Knowing and Applying the Science of Early Reading Instruction (K-3) in Tier 1 Classroom Instruction

WAVE CONFERENCE PRESENTATION
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International Reading Hall of Fame
https://www.readinghalloffame.org/board-of-directors
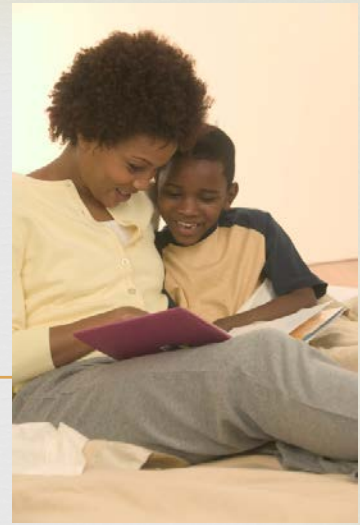August 1, 2018

Learning to Read
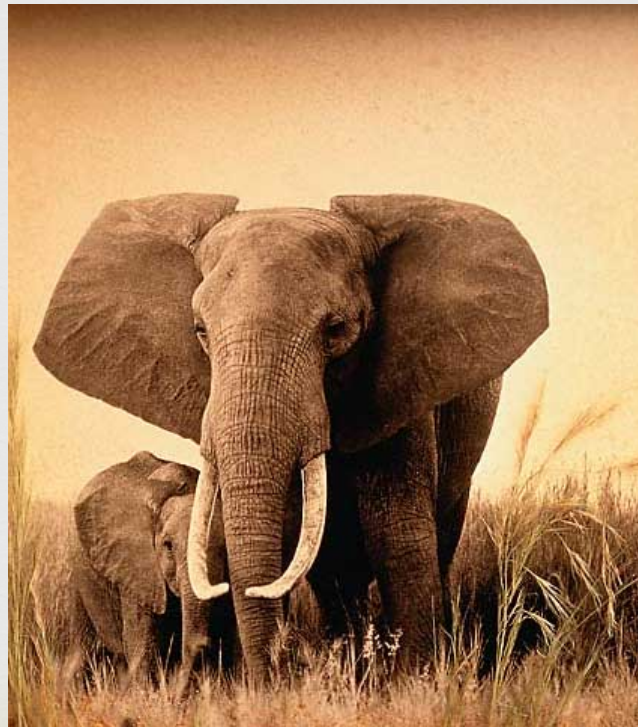
Jake is 5 and learning to read.

He points at a picture in a zoo book and says, "Look Mama! It's a frickin' Elephant!"

Deep breath…. "What did you call it?"

"It's a frickin' Elephant, Mama! It says so on the picture!"

And so it does…..

AFRICAN & ELEPHANT

The Science of Early Reading Instruction (K-3)

❧ The **National Reading Panel** (2000) lists the following foundations of reading instruction as supported with scientific research for early reading:
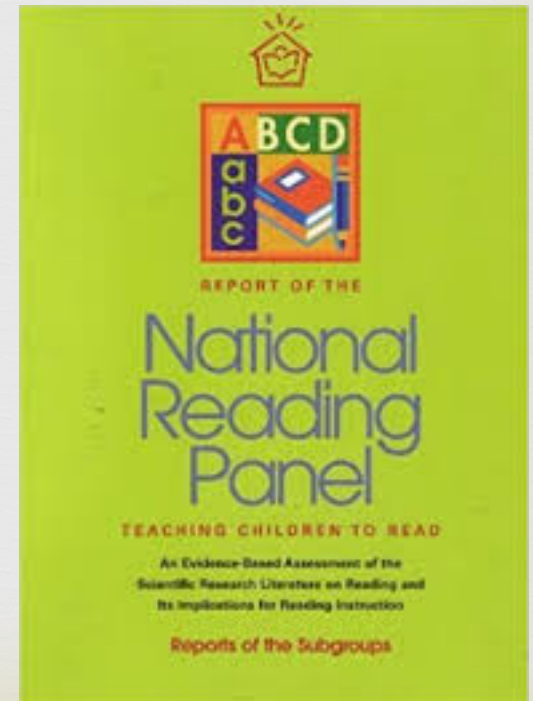
- Phonemic Awareness
- Phonics
- Fluency
- Vocabulary*
- Comprehension*

These will not be a part of this presentation in the interest of time allotted.

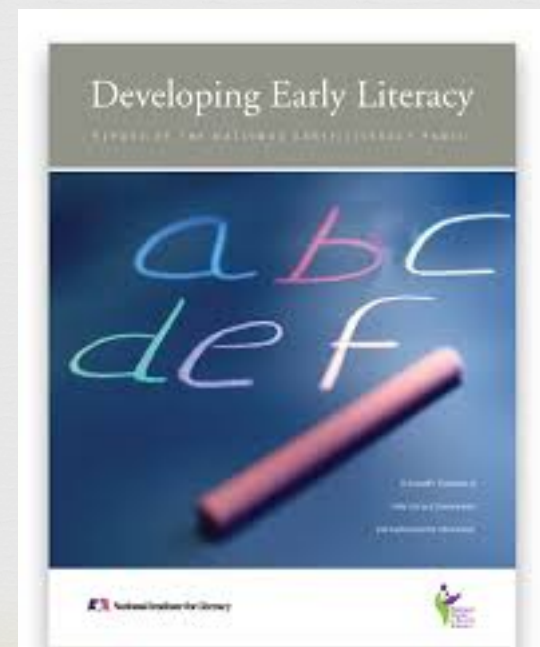# The Science of Early Reading Instruction (K-3)

❧ The **National Early Literacy Panel** (2008) lists the following additional foundations of reading instruction as supported with scientific research for early reading:

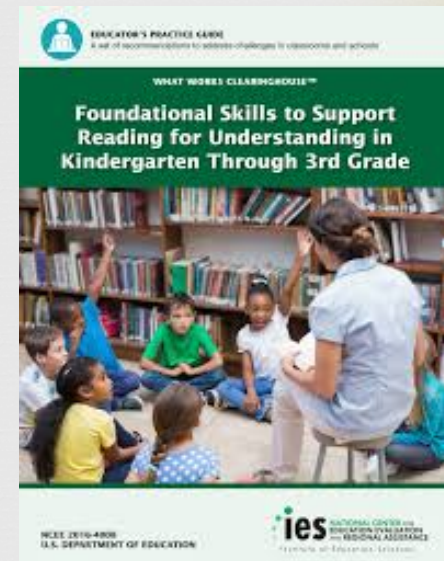ℰ Oral Language*

ℰ Concepts About Print

ℰ Alphabetic Knowledge

* This will not be a part of this presentation due to time allotted.

The Science of Early Reading Instruction (K-3)

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 The **Institute of Education Sciences** (2016) *Foundational Skills to Support Reading for Understanding in Kindergarten Through 3rd Grade* lists the following additional foundations of reading instruction as supported with scientific research for early reading:

- Academic Language vocabulary, inferential and narrative language.
- Develop awareness of the segments of sounds in speech and how they link to letters.
- Teach students to decode words, analyze word parts, and write and recognize words.
- Ensure that each student reads connected text every day to support reading accuracy, fluency, and comprehension.

