

## How am I Learning?

Indicators of Later Literacy Learning and the Impact of Early Intervention

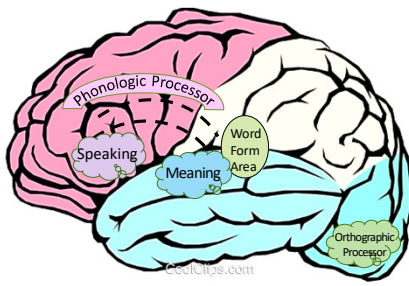
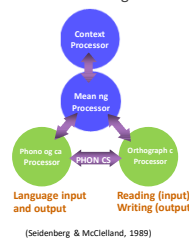
Dr. Lucy Hart Paulson, EdD, CCC-SLP  
Ohio Literacy Academy  
June 8, 2023

## Today's Agenda

- Brain processes involved in literacy learning
- Developmental sequences, age expectations, and predictive indicator skills for literacy learning
- Effective early instruction and intervention strategies

## Language and Literacy Processing in the Brain

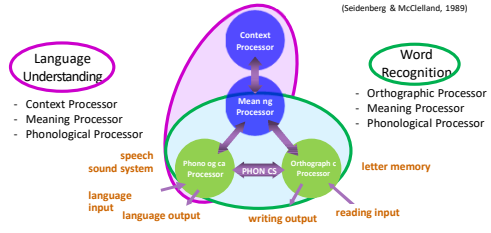
Four-Part Processing Model for Word Recognition

(Seidenberg & McClelland, 1989)

## Four-Part Processing Model for Word Recognition

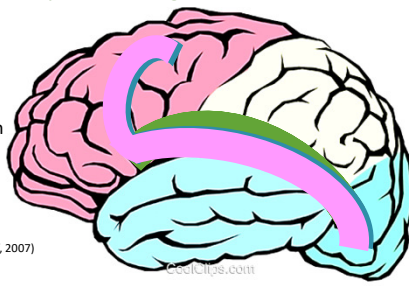
(Seidenberg & McClelland, 1989)



- Language Understanding
  - Context Processor
  - Meaning Processor
  - Phonological Processor
- Word Recognition
  - Orthographic Processor
  - Meaning Processor
  - Phonological Processor

speech sound system, language input, language output, writing output, reading input, letter memory

## Language and Literacy Processing in the Brain



- Reading Words
- Letter Recognition
- Writing Words

(Dehaene, 2009; James, 2017; Wolf, 2007)

## The Simple Views of Reading and Writing

Word Recognition x Language Comprehension = Reading Comprehension

(Gough & Tunmer, 1986; Hoover & Gough, 1990)

Executive Function

Handwriting and Spelling x Composing = Writing Proficiency

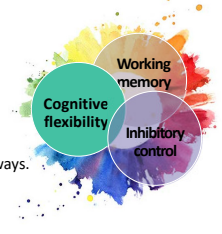
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(Berninger & Wolf, 2016)

### Predictive Indicators Across Developmental Domains in Early Childhood

<b>Language and Literacy</b> <ul style="list-style-type: none"> <li>Vocabulary</li> <li>Letter naming</li> <li>Phoneme isolation</li> <li>Executive function</li> </ul>	<b>Approaches to Learning</b> <ul style="list-style-type: none"> <li>Executive function</li> <li>Emotional regulation</li> </ul>	<b>Cognitive</b> <ul style="list-style-type: none"> <li>Numeral identification</li> <li>Subitizing (how many)</li> <li>Ordinality (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>)</li> <li>Executive function</li> </ul>
<b>Health Physical</b> <ul style="list-style-type: none"> <li>Executive function</li> <li>Visual-spatial skills</li> <li>Precision in movement</li> </ul>		<b>Social Emotional</b> <ul style="list-style-type: none"> <li>Executive function</li> <li>Oral language</li> </ul>

### Three Components of Executive Functioning




- Cognitive flexibility**—involves thinking about something in multiple ways—for example, considering someone else's perspective on a situation or solving a problem in multiple ways.
- Working memory**—involves both keeping information in mind and, usually, manipulating it in some way.
- Inhibitory control**—(self-regulation) is the process of deliberately suppressing attention (and subsequent responding) to something, such as ignoring a distraction, stopping an impulsive utterance or action, or overcoming a highly learned response.

