech to say each sound and blend sounds together

Provide diagnostic distractor array

Teacher says, "I'll give you 4 choices. Listen to the choices: [choice 1], [choice 2], [choice 3], [choice 4]. Is it [choice 1]?" (waits 2-5 seconds for response). *Teacher must be careful not to cue student for correct choice



Student uses reliable means of response to select from the diagnostic distractor array

Record student response

Teacher records the student's response on the data sheet.

Respond to student's selection

If student answered correctly, teacher provides positive reinforcement. If student answered incorrectly, teacher provides guided practice procedure with modeling of sounds.



If answered correctly, student is guided through the process of using inner speech to read the sounds/word

Complete error analysis

Teacher analyzes data after each session to examine error patterns and determine additional instructional needs and possible changes in distractor arrays.



Evaluation: Diagnostic Distractor Array

- **Diagnostic Distractor Array Considerations:**
 - 1) Carefully choose a set of words that are similar to the answer
 - 2) Put in sounds/words confused in past after retaught sounds/word
 - 3) Record exact error
 - 4) Analyze errors and correct



Evaluation: Diagnostic Distractor Array

Examples of poor / good arrays:

Sound out this word:

cat

I will give you 4 choices. Listen to
the choices:

cat dog bird mouse

can call cat come

cat cot can dig



Evaluation: Diagnostic Distractor Array

WHY IT'S A DIAGNOSTIC DISTRACTOR ARRAY:

cat cot can dig

- **Carefully planned out**
 - one has different vowel
 - one has different ending
 - one is very different

- **Carefully analyze errors**
 - If chose “cot” what could that tell you?
 - If chose “can” what could that tell you?
 - If chose “dig” what could that tell you?



Clip of Evaluation



-
- **Get with a partner and come up with example of diagnostic distractor arrays for the following words:**
 - **bat**
 - **coat**
 - **black**
 - **into**

Student: Luigi 2 Date(s): 9/30/10, 10/1/10

Key: C = Correct

Put C or missed word here
Put distractor array change here

Words	Distractor Array Oral Choices	<u>Trials:</u>						
		9/30/10 Trial 1	9/30/10 Trial 2	9/30/10 Trial 1	10/1/10 Trial 1			
cat	cot can mat	cot	mat	cot				
				can - sat				
dog	dig dot log	dig	dig	log				
				dot - dug				
man	men map fan	fan	men	C				
				map - mean				

PERCENT CORRECT: 0% 0% 33.33%

Introduction

- 1) “I am going to quiz you on some words. You will sound the words out in your head and then I will give you choices.”
- 2) “Here is your first word. Do you know this word without sounding it out?”
Show the word to the student. If the student indicates he/she knows the word, skip the next section and go to the diagnostic distractor array.

Guide Through Steps of Sounding Out Without Modeling Sounds

- 3) “Now, in your head, say this sound.”
Cover all but the first phoneme on the flashcard with your hand. DO NOT MODEL THE SOUND!
- 4) Uncover each phoneme while telling the student to say it in his/her head. Do not model the sounds. You are only guiding him/her through the strategy.

Diagnostic Distractor Array

- 5) “I will give you 4 choices. Listen to all 4 choices. Then I will go through the choices again and you will tell me when you hear the right word. Is this [Choice 1], [Choice 2], [Choice 3], or [Choice 4]? Tell me when you hear the right word: (Repeat the choices).”

Reinforcement or Re-teaching

If the student answered correctly, provide descriptive reinforcement (e.g., Yes. That word is _____. You got it right!) If the answer was incorrect, re-teach using the guided practice steps.