The Science of Early Reading Instruction (K-3)

ℭℬ

 Motivating Students to Reading : Evidence for Classroom Practices that Increase Reading Motivation and Achievement* (Gutherie & Humenick, 2004).

* This will not be a part of this presentation due to time allotted.

The Voice of Evidence in Reading Research

Peggy McCardle
Vinita Chhabra

Foreword by Catherine Snow
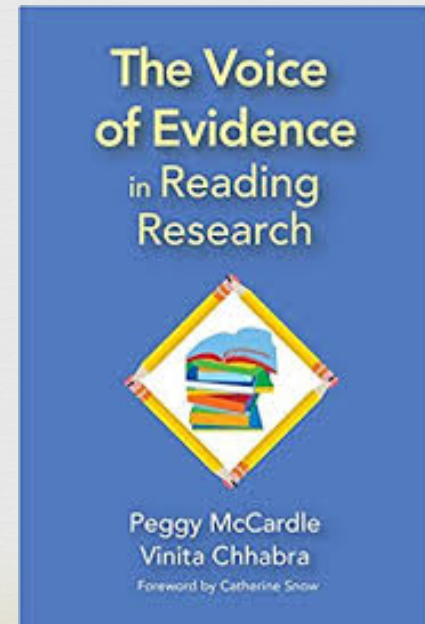
The Science of Early Reading Instruction (K-3)

Concepts About Print

Concepts About Print

Don't Assume It!

As children learned to read, they need to develop clear understandings about basic print concepts such as letters, words, sentences, directionality (top, bottom, left, right, first, last, etc.), book handling, and be able to connect these concepts to the terms used to refer to them (Clay, 1972, 1991) . Clay (1991, p. 141) cautioned years ago, "Teachers cannot assume that beginning readers can isolate for attention the things that labels refer to. If they cannot and the teacher uses the terms without checking the teaching-learning interaction goes astray."

Concepts About Print

ℭℬ

Question: Where do children acquire print awareness?

Answer: They get it from seeing environmental print and seeing people use print for various purposes (Hiebert, 1983). According to Adams (1991), children from middle class homes arrive at first grade having experienced 1,000 to 1,700 hours of storybook reading – one on one- as well as another 1,000+ hours of print experience in their homes and communities. In comparison, children coming to first grade from poverty homes typically have experienced only 25 hours of storybook reading and less than 200 hours of general guidance about the forms and nature of print. Consequently, there is likely to be some children in every classroom who need CAP assessment and instruction.
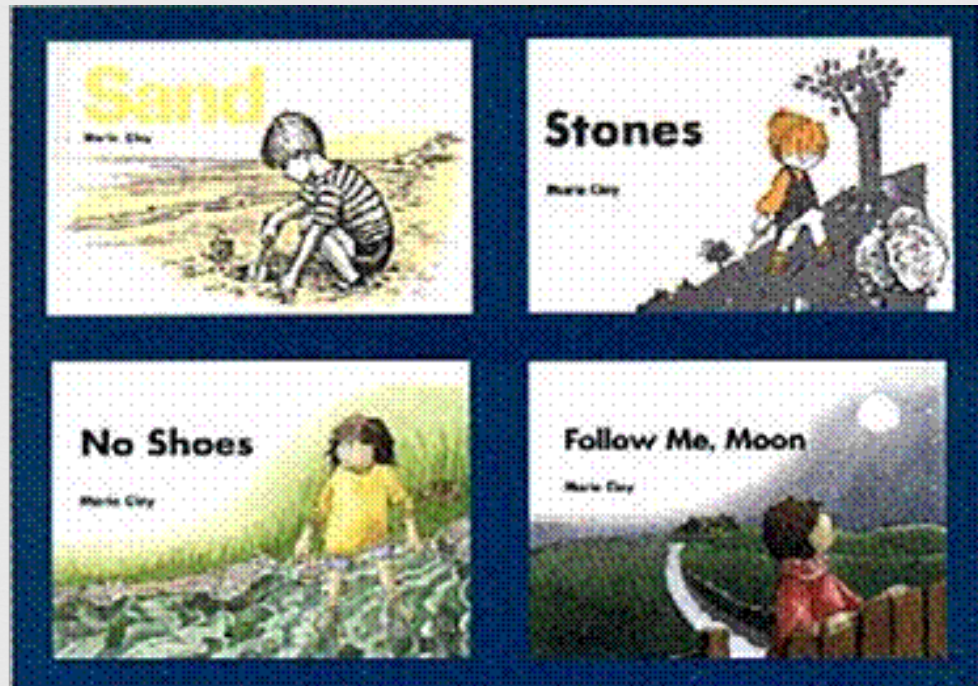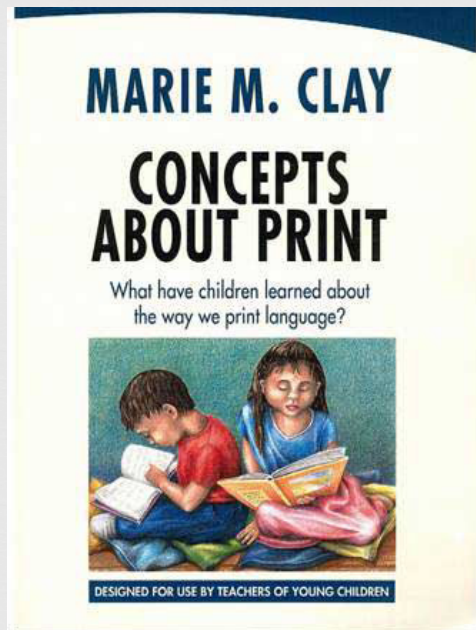
Concepts About Print

The purpose of the "Concepts About Print" test by Marie Clay (2000) is to screen and diagnose students' conceptual and procedural knowledge about how printed language functions. Concepts and procedures assessed include:

No.	Concept	No.	Concept
1.	Front of book	11.	Left page before right
2.	Print contains message	12.	One change in word order
		13.	One change in letter order
3.	Where to start	14.	One change in letter order
4.	Which way to go	15.	Meaning of a question mark
5.	Return sweep to left	16.	Meaning of full stop (period)
6.	Word-by-word matching	17.	Meaning of comma
7.	First and last concept	18.	Meaning of quotation marks
8.	Bottom of picture	19.	Locate m i (*Moon*) OR m i (*Shoes*)
9.	Begins 'I' (*Moon*) or 'Leaves' (*Shoes*) bottom line, top OR turns book	20.	Reversible words *was, no*
		21.	One letter: two letters
		22.	One word: two words
10.	Line order altered	23.	First and last letter of word
		24.	Capital letter

Assessing Print Concepts

What is needed to administer the "Concepts About Print Test*" to young children?

MARIE M. CLAY

CONCEPTS ABOUT PRINT

What have children learned about the way we print language?