(Blair & Diamond 2008; Carlson, Zelazo, & Faja 2013; Diamond 2013; Garon, Bryson, & Smith 2008; Hughes 2011; Jacques and Marcovitch 2010; Meuwissen and Zelazo 2014)

### Predicting Academic Achievement

We can determine with over 90% accuracy whether or not a child in kindergarten will be in the bottom 10% of readers in 2<sup>nd</sup> grade by looking at: (Wagner, 2001)

- vocabulary
- phonological awareness
- letter knowledge



### Predicting Later Reading Development

The **best TWO** predictors of reading achievement from early kindergarten to 2<sup>nd</sup> grade are:

- Phonemic awareness (sound isolation)**
- Letter knowledge**

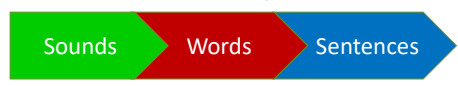
(National Early Literacy Panel, 2008; National Reading Panel, 2000)

### Oral and Written Language in Parallel Form


Learning to:

**talk**      **Infants – toddlers – preschoolers**


**read and write**      **Preschoolers – kinders – early graders**




### Language Development Overview

**Infants** should: 


- Babble by 12 months
- Gesture (wave, point) by 12 months
- Say single words by 16 months

**Toddlers** should: 

- Say words understandable to care provider
- Say new words all the time
- Use 2-word spontaneous combinations by 24 months (not imitation)

**Preschoolers** should: 

- Say understandable words
- Understand what is said to them
- Say new words all the time
- Combine 4-10 words spontaneous sentences
- Relate 3 to 5 events in a narrative

**Early graders** should: 

- Say correctly articulated words
- Understand complex sentences
- Use grammatically correct sentences
- Relate events in complex narratives

### Oral and Written Language in Parallel Form

Preschoolers – kinders – early graders



Foundations for learning to read and write:

- Sound awareness leads to phoneme awareness.
- Word awareness is needed for decoding and spelling.
- Sentence awareness is needed for comprehension and composition.

### Timeline of Literacy Development

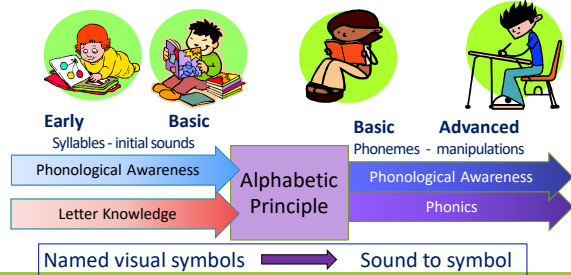
Early literacy → Early reading/writing → Reading to learn



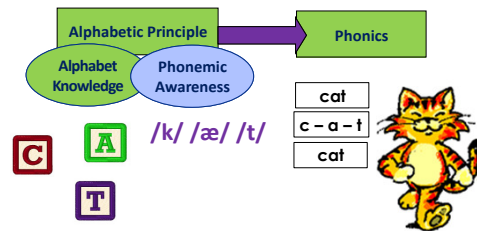
- Pre-alphabetic**
    - Sound and language processing
    - Visual processing
  - Early Alphabetic**
    - Phonological processing
    - Letter recognition writing
  - Later Alphabetic**
    - Letter/sound mapping
    - Reading/ writing simple words
    - Reading connected text
  - Consolidated**
    - Reading complex text
    - Writing compositions
- Ehri, 2014

