

# Learning to Read and Spell Words:

How Teachers' Instruction and Students' Reading Practices Contribute to the Development of Word Reading and Spelling Skill

Linnea Ehri

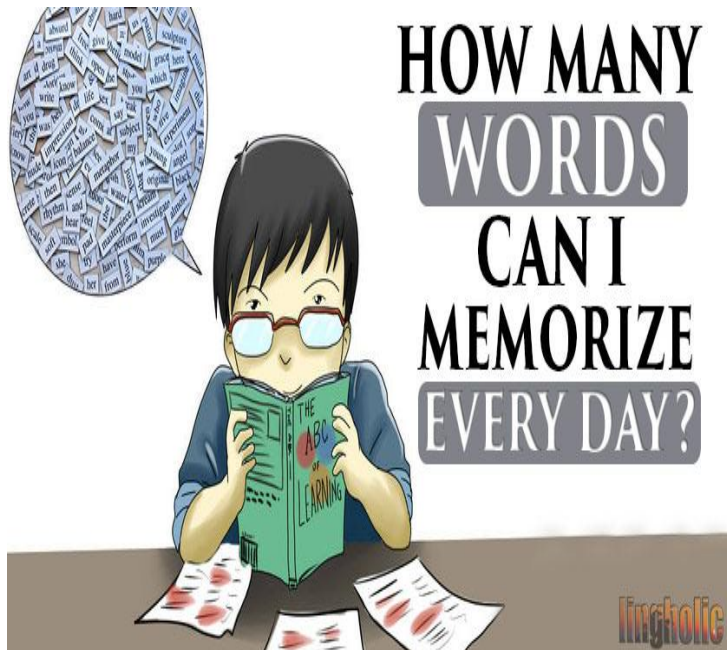
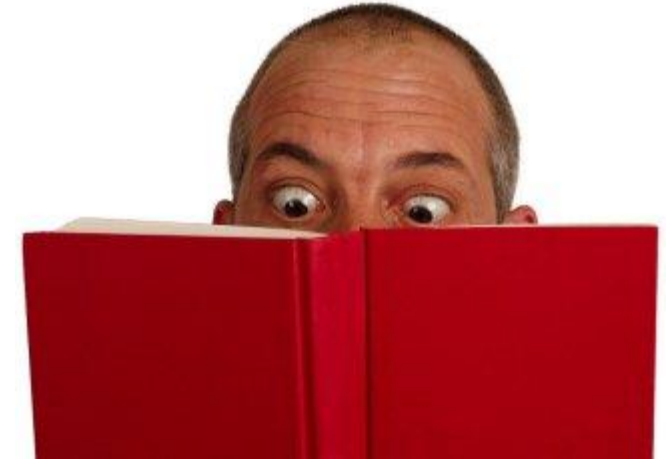
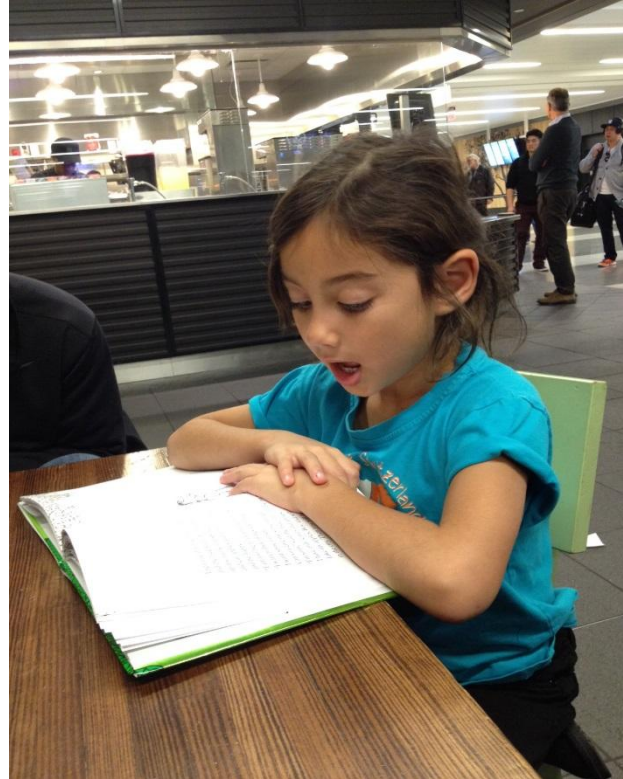
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# Questions about Reading Words



# *Different Ways to Read Words*



## ***By Decoding:***

1. Convert letters into sounds,
2. Blend sounds to form a pronunciation,
3. Match pronunciation to a word meaning in memory

Identify graphemes, convert to phonemes, blend

**Phonemes are smallest sounds in words shown between slash marks**

**Graphemes are 1 or more letters that represent phonemes**

- D O G --> /d/ /o/ /g/ --> “dog”
- CH E CK (5 letters, 3 graphemes) - > /č/ /ɛ/ /k/ - > “check”

## **More advanced readers**

- Segment and blend larger letter units: syllables, prefixes, suffixes, root words
  - EXCELLENT -> /ex/ /cel/ /lent/ -> “excellent”
  - UPHOLDING -> /up/ /hold/ /ing/ -> “upholding” (prefix, root, suffix)

# *Sources of Confusion*

- Graphemes versus letters
- Graphemes are the important units for decoding
  - 1 grapheme may consist of 2 or 3 letters representing 1 phoneme
- SH, TH, CH, NG, WH, PH, CK, EA, AI, GHT
- Letters can mislead about the phonemes in words
- How many phonemes in these words?