DESIGNED FOR USE BY TEACHERS OF YOUNG CHILDREN

Sand

Stones

No Shoes

Follow Me, Moon

* All of these pictured materials can be purchased at http://www.heinemann.com in English and Spanish for a total of $48.00

Assessing Print Concepts

44

☐ Sand		**CONCEPTS ABOUT PRINT SCORE SHEET**		
☐ Stones				
☐ Moon			Date: _____	
☐ Shoes				
Name: _____		Age: 6·11	TEST SCORE:	21 /24
Recorder: Peggy Paterson		Date of Birth: 5/29/01	STANINE GROUP:	6

PAGE	SCORE		ITEM	COMMENT
Cover	✓	1.	Front of book	
2/3	✓	2.	Print contains message	
4/5	✓	3.	Where to start	
4/5	✓	4.	Which way to go	
4/5	✓	5.	Return sweep to left	
4/5	✓	6.	Word-by-word matching	
6	✓	7.	First and last concept	
7	✓	8.	Bottom of picture	said It's upside down
8/9	✓	9.	Begins 'The' (Sand) Begins 'I' (Stones) Begins 'I' (Moon) Begins 'Leaves' (Shoes) bottom line, then top, OR turns book	
10/11	✓	10.	Line order altered	Read bottom sentences then top
12/13	✓	11.	Left page before right	
12/13	✓	12.	One change in word order	P
12/13	✓	13.	One change in letter order	stool s is switch
14/15	✓	14.	One change in letter order	point to come it should be /c/u//m/
14/15	✓	15.	Meaning of a question mark	
16/17	✓	16.	Meaning of full stop (period)	=a period
16/17	0	17.	Meaning of comma	—
16/17	○	18.	Meaning of quotation marks	
16/17	✓	19.	Locate: m h (Sand); t b (Stones); m i (Moon); m i (Shoes)	
18/19	✓	20.	Reversible words 'was', 'no'	1st pointed to on then S.C.
20	0	21.	One letter: two letters	showed folloow
20	✓	22.	One word: two words	
20	✓	23.	First and last letter of word	
20	✓	24.	Capital letter	

Assessing Print Concepts

Concepts About Print Test Norms for Total Score

73 Ohio urban children in first grade in 1990-91	Stanine group	1	2	3	4	5	6	7	8	9
	Test score	0–10	11–12	13	14–15	16	17–18	19	20	21–24

Concepts About Print Test Age Norms for Each Item

AGE EXPECTATIONS FOR ITEMS
(Age at which 50 percent of average European children pass an item; Clay, 1970)

| ITEM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Age 5:0		x																						
5:6	x		x	x	x	x	x	x	x	x	x										x			
6:0																			x	x		x		
6:6												x	x		x								x	x
7:0														x		x	x	x						

Instructional Strategies

Teaching Print Concepts

Where does concepts about print instruction fit in reading instruction?

- Concepts about print should be fostered in pre-school, kindergarten, and first-grade. It should be taught in connection with oral language, vocabulary, reading aloud, phonemic awareness, and learning letters.
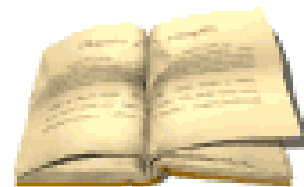
Teaching Print Concepts

Shared Reading Experience

ϖ During shared reading, the teacher can point out concepts of books (i.e., front cover, author and illustrator, top and bottom of page, etc.).

ϖ Finger pointing at text during shared reading reinforces the concept of word
and word boundaries as well as directionality

Teaching Print Concepts

What is the developmental sequence of difficulty in concepts about print instruction?

- Print Not Picture – Pre-K
- Front of Book - K
- Knows Where to Begin Reading Print - K
- Directionality- K
- Voice-Print Matching (Concept of Word)-K
- Concept of Letter- K-1
- Concept of First and Last- K-1
- Lower Case & Upper Case Letters-K
- Reversible Words- K-1
- Does the print look right ? - 1
- Punctuation- 1

Teaching Print Concepts

Instructional Strategies for Developing Children's Concepts About Print

- *Pointing*
- *Smooth*
- *Word by Word*

Teaching Print Concepts

Instructional Strategies for Developing Children's Concepts About Print
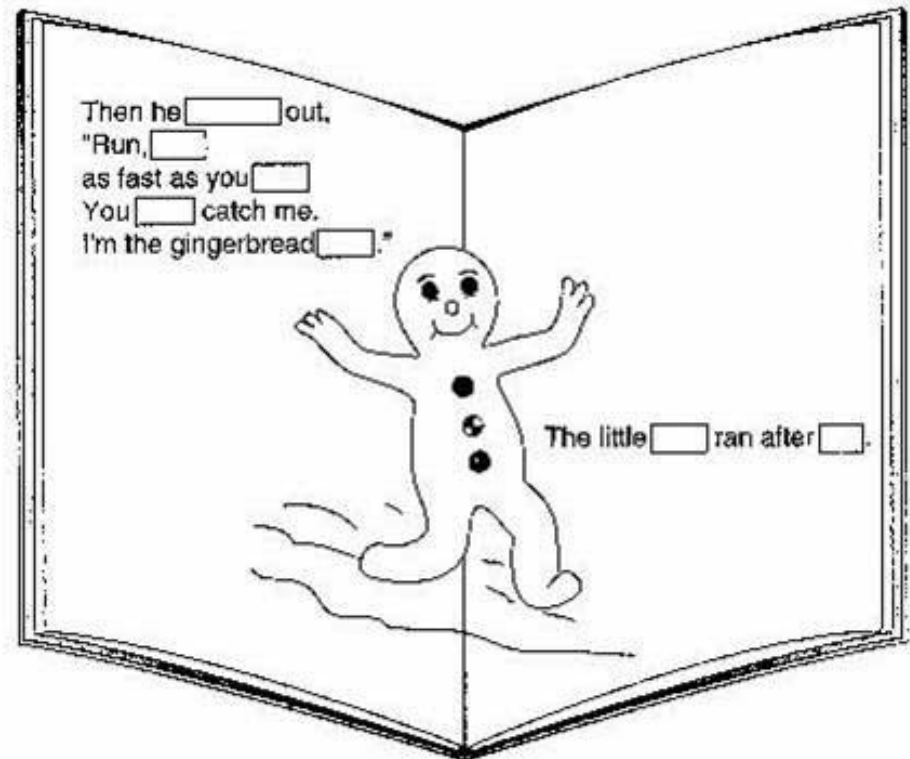
✍*Framing*

- *Fixed Frames*
- *Sliding Frames*
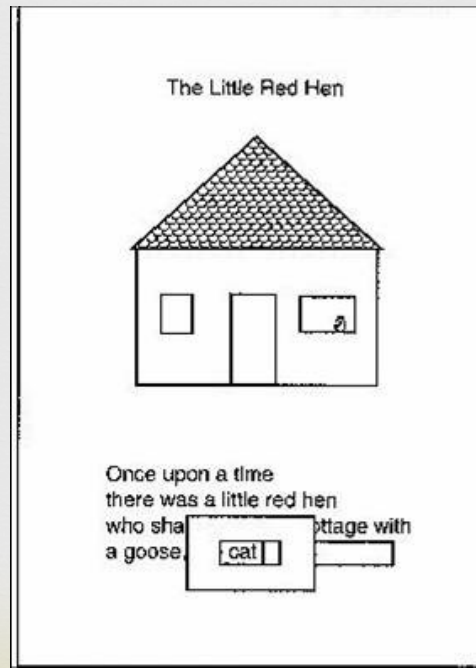
The Little Red Hen

Once upon a time
there was a little red hen
who sha____ ____ttage with
a goose. | cat |

Teaching Print Concepts

❧

Instructional Strategies for Developing Children's Concepts About Print

❧ *Masking*

• *Post Its*

Then he [ ] out.
"Run, [ ]
as fast as you [ ]
You [ ] catch me.
I'm the gingerbread [ ]."