### Timeline of Literacy Development

Early literacy → Early reading/writing → Reading to learn

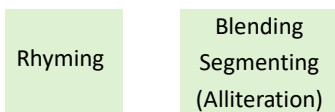


### Transition into Early Reading and Writing



### Phonological Awareness Component Skills

Two Constructs



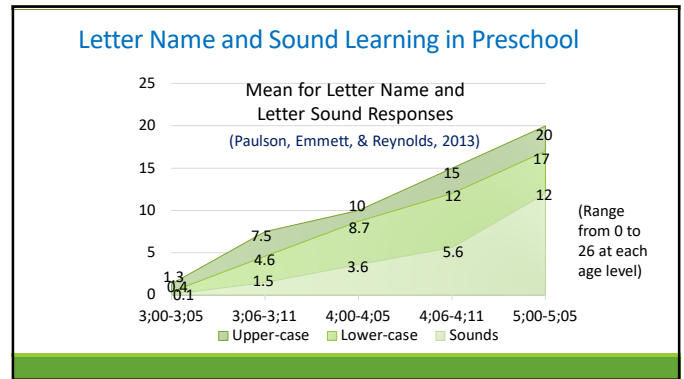
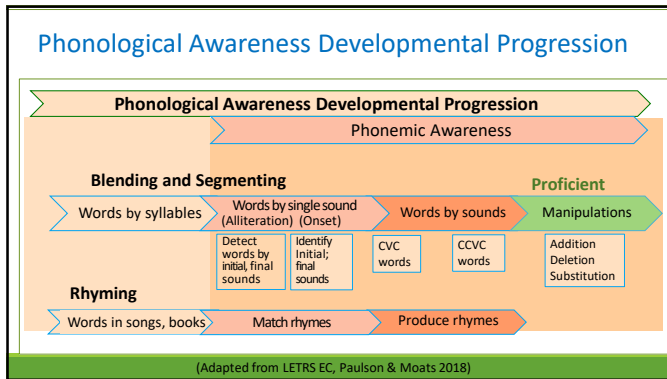
Think of your favorite rhyming and blending/segmenting activities.

### Progression of Phonological Awareness Skills

(Adapted from Kilpatrick, 2015)

Early PA	Toddler to preschooler	Segmenting and blending syllables
		Rhyme detection
Basic PA	Preschool to 1 <sup>st</sup> grade	Segmenting and blending initial and individual phonemes
		Rhyme production
Advanced PA	1st grade and beyond	Adding, deleting, substituting, and reversing word segments

What level are your favorite PA activities?



### Letter Name and Sound Learning in Kindergarten

“Letter Name, Letter Sounds and Phonological Awareness: An Examination of Kindergarten Children Across Letters and of Letters Across Children”

(Evans, Bell, Shaw, Moretti, & Page, 2006)

Task	Mean	SD	Range
U/C Names	23.1	4.9	2-26
L/C Names	19.5	6.1	1-26
L/C Sounds	15.1	8.1	0-26

(Conducted in April of the school year)

### Letter Name Learning

- Considering literacy outcomes of word identification, spelling, and passage comprehension in first grade and . . .
- Looking at sensitivity, specificity, and positive predictive power:
  - Optimal benchmark at P-K to K of:
    - 18 uppercase letter names
    - 15 lowercase letters names

(Piasta, Petscher, & Justice, 2012)

### Phases of Early Word-Reading and Spelling Development

- Prealphabetic
  - incidental visual cues
- Partial Alphabetic
  - letter knowledge
  - partial phoneme awareness
- Full Alphabetic
  - early sight-word learning
  - phoneme-grapheme correspondence
  - complete phoneme awareness
- Consolidated Alphabetic

(Ehri, 2014)

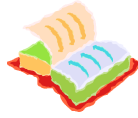
### Prealphabetic

- May or may not know letters
- Lack of phonemic awareness
- No grapheme-phoneme connection between spellings and pronunciations
- Sight words learned by remembering salient visual or context cues
- No non-word decoding ability
- Words spelled nonphonetically