NRA: Expansion

- **Additional Instruction**
 - Definitions, onset/rime, working with words
 - Mnemonic to memorize strategy: SAM
(Say the sounds, Altogether, Make it fast)
- **Sound out larger words (recognizing “chunks”)**
- **Recognize words without sounding them out**
- **Read a line & stop at unknown words**
- **Check for accuracy & comprehension**
 - Random word checks
 - Comprehension questions
- **Spell & write target words**



Using Technology with the NRA

- **Evaluation – student response to diagnostic distractor array**
- **Guided Practice & Independent Practice**
- **Expansion Activities**



Evaluation: Student Responses

Student Responding to the Diagnostic Distractor Array

- **One selection response: Student listens to auditory choices and only responds using the device when his/her choice is spoken.**
 - **Reliable means of response**
 - **Low tech AAC (paper board, eye gaze board): create a board with “Yes” or “That one” along with “I don’t know.”**
 - **Mid tech AAC (voice output communication aid such as the BigMack or LittleMack): program the device to say, “Yes” or “That one.” (Alternately, student responds to selection with a physical movement and device is programmed with, “I don’t know. I need to sound it out again.”)**
 - **High tech AAC (dynamic display device such as Dynavox or laptop with Speaking Dynamically Pro): Program two buttons: “Yes” or “That one” and “I don’t know.”**
- **Multiple selection response: Student listens to auditory choices that are paired with multiple “buttons” for selection**
 - **Low, Mid, High Tech AAC: Create a board with four buttons: A, B, C, D**



Guided & Independent Practice

AAC

- **Self-operated auditory prompt for remembering the strategy**
 - **use a Step-by-Step programmed to speak the steps aloud to the student when he/she is “stuck” on a word**
 - **program the steps into the student’s dynamic display AAC device (e.g., Dynavox, Speaking Dynamically Pro)**
- **Program words onto student’s high tech AAC device**



Guided & Independent Practice

PowerPoint

- **Presentation of words: Computer-Assisted Instruction**
 - **Create a PowerPoint presentation with the student's words with recorded narration that models the strategy steps and the sounds**



PowerPoint: Computer-Assisted Instruction

- **Allows for Independent Practice**
- **Reduces 1:1 Adult Instruction Time**
- **Coleman-Martin, Heller, Cihak, & Irvine (2005) found that NRA script delivered by PPT was equal to teacher-directed instruction**



PowerPoint and the NRA

- **PowerPoint presentations constructed to present words**
- **Presentations set up to match script from NRA**
- **Different colors used to emphasize letter(s) for sound being heard**