*Teach*

*Thing*

*Straight*



# Sources of Confusion

1 grapheme may consist of 2 or 3 letters representing 1 phoneme

SH, TH, CH, NG, WH, PH, CK, EA, AI, GHT

Letters can mislead about the phonemes in words

## - How many phonemes in these words?

*Teach*      3 phonemes    t + ea + ch

*Thing*      3 phonemes    th + i + ng

*Straight*    5 phonemes    s + t + r + ai + ght

Count graphemes, not letters

Monitor sounds and mouth movements



# Other Ways to Read Words

- **By Analogy:**      n ight → br ight   d og → fr og  
                                 b ottle → thr ottle

Requires memory bank of known written words

- **By Prediction:** context & letters
  - At the hospital, the doctors and n.....
- **By Memory / Sight**
  - Dog → “dog”

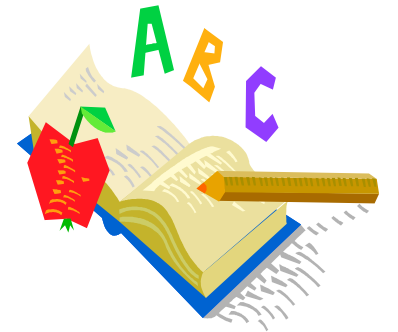


# *Which ways are used?*

## **WORDS AND NONWORDS NEVER READ BEFORE**

### ***Application of **Strategies** to read***

- By Decoding
- By Analogy
- By Prediction



## **FAMILIAR WORDS READ BEFORE**

By Memory / Sight

***Sight of the word activates its pronunciation and meaning in memory***

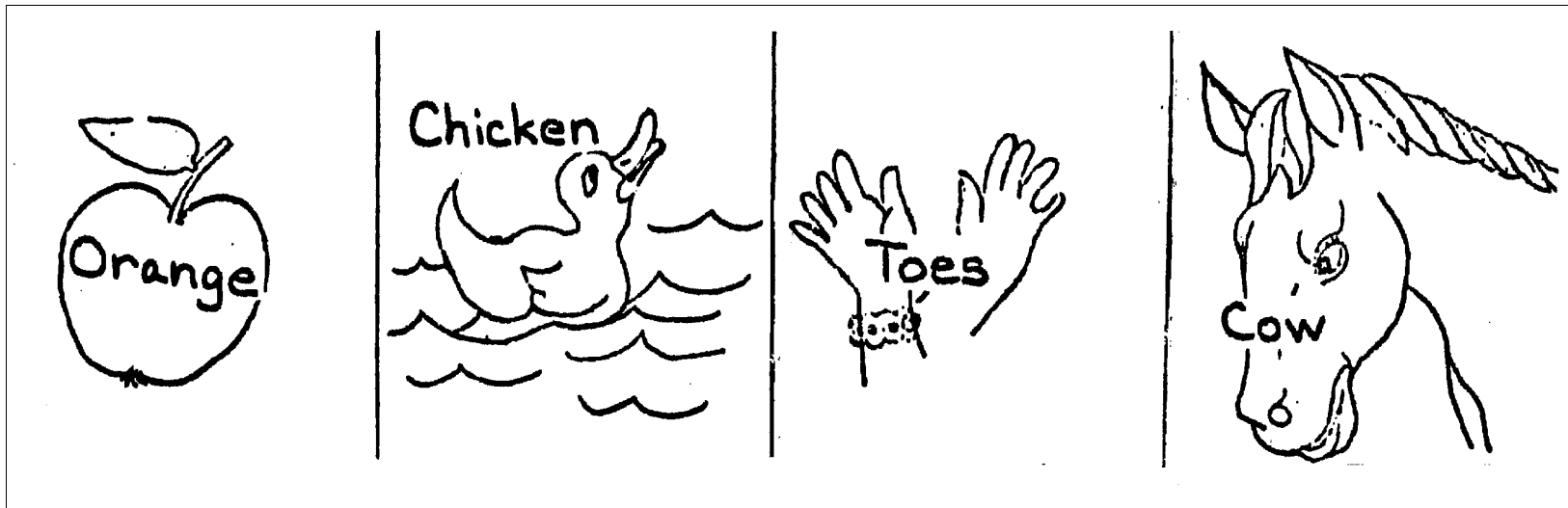
Note: All words when practiced become read from memory by sight.



# *AUTOMATICITY – Stroop Task*

TASK: Name the color or picture, ignore the words

RED GREEN BLUE BLACK

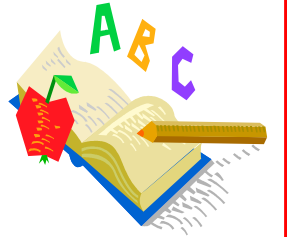


Evidence that familiar words are read from memory.



# *How to Explain Sight Word Reading?*

## *Facts to Explain*



- Skilled readers recognize thousands of words in an instant
- Accuracy is high, especially in text
- Similarly spelled words aren't confused
  - Stick, sick, slick, stink, stiff
- Written words stored in memory quickly – little practice required
- Decoding is too slow to explain
- Too many words to memorize visually by shape or letter chains

Powerful **mnemonic system** is required to get the spellings of words into memory to explain sight word reading.