(Ehri, 2014)

### Partial Alphabetic

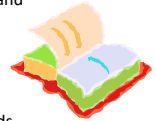
- Most letter shapes and names known
- Limited phonemic awareness; benefit of articulatory awareness instruction
- Partial grapheme-phoneme (GP) connections formed
- Sight words learned by remembering partial GP connections
- Little or no non-word decoding ability
- Partial phonetic spellings invented



(Ehri, 2014)

### Full Alphabetic

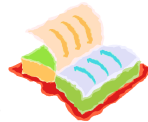
- Major GPs of writing system known
- Full phonemic awareness; segmentation and blending
- Complete GP connections formed
- Sight words learned by remembering complete GP connections
- Growing ability to decode unfamiliar words and non-words
- Phonetically accurate spellings invented



(Ehri, 2014)






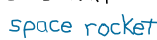
### Consolidated Alphabetic

- Grapho-syllabic spelling units known
- Grapho-syllabic connections predominate
- Sight words learned primarily by grapho-syllabic connections
- Can decode unfamiliar words and non-words proficiently
- Grapho-syllabic and GP units to invent spellings



(Ehri, 2014)

### Developmental Phases and Levels for Writing

	0. No distinction between drawing and writing	
	1. Pre-conventional	
Prealphabetic	- Scribble	
	- Mock Letter	
	- Random Letter Strings	
Partial alphabetic	2. Semi-phonetic	
Full alphabetic	3. Phonetic	
Consolidated	4. Conventional	



### Instructional Impacts on Learning



Learning occurs in an interconnected and recursive manner integrating skills across the developmental domains.

Educational approaches that promote children's developing language and social-emotional skills while integrating cognitive and executive function skills facilitate school readiness and academic abilities.

(Zelazo et al., 2016)

### I Do – We Do – You Do



Teacher-child modulated learning is more effective than child-child modulated learning. (Connor et al., 2006)

I DO

WE DO


YOU DO

Valuable learning experiences occur when adults provide children with the "tools" they need to then make child-guided learning experiences valuable. (Shanahan & Lonigan, 2013)

## Language Facilitation Strategies

Develop **Receptive Language** through **narration** by talking about what is happening.


- **Self-talk (I DO):** Describing what you are doing or how to do something
- **Parallel Talk (WE DO):** Describing what the child is doing or should be doing



**Self-Talk:**  
the cooking show host

I DO

➤ Modeling a new and deeper learning



**Parallel Talk:**  
the sports announcer

WE DO

➤ Guiding a new and deeper learning

**Talk: A Lot!**

## Language Facilitation Strategies

### Developing Expressive Language

- **Expansion (extension):** An adult adds more information (vocabulary or grammar) to the sentences that the child expresses.
- **Recast:** An adult repeats what a child inaccurately says with a correct model.



Then encourage the child to practice the sentence again.

## Brain Development and Taking Turns

- The power of language for brain development has more to do with conversational turn-taking than just the number of words children hear.
- Young children who experienced more interactive turn-taking conversations showed more engagement and attention when listening to voices and stories. (Gabrieli & Romeo, 2018)

**"In the flesh" talk matters!**

Serve-and-return  
Strive for 5



## Talk Matters!

How many words do young children need to hear every day? (Suskind, 2015)

**20,000 words every day!**

How many conversational turns do young children need, on average, every hour?

**40 turns every hour at home!  
5 or more turns every hour at school!**

(Gillkerson et al., 2018)



## Key Principles for Teaching Vocabulary

1. Children need both explicit and implicit instruction.
2. Be intentional in word selection.
3. Build word meaning through knowledge networks.
4. Children need repeated exposure to gain vocabulary.

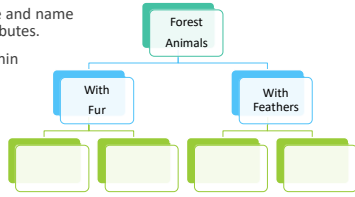


(All About Words: Increasing Vocabulary in the Common Core Classroom, Pre-K-2, Neuman and Wright, 2013)

### Connecting Vocabulary within Category Networks

Teach children to notice and name categories and use attributes.