The little [ ] ran after [ ].

Teaching Print Concepts

Instructional Strategies for Developing Children's Concepts About Print

- *Highlighting*
  - *Highlighting Tape*
  - *Wikki Sticks*
  - *Verbal Punctuation*
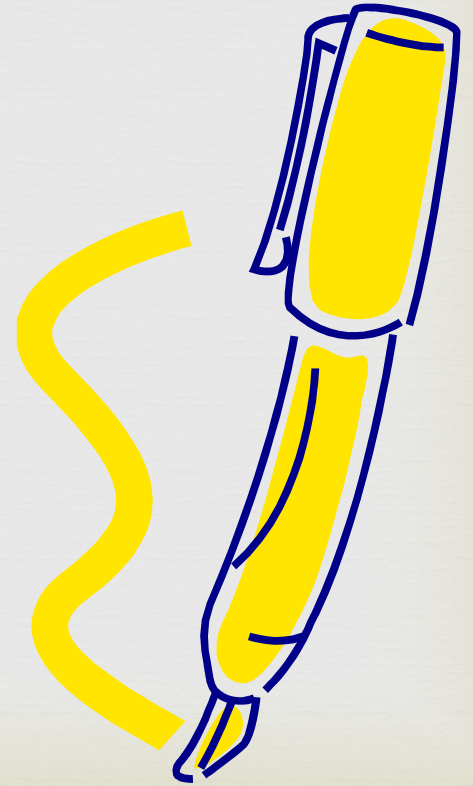
Teaching Print Concepts

Instructional Strategies for Developing Children's Concepts About Print

Match connected text with -

- *Word Cards*
- *Letter Cards*
- *Sentence Strips*

Teaching Print Concepts

Instructional Strategies for Developing Children's Concepts About Print

What are some necessary tools for teaching print awareness?

- *Enlarged Print*
- *Post-It Notes*
- *Highlighting Tape*
- *Pointer*
- *Fixed and Sliding Print Frames*
- *Lap Sized White Board*
- *Word and Sentence Strips*
- *Chart or Big Book Easel*
- *Pocket Charts*

The Science of Early Reading Instruction (K-3)

Phonemic Awareness

Phonemic Awareness

 Phonological awareness is the ability to hear units larger than a single sound in spoken language.

 Phonemic awareness is the ability to hear and manipulate individual sounds in spoken language.

From Phonological Awareness to Phonemic Awareness

		Phonological Awareness→			Phonemic Awareness →	Phonemic Awareness with Phonics →		
Developmental Level Tasks	*Linguistic Levels*	Word → Awareness	Syllables→	Onset and Rime→	Single Sound→	Blending→	Segmenting→	Manipulation
	Introduced (Approx.)	Pre → K		K Review first five weeks of 1st grade	K – 1st Grade			1st Grade
	Instruction sounds like	How many words do you hear in this sentence?	How many syllables do you hear in this word?	What is (are) the sound(s) before the vowel? What are the sounds made by the vowel and the letters after it?	How many sounds do you hear in this word?	What word do we get when we blend the sounds /m/+/a/+/n/?	What sounds do you hear in the word cat?	What word do you get when you take the /k/ sound off cat? What word do you get if you substitute /t/ for /s/ in son
	Response looks like	Children: • count • clap • manipulate markers	Children: • count • clap • manipulate markers	Children: • recognize • manipulate (segments)	Children: • count sounds they hear (not letters)	Children: • elongate the sounds getting faster each time	Children: • count • clap (spunos)	Children: • delete sound to make new word • substitute sound(s) to make new word
	Helpful hints	The dog ran. 1 2 3	Best to start with compound words– cow/boy 1 2	Use: word families, rhyming words, alliteration s + at w + in / d + ow	w i n d ow 5 sounds (6 letters)	clap when it's fast enough to be a word man	Use a rubber band to "stretch" the word c - a - t /k/ /a/ /t/	cat - /k/ = a /t/on - /t/ = son
		Total 18 hours of instruction unless indicated otherwise via assessment.						

From Phonological Awareness to Phonemic Awareness

Task 1: Rhyming

ଙ Phonological awareness learning and teaching activities

  ଙ Rhyme Away

    ଙ Erase parts of a pictures from hearing a rhyme such as:

    "He ran to a fire, erase a _____.
    (tire)

  ଙ Draw-a-Rhyme

    ଙ Draw a part of a picture from hearing a rhyme such as:

    "When drawing a clown, it is said, always start with his big, round _____. (head)

From Phonological Awareness to Phonemic Awareness

Task 2: Alliteration

- Phonological awareness learning and teaching activities
  - Bag of Sounds
    - Collect pairs of objects like: nickle, nail; rattle, ring; pencil, penny.
    - Place one object from each pair on a table or desk. Ask a child to come up and draw an object from the bag and tell which object that begins with the same sound it matches on the table.
    - Continue with other children, objects, and bags in small groups.

From Phonological Awareness to Phonemic Awareness

Task 3: Oddity-Tasks

ভ Phonological awareness learning and teaching activities

   ভ Which One Doesn't Fit Grab Bag

      ভ Place several objects into a bag that either rhyme or begin with the same sound.

      ভ Have children sort the objects into those that belong together (rhyme or begin the same) and those that do not fit together.

      ভ To extend this activity, put two or three sets of rhyming or same beginning sound objects into the same bag.

From Phonological Awareness to Phonemic Awareness

Task 4: Blending

✿ Phonological awareness learning and teaching activities

ം Name Chant

✿ Say the following chant to the children:

"It begins with /M/,

And ends with /ary/.

Put them together,

And they say _____. (Mary)

From Phonological Awareness to Phonemic Awareness

Task 5: Segmenting

ଓ Phonological awareness learning and teaching activities

   ଓ Push a Penny

      ଓ Give each child a stack of pennies and piece of paper divided in half by a dark black line. Have them line their pennies up beneath the dark black line on the paper.

      ଓ Say a word with two, three, or four sounds.

      ଓ Ask children to move a penny from below the line to above the line for each sound they hear in the words spoken.

The Science of Early Reading Instruction (K-3)

Alphabetic Knowledge

Letter Name Knowledge: Theories and Research

֎ Critical Feature Analysis Theory

֎ All letters are analyzed into and constructed a small set of critical features shown below

. | / \   — ● (⌐

Letter Name Knowledge: Theories and Research

⊗ Critical Feature Analysis Theory

⊗ Shared critical features make some letters confusable.

⊗ Young children don't understand the identity change that occurs in the 2 dimensional print world. Unlike their previous 3 dimensional object world experience.

d p b   m n u

⊗ This doesn't mean kids are dyslexic!

Letter Name Knowledge: Theories and Research

ℭℬ

Discriminate this symbol from others

Categories into which this symbol can be sorted

Recognize graphic symbol

Motor codes used in transcription

k

Name the symbol

Paired Associates: Objects Pictures

Made from x number of critical features

Associated sound

Letter Name Knowledge: Theories and Research

Multi-Componential Letter Name Instruction is the Most Powerful and Effective

- sounds
- graphic images/mnemonics
- name
- critical features
- transcription of symbols
- categories
- discrimination

Letter Name Knowledge

What does research have to say about factors that affect how young children learn letter names and sounds?