# *Which spelling is easier to store in memory?*

## *Why?*

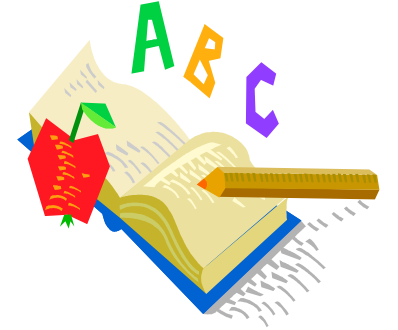
- Phoenigm\* – reddening of the skin
- Pication - application of warm pitch to the skin as medical treatment

Both have 8 letters

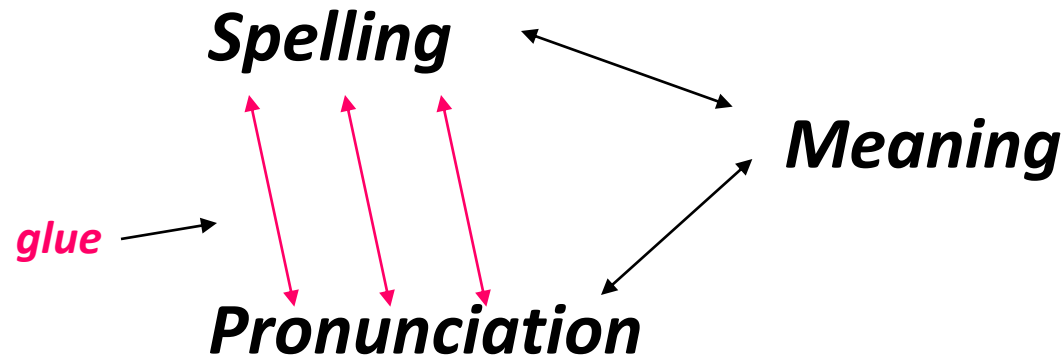
\*Pronounced “feen” as in Phoenix, “nime” as in paradigm



# *Reading Words from Memory*



- Process of forming connections or mappings



Knowledge of the grapheme-phoneme system provides the glue connecting spellings to pronunciations in memory

# Examples of grapheme-phoneme *mappings* for regularly spelled words

S T O P  
↙ ↘ ↙ ↘  
/s/-/t/-/o/-/p/

CH E CK  
↓ ↓ ↓  
/ch/-/e/-/k/

← Graphemes

← Phonemes

G I GG LE  
↓ ↓ ↓ ↓  
/g/-/l/-/g/-/L/

B IR D  
↓ ↓ ↓  
/b/-/r/-/d/

← Graphemes

← Phonemes



## *Examples of grapheme-phoneme **mappings** for irregularly spelled words*

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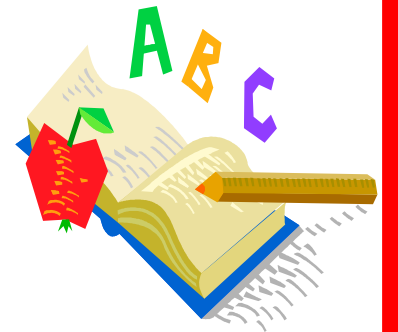
I S\* L A N D  
↓ ↓ ↓ ↓ ↓  
/ay/ - /l/ - /a/ - /n/ - /d/

S W\* O R D  
↓ ↓ ↓ ↓  
/s/ - /o/ - /r/ - /d/

L I S T\* E N  
↓ ↓ ↓ ↓ ↓  
/l/ - /i/ - /s/ - /e/ - /n/

S I G\* N  
↓ ↓ ↓  
/s/ - /ay/ - /n/

\* “Silent” letters



## *Knowledge needed to form connections and secure the spelling of words in memory*

- **Phoneme segmentation**

- Analyze the word's pronunciation into its smallest sounds or phonemes

- **Grapheme-phoneme correspondences**

- Know letter-sound units of the writing system (**the glue**)

- **Orthographic Mapping**

- Connect graphemes in spelling to phonemes in pronunciations when reading individual words
- Decoding – best strategy

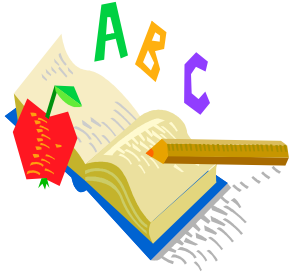
- **Meaning activation**

- Connect spelling and pronunciation to meaning in memory
- Homonyms – need context to form correct connection

Examples: *there* vs. *they're* vs *their*;                      *too* vs. *two* vs. *to*



# *Multi-letter Units to Form Connections for Sight Word Learning*



- Spelling patterns
  - ump in *jump, bump*; -ent in *bent, tent*; -ire in *fire, tire*;
- Syllables
- Prefixes, roots, suffixes
- Connect larger spelling units to sound units to learn words
- Example: *interesting*
  - 4 syllable connections:    in ter est ing
  - 9-10 grapheme-phoneme connections: i n t er e s t i ng

# *Word Reading: Phases of Development*

Growth is portrayed by the predominant type of alphabetic connection used to read and spell words

## Phase 1: Pre-alphabetic

Use of visual, non-alphabetic connections

## Phase 2: Partial alphabetic

Use of partial letter-sound connections

## Phase 3: Full alphabetic

Use of more complete grapheme-phoneme connections

## Phase 4: Consolidated alphabetic

Use of multi-letter connections for syllables, affixes

Examples: -ING, -TION, PRE-, CON-; IN – TER – EST - ING

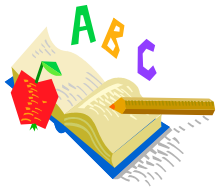




# *Pre-alphabetic Phase*

- Pre-readers
  - Cannot decode words; cannot read text independently
- Little if any use of letter-sounds to read or spell
- Writes words with random, pseudo or memorized letters, not connected to sounds
  - Example: knowing letters in own name
- Pretends to read memorized stories
- Uses visual cues to remember how to read words and environmental print