Include taxonomies within vocabulary instruction.



### Attribute BEARS

**PARTS**

**LOCATION**

**COLOR**

**FUNCTION**

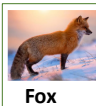
**SIZE SHAPE**

**MADE OF**

### Teach Word Definitions with Categories

Create a child-friendly (**Aristotelian**) definition with a category and a distinguishing features. Include a gesture.  
 (A dog is an animal that barks.)

- A raccoon is a forest animal that ... (gesture) ... stays up at night and has a mask.
- A skunk is a forest animal that ... (gesture) ... is black and white and really stinks.
- A fox is a forest animal that ... (gesture) ... has a bushy tail and is clever.



### What do you know about this animal?



- Name: ?
- Category:
- Distinguishing feature:
- Other details:

### Robust PA Instruction for Every Student

- |  |   |   |
|--|---|---|
| <p><b>Foundational Skills</b></p> <ul style="list-style-type: none"> <li>• Oral language development</li> <li>• One-to-one correspondence</li> <li>• Following directions</li> <li>• Directionality words/concepts</li> <li>• Awareness of the production of speech sounds</li> </ul> <p><b>Preschool</b></p> <p><b>Phonological Awareness:</b></p> <ul style="list-style-type: none"> <li>• Recognize and begin to produce rhyming words</li> <li>• Blend and segment syllables</li> <li>• Blend and segment initial sounds</li> </ul> <p><b>Phonics and Word Recognition:</b></p> <ul style="list-style-type: none"> <li>• Learn letter names and a few sounds</li> <li>• Recognize familiar signs in environment</li> </ul> | <p><b>Kindergarten</b></p> <p><b>Phonological Awareness:</b></p> <ul style="list-style-type: none"> <li>• Recognize and produce rhyming words</li> <li>• Blend and segment syllables</li> <li>• Blend and segment initial and final sounds</li> <li>• Blend and segment individual phonemes in simple words</li> <li>• Create new words by manipulating the phonemes in one-syllable words</li> </ul> <p><b>Phonics and Word Recognition:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate letter-sound knowledge of consonants and short vowel sounds</li> <li>• Begin decoding CVC words</li> <li>• Read common high-frequency words</li> </ul> | <p><b>First Grade</b></p> <p><b>Phonological Awareness:</b></p> <ul style="list-style-type: none"> <li>• Count, blend, and segment single-syllable words that include consonant clusters</li> <li>• Create new words by manipulating individual phonemes in one-syllable words</li> </ul> <p><b>Phonics and Word Recognition:</b></p> <ul style="list-style-type: none"> <li>• Know the letter-sound correspondence for consonant clusters and digraphs</li> <li>• Decode words with final-e and vowel teams</li> <li>• Decode one-syllable words</li> <li>• Connect syllabification with a vowel sound</li> <li>• Begin to decode two-syllable words</li> <li>• Identify root words and simple suffixes</li> <li>• Read common high-frequency words</li> </ul> |
|--|---|---|

### Blending/Segmenting Hints

- Use motions or gestures.
  - Highlight mouth gesture.
- Kinemes!
- Say each syllable or sound in one-second intervals. As needed, decrease the time interval to make the task easier, and increase it to make the task more challenging.
  - Say the *sounds* in the word and not the letter *names* (e.g., say “/p/-/ð/-/t/,” not “p – o – t” or “/puh/-/ð/-/tuh/”).
  - Syllables are easier than sounds to identify in words.
  - Beginning sounds are easier to isolate than ending sounds; middle sounds are the hardest.
  - Consonant blends are more difficult.