Letter Name Knowledge

ೋ Letter naming is a **strong predictor** (along with phonological awareness) of phonics acquisition and reading fluency (Evans, Bell, Shaw, Moretti, & Page, 2006; National Reading Panel, 2000; Treiman, Weatherston, & Berch, 1994; Stage, Shepard, Davidson, & Browning, 2001).

Letter Name Knowledge

Letter Name Learning is a *Constrained Reading Skill*.

❧ *Scope –*
- ❧ *Finite set of 26 letters (52 with upper and lower case)*
- ❧ *Learning curve is steep*
- ❧ *Time period is relatively brief*

❧ *Importance –*
- ❧ *Centrality to process of becoming a reader*
- ❧ *Typicality of the process of becoming a reader*

❧ *Range of Influence*
- ❧ *Limited to the process of developing decoding automaticity*
- ❧ *Found in the earliest stages of literacy development*

Letter Name Knowledge

Letter Name Learning is a *Constrained Reading Skill*

Unequal Learning –

- Some letter names and sounds are learned more easily, quickly and deeply than others.
- Result of unequal exposure rates to letter names and sounds.

Mastery –

- Letter name learning is mastered early, quickly and completely.

Universality –

- Letter name learning needs to be learned by all learners.
- Letter name learning is composed of identical information learning elements.

Letter Name Knowledge

What does recent research say about the instructional pacing and review of letter names and sounds?

Letter Name Knowledge: Pacing of Instruction

Figure 3: Percentage Students At-Risk and Benchmarked on DIBELS Letter Name Fluency Subtest – Beginning and End of Year (Jones and Reutzel, 2013)
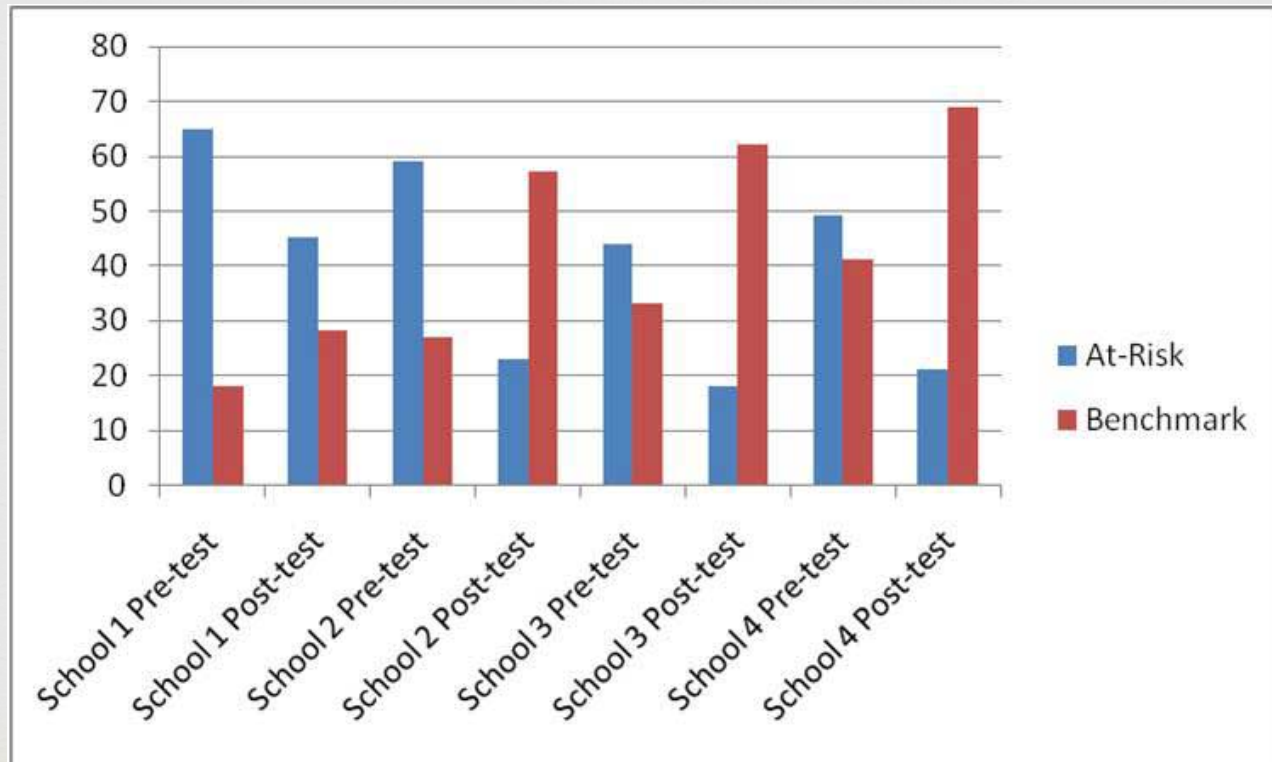
A sign test indicated significant differences at the end of year one between groups for students designated at risk, $z = 2.35$, $p = .02$ with fewer students at risk in the Enhanced Alphabet instruction group, $M = 2.11$, $SD = .84$, than students in the traditional alphabet instruction group, $M = 1.57$, $SD = .81$ (Figure 3).
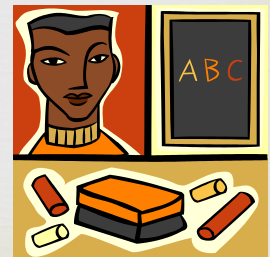
Letter Name Knowledge: Pacing of Instruction

Four Letter-a-Week Teachers' Scores when they Changed to Letter-a-Day

Legend: At Risk (yellow), Benchmark (teal)