# ***VISUAL CUES USED TO READ WORDS DURING THE PRE-ALPHABETIC PHASE***



**Colors and logo  
to read McDonalds**

**LOOK**

**Eyes as visual cues  
to read LOOK**

dog

**Tail as visual cue**

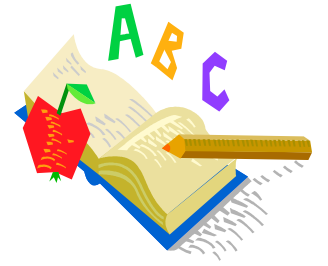
camel

**Two humps as visual cue**



**Colors and logo –  
Misread as Pepsi**

# *Movement into Partial Alphabetic Phase*



- Learn **letter** shapes, names and sounds
- Acquire some **awareness of sounds** in words
- Can write **partial letter-sound spellings** of words
  - Examples: BP for bump; KR for car
  - Very hard to remember correct spellings
- **Cannot decode** new words
- Can **guess words** from partial letters or context
- Can **read words by sight**
  - Connects partial letters to sounds in words
  - Misreads words sharing similar letters: *stop* for *step*
  - Not fully accurate

S T E P  
↓       ↓  
/s/    /p/

## *Early invented spellings may be unexpected*



- HKN (chicken) – name of H (aich) contains /ch/
- LDL (little) – middle sound is closer to /d/
- HRK (truck) – initial sound pronounced more like /ch/
- JRN (dragon) – initial sound pronounced more like /j/

To understand spellings at the beginning of partial alphabetic phase, you need to figure out how children are using knowledge of letter names to analyze sounds in words.

# More Advanced Invented Spellings in the Partial Phase

Female, Age 6, K

Bot (boat)

Grl (girl)

chikn (chicken)

Fernds (friends)

Natr (nature)

Blawcs (blouses)

Truc (truck)

Drtie (dirty)

Monst (monster)

Drikn (drinking)



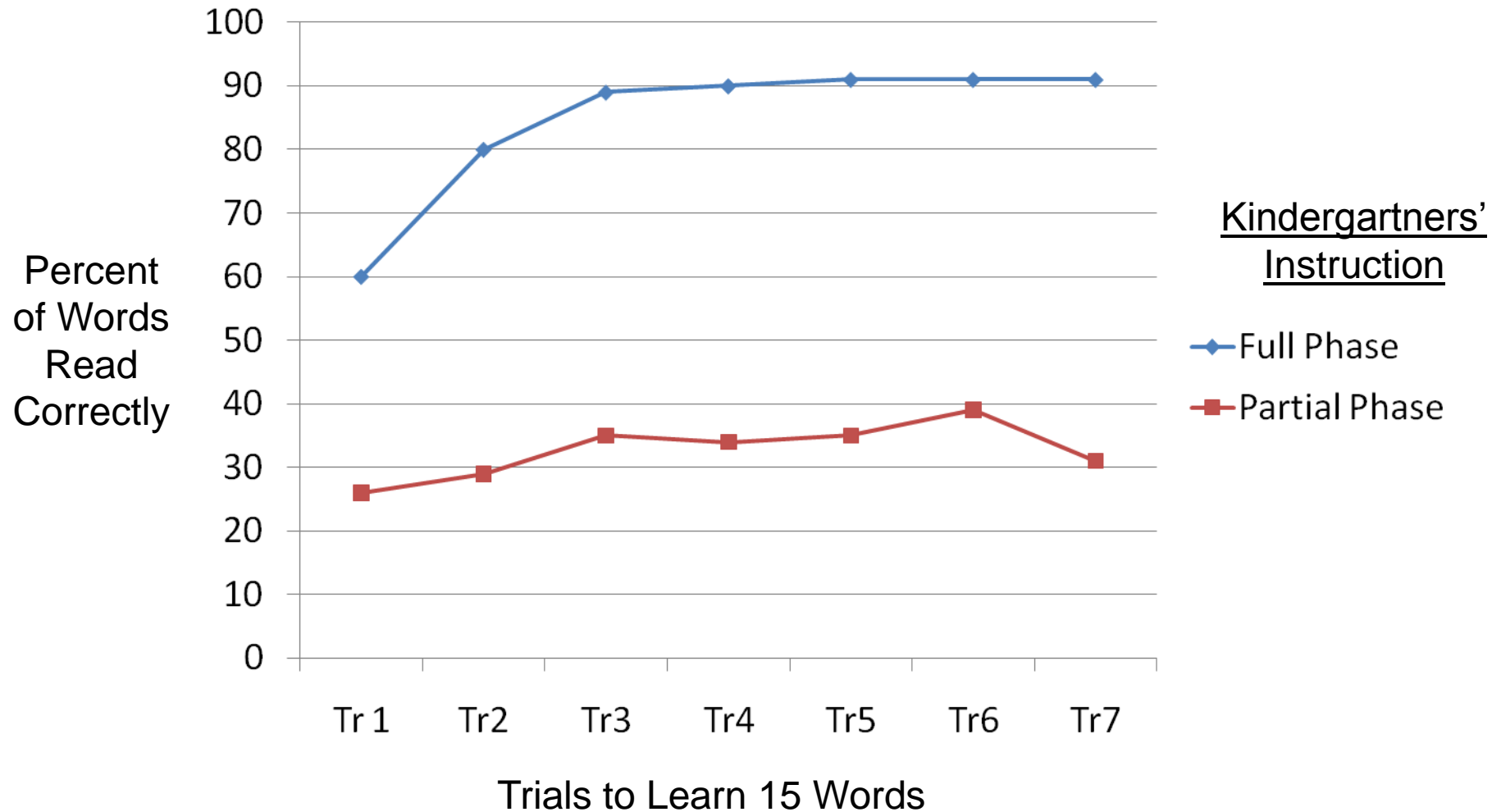
# *Movement into Full Alphabetic Phase*

- Learn the major grapheme-phoneme correspondences
  - The **glue**
- Learn to segment words into phonemes
- Map graphemes in spellings to phonemes in pronunciations to store sight words in memory
  - Graphemes are **fully** bonded to phonemes
- Learn to decode new words
  - Sound out and blend letters
  - This helps sight words get into memory