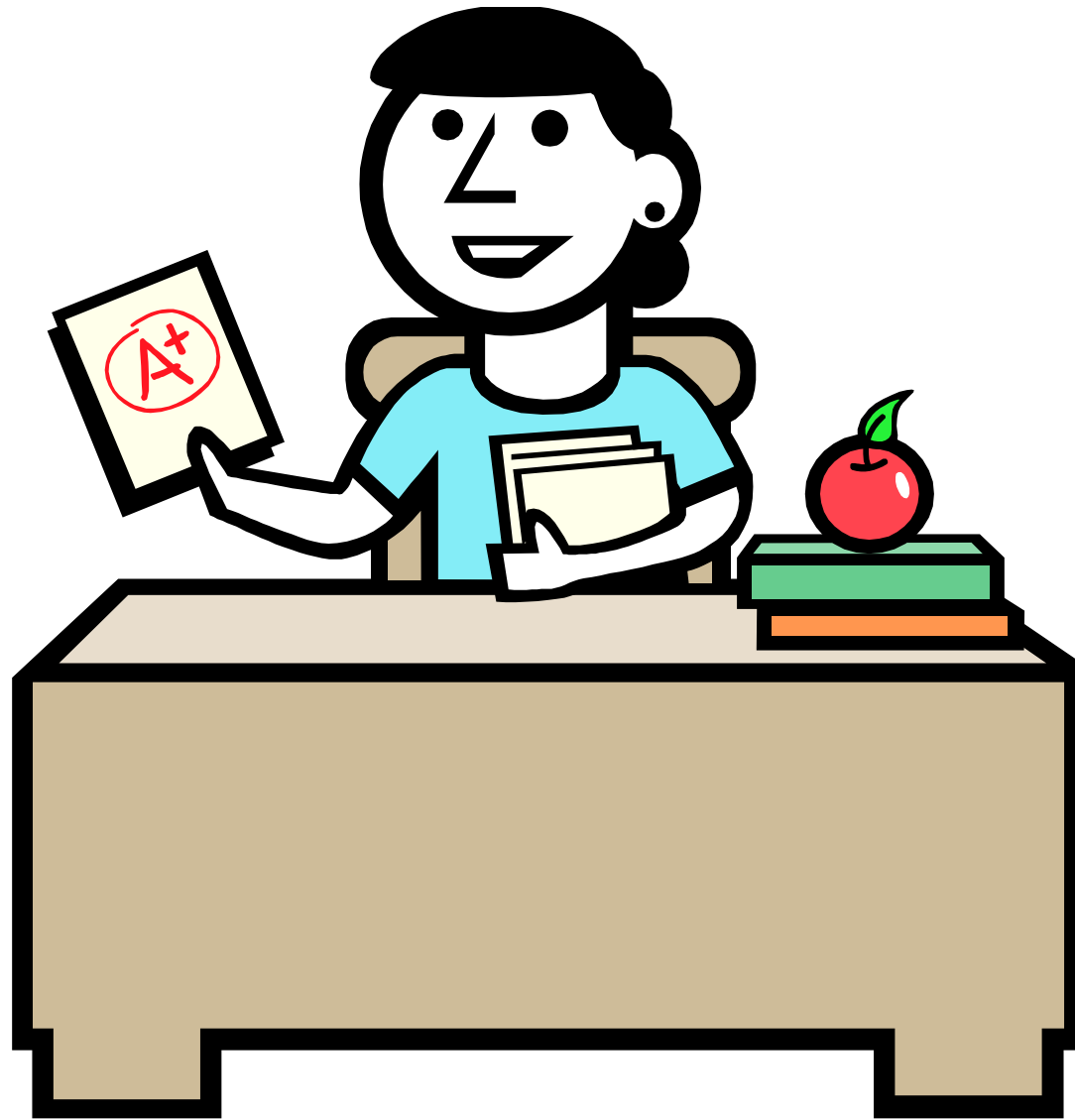
Coleman-Martin, et. al

- **Instruction using the NRA**
 - **Teacher Instruction Only**
 - **Teacher + Computer-Assisted Instruction**
 - **CAI only**

- **Approximated natural progression of instruction**

Example:

**Computer-Assisted
Guided Practice**



sneak



S



sn



snea



sneak



sneak



sneak



Fantastic!





Example:

**Computer-Assisted
Evaluation and Additional
Instruction**

mad



m



ma



mad



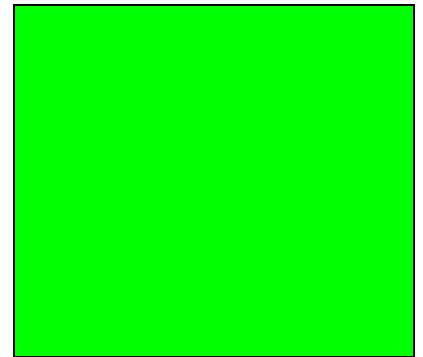
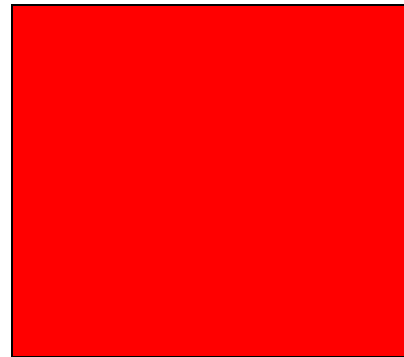
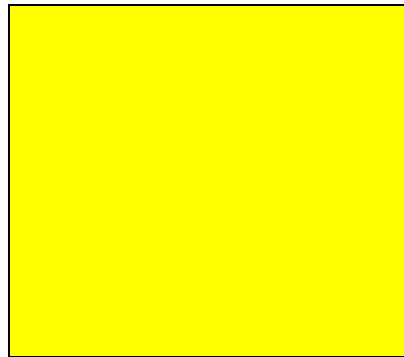
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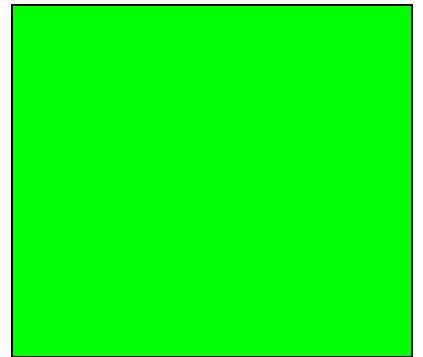
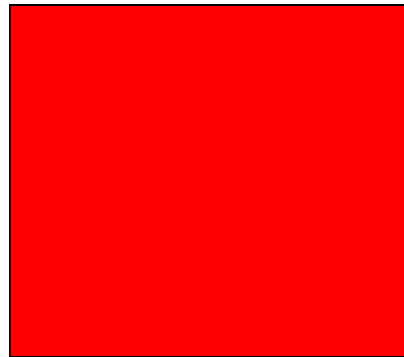
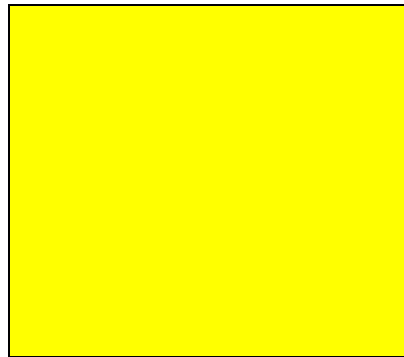
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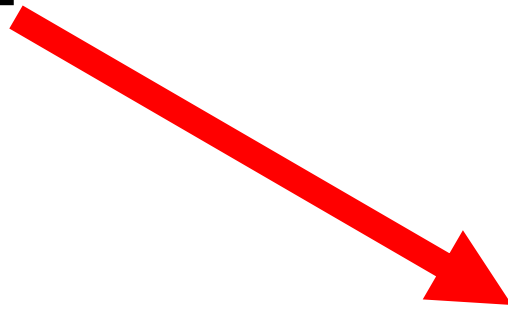
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Teaching Implications

- **PPT may be more efficient than teacher-directed instruction**
- **Provides multiple opportunities to practice words with less teacher time**
- **Students are able to practice in multiple environments**
- **Computer-assisted instruction may be more motivating for some students**
 - **Students with autism spectrum disorders**
 - **Allows for independent work**



Technology: Expansion

- **Additional Instruction**
 - **Create electronic dictionary of words that have been taught**
- **Sound out larger words (recognizing “chunks”)**
 - **Program boards on AAC device with common parts of words (prefixes and suffixes, onsets and rimes) for student to practice/ refer to**
- **Read a line & stop at unknown words**
 - **Program a page on AAC device with steps and a button to ask for help when he/she does not recognize the word**
- **Check for accuracy & comprehension**
 - **Use software (SDPro, Kurzweil, Write:OutLoud) for student to read along with story to check himself or herself, have student write/type words he/she did not know**
 - **Program boards on AAC device or create PowerPoint that checks for comprehension**
- **Spell & write target words**
 - **Using computer or onscreen keyboard on AAC device**



Resources

Georgia Bureau for Students with Physical and Health Impairments Website: NRA
(slight changes to strategy have been made, but site contains a lot of information about literacy for students with physical disabilities).

- <http://education.gsu.edu/PhysicalDis/strategies/nonverbal.html>

MBC's web site: You will find examples of PowerPoints here:

- http://web.utk.edu/~mbc/mbc_PowerPoint