2006-2007: At Risk 45, Benchmark 28
2007-2008: At Risk 25, Benchmark 46
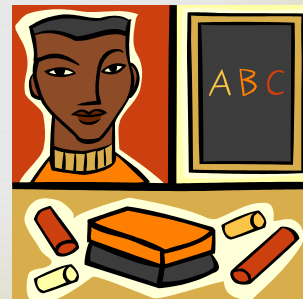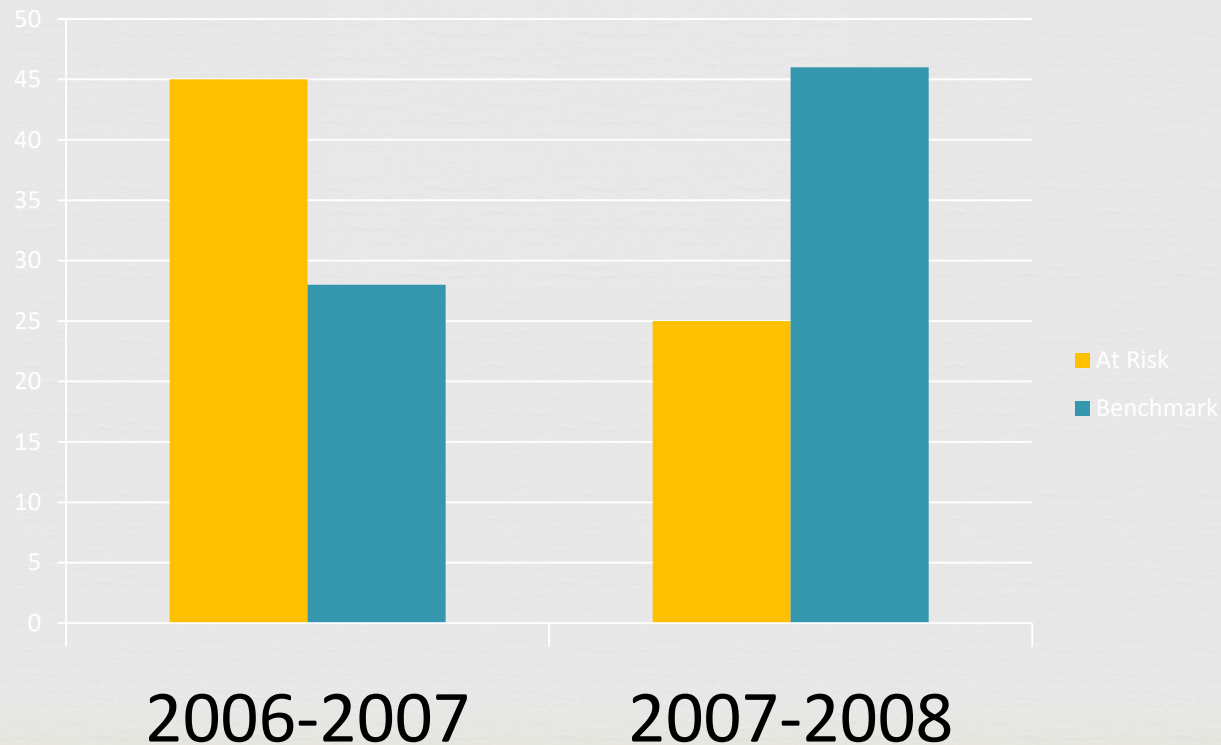
Letter Name Knowledge

Research has shown that learning letter names is facilitated through six different "advantages" (Justice, Pence, Bowles & Wiggins, 2006).

- ℘ *Own-Name Advantage* (where letters occur in children's names)
- ℘ *Alphabetic order* (where letters are taught in alpha order)
- ℘ *Letter pronunciation effect* (where the sound of the letter is also in the name)
- ℘ *Letter frequency effect* (letters that occur most frequently in written language)
- ℘ *Consonant Phoneme Acquisition order effect* (order of sounds the child first learns to articulate in oral language.
- ℘ *Letter Writing Advantage :* (where explicit letter formation is taught and practiced)

Letter Name Knowledge

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Letters that occur in Children's names
(Krech, 2000)
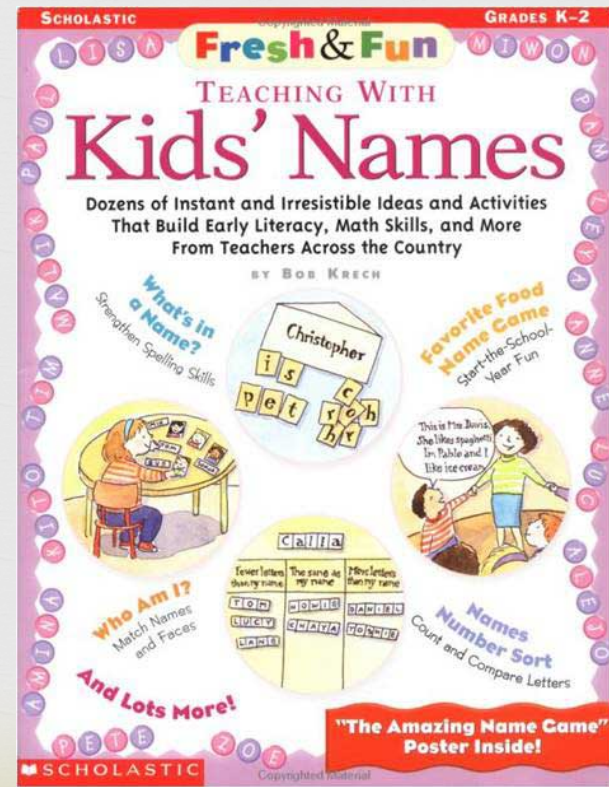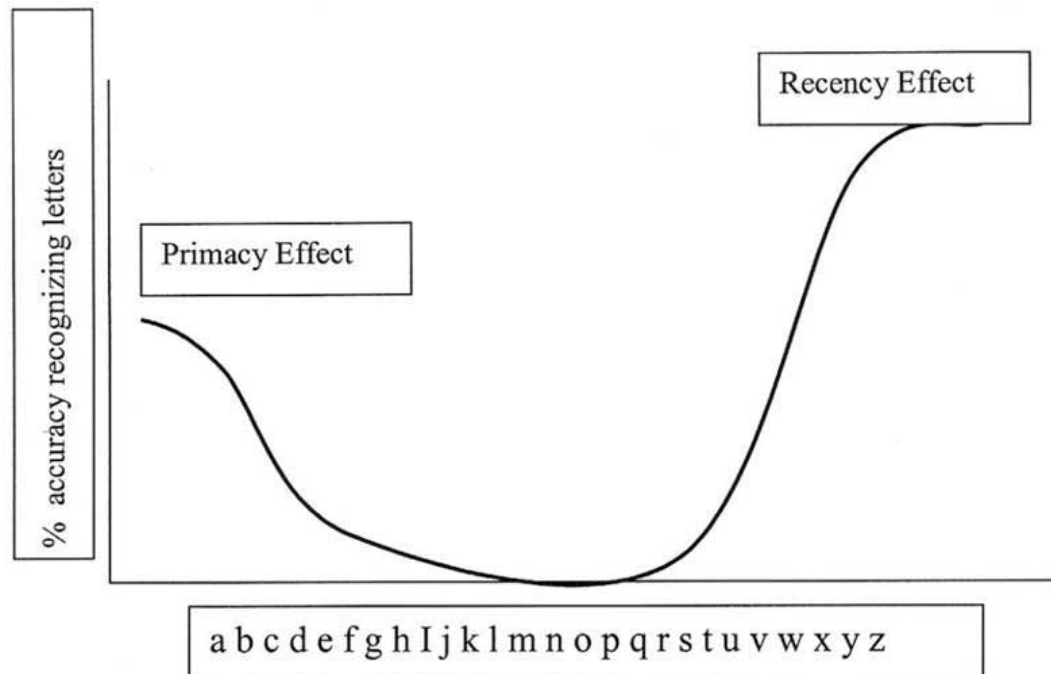
Letter Name Knowledge