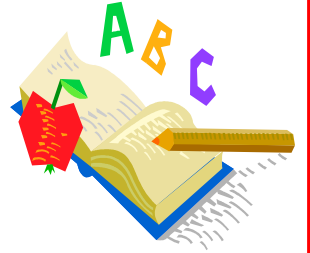


# Learning to Read 15 Similarly Spelled Words Over Trials

Set of words: bend, bib, blast, blond, dot, drip, drum, dump, lamp, lap, list, spin, stab, stamp, stand



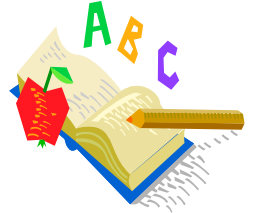
# *Full Alphabetic Phase*



- Children's **sight word vocabularies expand**
  - Words recognized automatically
  - Word reading is accurate
  - Strategy of reading words by analogy becomes possible
- Children can **invent** more complete letter-sound spellings
- Children can **remember** correct spellings of words
- Children can **read text independently** at their level
- **Note.** Word reading and spelling abilities are **constrained** by their knowledge of letter-sound regularities.



# *Movement into the Consolidated Alphabetic Phase*



Children learn **multi-letter patterns** as consolidated units

Rime spellings: -amp in camp, damp, lamp, champ

-ing, -ed, -ack, -ake, -est, pre-, -tion,

36 rime spellings appear in over 500 words

Spellings of syllables, morphemes including root words and affixes.

Children use letter patterns to form **spelling-sound connections**:

- to decode multi-syllabic words
- to retain sight words in memory
- to remember spellings of words

Sight vocabulary grows rapidly

Knowing more words enables strategy of reading words by analogy

Study: Practice reading words as wholes versus in syllable units

# *Application to Teaching and Instruction*

- Systematic comprehensive phonics program in K-2<sup>nd</sup> grades
  - Teach phonemic awareness (PA)
  - Teach major grapheme-phoneme (GP) relations
  - Teach decoding
- Insure teacher knowledge of PA and GP relations

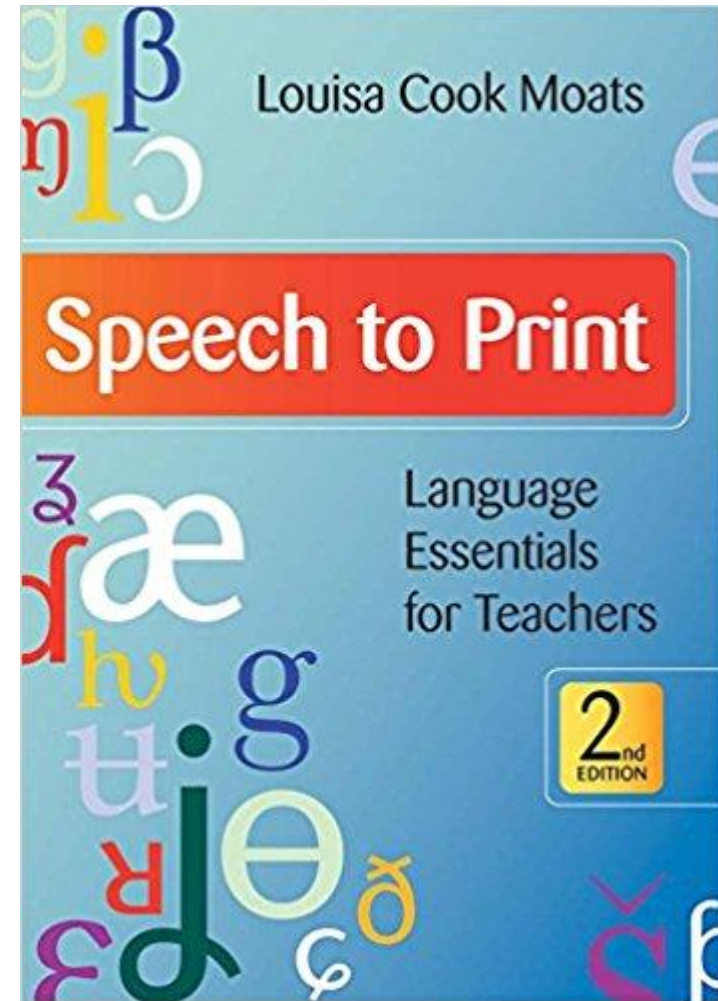




## Table of Contents

- Why Study Language?
- Phonetics: The Sounds of Speech
- Phonology: Speech Sounds in Use
- The Structure of English Orthography
- Morphology: Roots, affixes
- Syntax: How Sentences Work
- Semantics: Words and Phrase Meanings
- Language and Reading Instruction
- Developmental Spelling Inventories

Available at Amazon.com



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## To build sight vocabulary

- Beginners practice reading easier text aloud
- Readers acquire a habit of decoding rather than guessing and skipping over new words in text
- To study words for spelling tests: focus on spelling-sound connections  
Pronounce silent letters: Feb – ru – ary, choc – o – late
- To learn new vocabulary words, show spellings of words

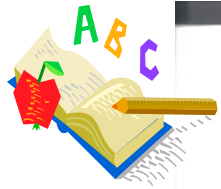
# *Pictures to Teach Grapheme-Phoneme Relations*

## Learning Task

1. Letter shapes
2. Letter sounds
3. Connections



\*\*Take your toddler's hand and help them write out the letters above.  
Copyright © 2011 - Toddler ABC Guide to Discipline - www.ToddlerABC.com - All Rights Reserved.