### Rhyme Routines in Pre-k to Kindergarten

- Rhyme children's names while taking attendance and when dismissing them from circle.
- Change the beginning sound in students' names to create a rhyme (e.g., Terry Berry, Chris Bris, Jaylon Chaylon).
- Use rhyming words while giving directions ("It's time to go to the *bribary*." instead of library).
- Point out words that rhyme in songs and children's books. ("Flopsy and Mopsy rhyme! They sound the same at the end.")
- So many, many more!



### Rhyme Routines in Kindergarten to Grade 1

- Change children's names to the sound corresponding to the letter patterns being taught when taking attendance (e.g., Mrs, Mavid, Mohn, Mally).
- Use an alphabet chart and the children give a rhyming word as you point to a **consonant** letter (e.g., rope – bope, cope, dope, fope, gope, etc.).
- Create a chart using the phonic patterns being taught to create a string of rhyming words and nonwords.
- So many more!

### Blending and Segmenting Routines in Pre-k-K

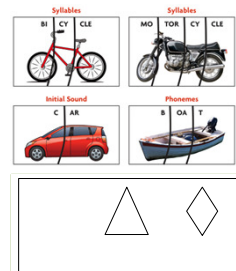
- Segment and blend children's names while taking attendance, first by syllables, then initial sounds, then ending sounds.
- Have children blend and segment say new vocabulary words. (Say, "Pre – ci – pi – ta – tion.")
- Use "Ro-bot Re-por-ting" while giving directions.
- Use the balance scale with counters and pictures to compare "which word weighs more" based on the number of syllables.
- Play "I Spy" for children to blend a segmented word to find an object.
- Play a sorting game to place items together that begin with the same sound.



(Paulson et al., 2001)

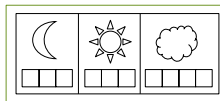
### Blending and Segmenting Routines in Pre-k-K

- Prepare and use picture puzzles to put together and pull apart. Start with syllables, then, initial sound, then individual sounds. (Paulson et al., 2001)
- Use letters on picture puzzles for pre-k to K.
- Do NOT use letters for older students.
- Use Elkonin boxes to finger tap or place chips to match the number of syllables.



### Blending and Segmenting Routines in K-1

- Focus on phonemes.
- Use progressively more complex words to blend and segment.
- Make phonemic connections to letter patterns.
- Sort pictures into groups based on initial sound, final sound, words with the same number of sounds.
- Use Elkonin boxes to finger tap or place chips to match the number of sounds.
- So many more!



### Foundational Skills Needed for Orthographic Mapping for Remembering Words

- Oral language development
- Phoneme segmentation and blending
- Proficient grapheme-phoneme correspondences
- Proficient phonemic awareness (manipulation tasks)



## Letter Naming Considerations

- Letter-name knowledge is one of the most powerful predictors of later reading achievement. (Caravolas et al., 2005; Leppanen et al., 2008; Schatschneider et al., 2004)
- Letter naming speed is the largest predictor of word-reading ability for first grade students. (Neuhaus & Swank, 2002)
- Letter naming must be accurate and fast. (Neuhaus & Swank, 2002)
- Letter names are the catalysts for learning letter sounds. (Ehri, 2005, Foulin, 2005, NRP, 2000)

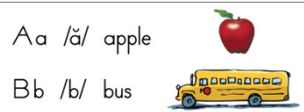
## Letter Name-Sound Connections

- A majority of consonant letter names have the sound. (14/21)
  - First sound in letter name: B, D, J, K, P, T, V, Z
  - Last sound in letter name: F, L, M, N, R, S
- Several consonant letter names sometimes have the sound. (4/21)
  - C, G, Q, X
- Only a few consonant letter names do not have the sound. (3/21)
  - H, W, Y (not at all)

## Teaching Recommendations

### Letter Instruction Components

1. Name
2. Shape (uppercase/lowercase)
3. Sound
4. Target word/picture
5. Mouth shape
6. Writing it



## Research Findings on Alphabet Learning in Preschool

### Optimal Learning Processes:

- Paired associate learning (powerful basic memory learning)
  - repetition and practice associating the letter label and letter form
- Articulation-referencing learning
  - speech part of the speech—print connection
  - mouth movements and mirrors
- Orthographic learning
  - letter writing

(Roberts et al., 2019)

## Instructional Strategy for Writing

First, focus on student's **content**.