❧ *Alphabetic order*
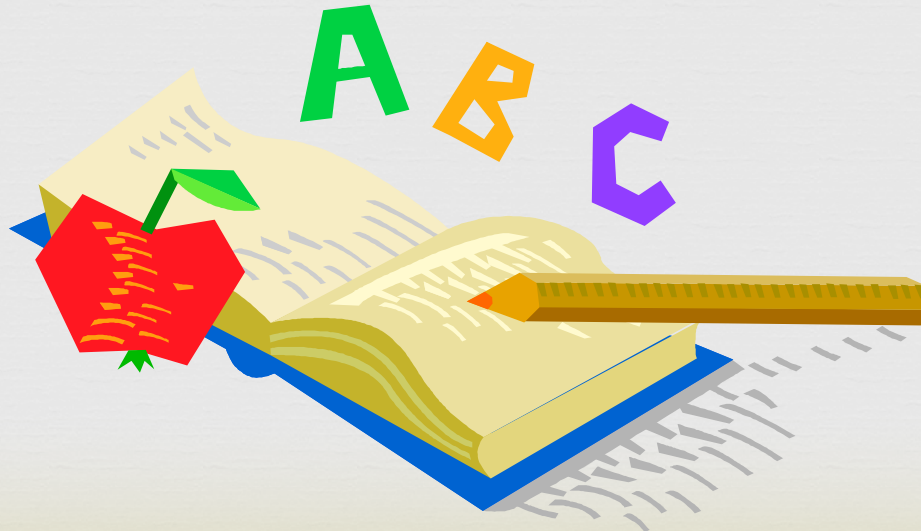
Letter Name Knowledge

Teaching the Alphabet as a serial list in order can lead to "list learning effects" as shown by the bowed serial position curve below.
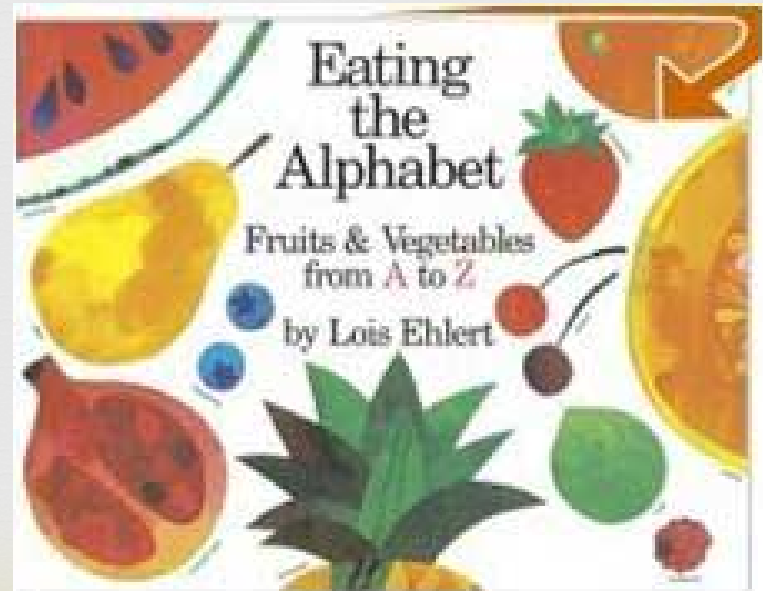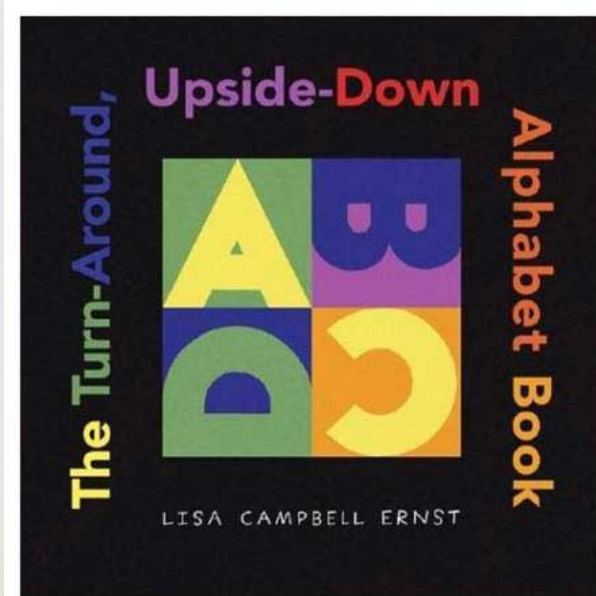
Letter Name Knowledge

 Using Alphabetic Order and Read Aloud
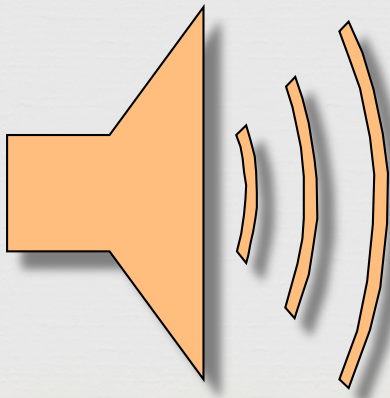
 Reading aloud alphabet books and discussing letters (Brabham, Murray, and Bowden, 2006).

 Singing and writing alphabet songs can be used to support children's learning of letter names (Smith, 2000).

Letter Name Knowledge

ભૂ

ભ *Letter name pronunciation effect* (where the sound of the letter is also in the name)

in Name

Letter Name Knowledge

ಣ **Naming the Letters**

   ಣ Saying the names of letters not only reinforces the names of letters but also many of the sounds (except g (hard g sound), h, q, w & y):

      ಣ Vowels – a, e, i, o, & u

      ಣ Consonants – b, c, d, f, j, k, l, m, n, p, q, r, s, t, v, x, z

      ಣ Letters where the sound of the letter is at the beginning of the letter names are learned easiest, then at the end of the letter names, and then not in the letter names (Treiman, et al., 1994; 1997; 1998; 2003).

Letter Name Knowledge

ℭℬ
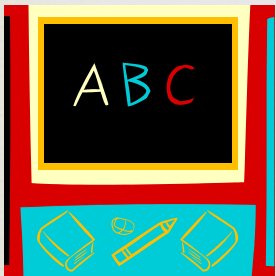
 ℭℬ *Letter frequency effect* (how often letters are found in written or printed language)
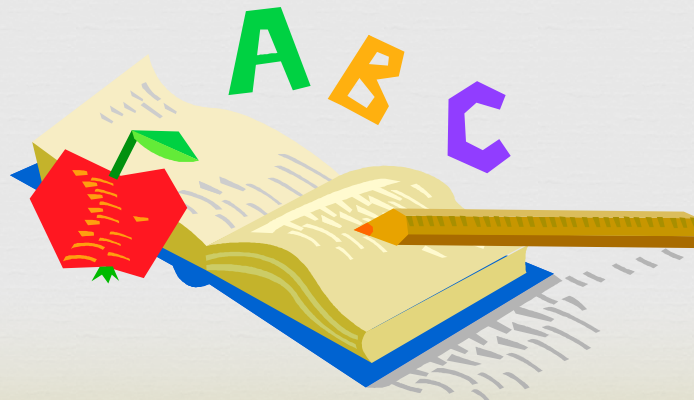
Letter Name Knowledge

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❧ **Using Letter Frequency** (Fry, 2004)

❧ Consonants in order of frequency:

r, t, n, s, l, c, d, p, m, b, f, v, g, h, k, w, th, sh, ng, ch, x, z, j, qu, wh, y

❧ Vowels in order of frequency:

Short i, a, e, schwa, long o & e, short u & o, long a, u, & i, r controlled a & o, ou, oo, oi, air, ar