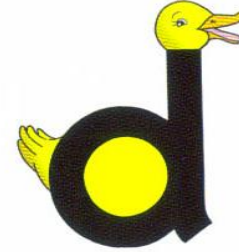
Annie Apple



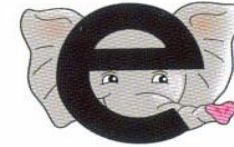
Bouncy Bunny



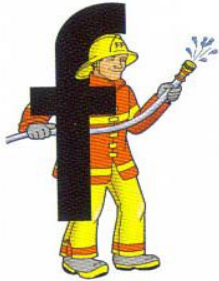
Clever Cat



Dippy Duck



Eddy Elephant



Fireman Fred

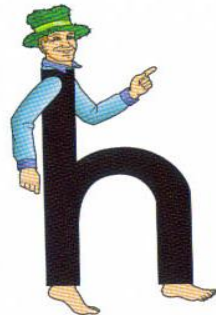
This **Letterland** book

belongs to:

From Lyn Wendon, *Letterland Program*. Published  
by Letterland.



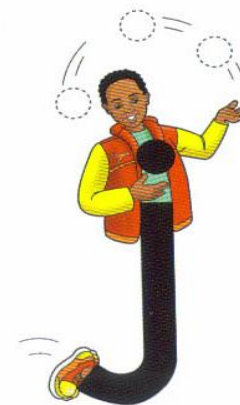
Golden Girl



Hairy Hatman



Impy Ink

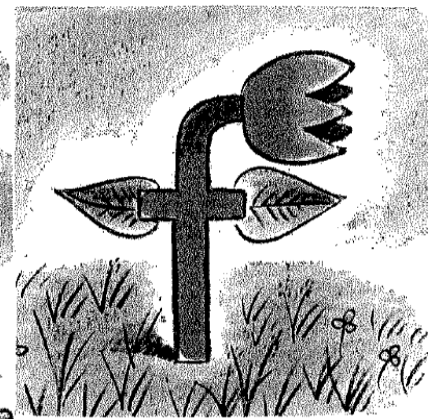
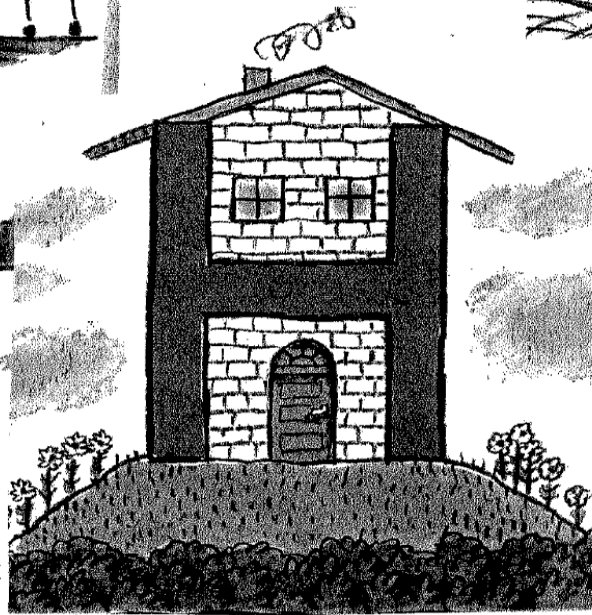
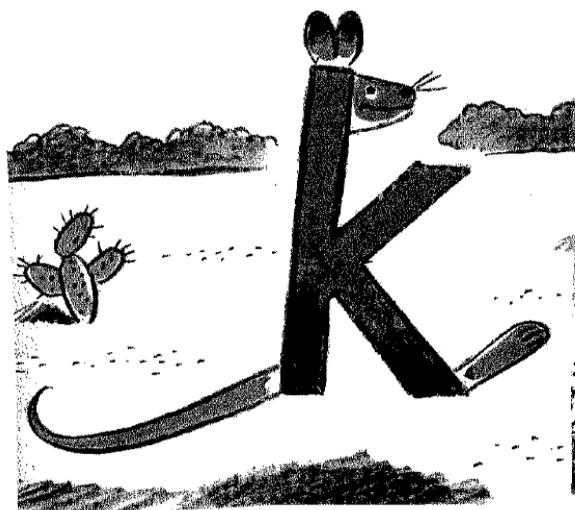
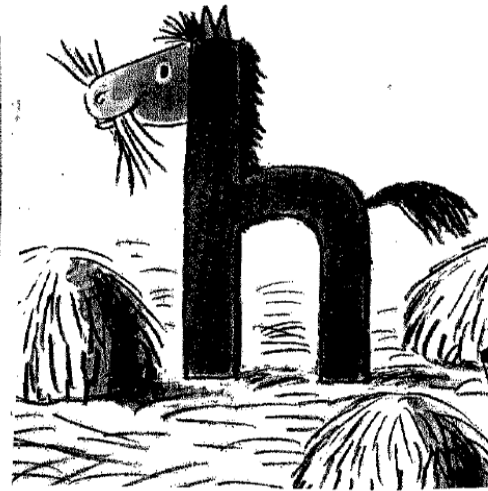
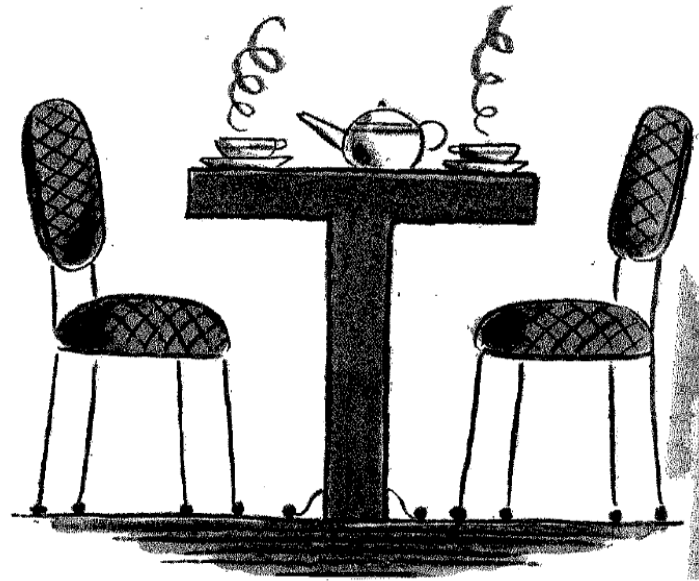