Handwriting and spelling development provide valuable instructional indicators for the next steps in their learning.

(Berninger & Wolf, 2016; Moats & Tolman, 2018)

## Critical Writing Foundation Skills

In the big picture...

- ☐ **Transcription skills**
  - Handwriting
  - Spelling
- ☐ **Composition skills**
  - Words to sentences, paragraphs, and essays
  - Creating, organizing, elaborating ideas
  - Editing, revising, sharing
- ☐ **Executive function skills**



## ABC Eye Charts

Make a chart of the alphabet letters in the same pattern as the Alphabet Song.

A	B	C	D	a	b	c	d	Aa	Bb	Cc	Dd			
E	F	G	e	f	g	Ee	Ff	Gg						
H	I	J	K	h	i	j	k	Hh	Ii	Jj	Kk			
L	M	N	O	P	l	m	n	o	p	Ll	Mm	Nn	Oo	Pp
Q	R	S	q	r	s	Qq	Rr	Ss						
T	U	V	t	u	v	Tt	Uu	Vv						
W	X	w	x	Ww	Xx									
Y	Z	y	z	Yy	Zz									

(Paulson et al. 2001)

## General Spelling Instruction Practices

- Use the same words for spelling and reading in K and Grade 1.
- Use frequent and distributed practice.
- Help students learn to analyze both speech and print.
- Use words in meaningful contexts.
- Teach proofreading and self-monitoring tasks.

## “What I think, I can say.”

### Oral Language First

- Have students respond to questions using complete sentences.
- Have students practice combining short sentences into a longer, more complex sentence.
- Help students learn parts of speech (nouns, verbs, describing words).

## Katahira Teaching Method

“What I Think,  
I Can Say,  
What I Say,  
I Can Write.”

- Teacher’s role
  - Model idea generation
  - Write thought, word by word
  - Segment sounds of each word and attach letter pattern to sound
- Children write using the modeled strategy learning phonological and orthographic connections.

(Berninger, 2009)

## “Picture Story/Word Story” Strategy



### Picture Story

Create a writing plan by drawing a picture related to a recent activity.

### Word Story

Teacher writes a simple sentence describing the picture modeling the levels of print development writing the same sentence at various levels.

## Picture Story/Word Story (Paulson, et al., 2001)

A technique that can be used to engage young children in writing by demonstrating for them the developmental levels of writing.

This approach helps children feel comfortable writing at their own level and helps them move onto the next level.



## Evaluating Writing Progress

- Use rubrics with components:
  - o Organization
  - o Content
  - o Language
  - o Print Conventions
- Students check writing for revision process.
- Teachers measure student progress and instructional needs.



(Adapted from *Step Up To Writing, Grades K-2* Auman, 2016)

## Writing Rubric Components

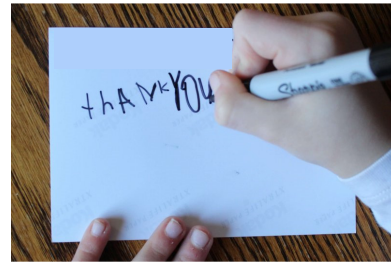
1. Organization: beginning, events, conclusion
2. Content: level of details
3. Language: sentence completeness
4. Print Conventions:
  - a. Handwriting
  - b. Capitals
  - c. Punctuation
  - d. Spelling

– Below basic  
– Basic  
– Proficient

## Rubric Ideas for Students

- My story has an order.
- My story has a message.
- I added details.
- I used capitals.
- My letters are legible.
- I used punctuation.
- I spelled my words correctly.

(Adapted from *Step Up To Writing, Grades K-2* Auman, 2016)



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