Letter Name Knowledge

- ***Consonant Phoneme Acquisition order effect*** (order of sounds the child first learns to articulate in oral language.
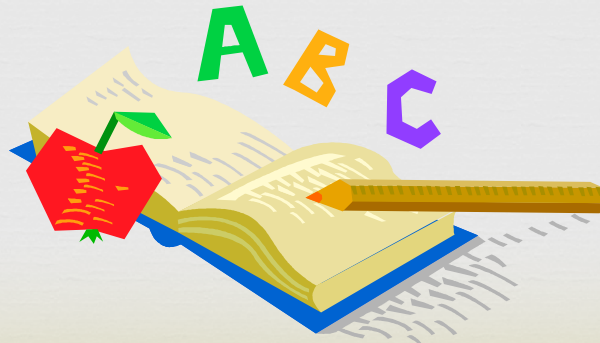
Letter Name Knowledge

❧

- **Using Consonant Phoneme Acquisition Order:**
  - Normative, developmental order of consonant phoneme acquisition includes the consonant phonemes of *n, m, p, h, t, k, y, f, ng, b, d, g w,* and *s* during the first four years
  - The consonant phonemes acquired after age 4 include: *l, r, v, z, sh, ch, j, zh,* and *th* (voiced sound as in *that* and unvoiced sound as in *think*).
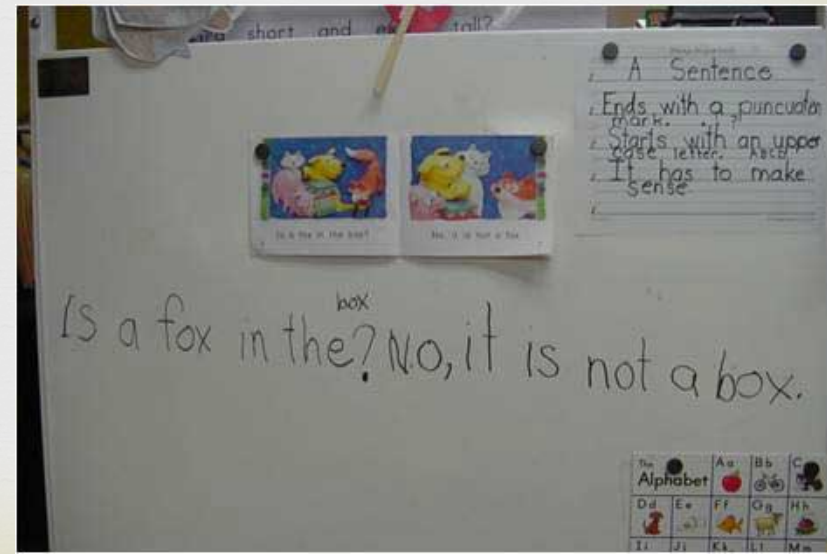
Letter Name Knowledge

Writing the Letters

Explicit teaching and guided practice of letter forms facilitates writing and letter naming fluency (Graham, Harris & Fink, 2000; Schlagal, 2007).
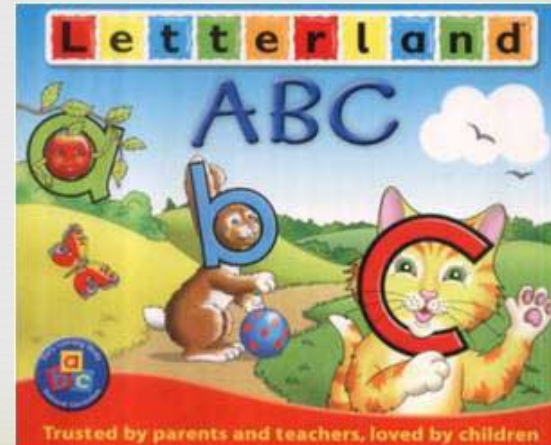
Letter Name Knowledge

❧ **Writing the Letters**

   ❧ Copying or tracing a letter from a correct model is helpful for children's practice. When doing this children should use a "look, say, cover, write, check" technique.

   ❧ Using pictographs in story or song-based instruction for introducing letters such as is found in the British *Letterland* approach is helpful.

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- Letter Dictation
  - Supplies needed: Markers, pencils, or other writing supplies, gel boards, white boards, kleenslates, etc. for choral response or lined/numbered paper.
  - Stop watch or wrist watch with second hand.
  - Dictate random letters using upper and lower case. Begin slowly about 10 seconds per letter. Increase speed during the year.

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What does research suggest about designing effective letter name and sound instruction?

Letter Name Knowledge: Lesson Guide

- Letter Naming Lessons should be:
  - short, 12 minutes or less
  - Follow a predictable format that is multi-componential
    - Name/Form
    - Sound
    - Categorize

Figure 3: Brief Predictable Format for Teaching Letter Name and Letter Sound

Lessons Objective: Students will learn the name, sound, and write the symbols for the upper and lower case letter *T/t*.

Supplies:

Bag of mixed alphabet letters	Washable markers and lap
boards	
Copies of enlarged print page	Highlighter tape

Explanation: Tell children: *Today boys and girls you will be learning to name, say the sound of, and write the upper and lower case letter T/t. Learning the letter name, sound and how to write upper and lower case letter t will help you to read and write many new words.*

Letter Name Identification: *This is the capital letter T.* (Write and show the upper case form of the letter *t*). *This is the lower-case letter t.* (Write and show the lower case form of the letter *t*). *Let's practice naming this letter. What is this letter?- T/t.* (Point in different order to upper and lower case letter T/t at least 3 times).

Letter Sound Identification: The letter *t* makes the /t/ sound. Say the /t/ sound with me… /t/, /t/, /t/. *What is the sound of the letter t? - /t/.* (Point to upper and lower case letter T/t at least 3 times asking students to make the sound of the letter).

Sort the Letters: *Here are some upper and lower case letter T/t. (6-8 upper and lower case T/t magnetic letters, foam letters, or dye cuts) mixed in this bag. We need to sort these letters into upper and lower case categories. (Begin with a closed sort and in subsequent review lessons use an open sort.) I'll put each letter on the board and if it is an upper case letter t, you say, 'Upper case, T, /t/.' If it is a lower case letter t, say, 'Lower case, t, /t/.* Place letters on whiteboard one at a time for students to identify and sort.

Letter Name Knowledge: Lesson Guide

 Follow a predictable format that is multi-componential (continued) –
  Find or Search
  Write

Find the Letters: *Now, let's see how many letter t's we can find on this page. (*Be sure to pick short pages of enlarged print with no more than 4 lines of print.) *Run a pointer underneath the words in each line of print. When students see a letter t, they are to point to the t. Call on one student to come up and place a piece of highlighter tape over the letter t on the enlarged print page.*

Write the Letter: Name and <u>demonstrate</u> the proper formation of the upper case T. Say something such as: *The upper case letter T starts at the top of the line and goes straight down to the bottom of the line. Then make a straight line across the top. (Down and across the top.)* Next name and demonstrate the proper letter formation of the lower case *t.* Say something such as: *The lower case letter t also starts at the top of the line and goes straight down to the bottom of the line. Next, make a line that crosses the other line between the middle and top of the line. (Down and cross.)*

Pass out white boards, gel boards, lap boards and ask students to take letter dictation. Ask students to write 3-6 dictated lower and upper case T/t letters and also quickly review other letters learned. Have students write and cover their letter. Then ask them to show you using a choral response mode the letter they wrote. Using a sticky note or clip board, notice when students show you their written dictated letters which were successful and which may need additional help in small group settings.

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