Jumping Jim



Kicking King





*From Curious George Learns the Alphabet, by M. & H. Rey, 1963.*  
T table, C crab, h horse, k kangaroo, H house, f flower

# ***Embedded Picture Mnemonics to Teach Short Vowel Letter-Sound Correspondences***



**Annie Apple**  
makes the sound  
at the beginning  
of her name - **a**  
(as in **ä**pple)



**Eddy Elephant**  
makes the sound at  
the beginning of his  
name - **e**  
(as in **ë**lephant).



itchy itch



**o**  
olive octopus



**u**

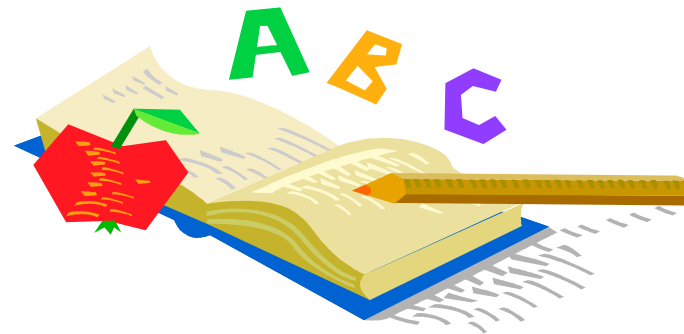
uppy umbrella

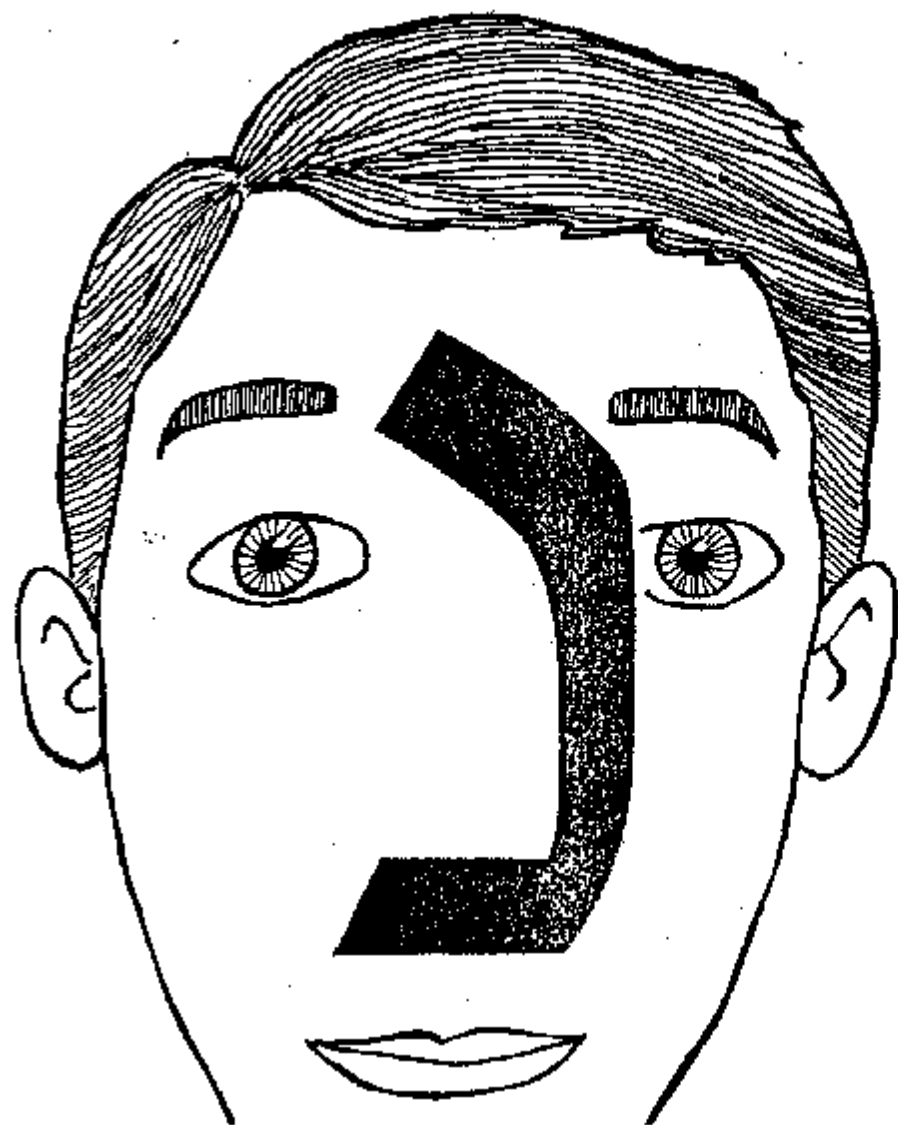


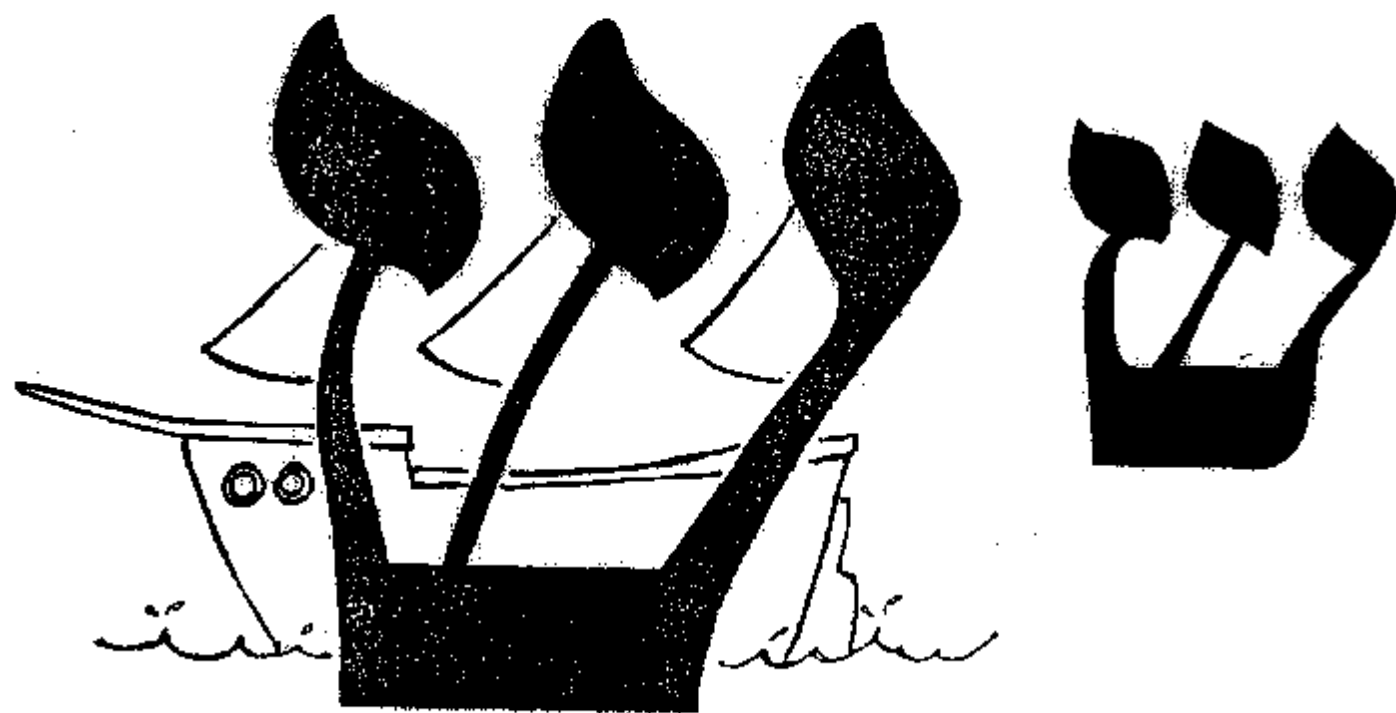


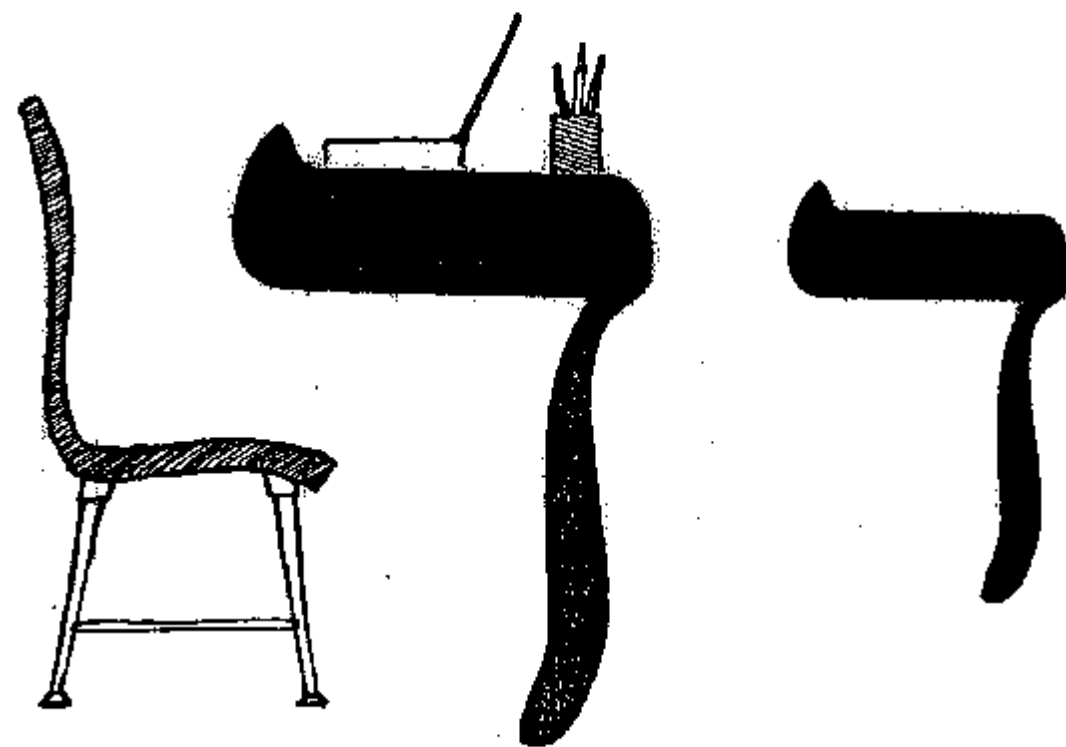
# Demonstration

- Hebrew letter-sounds taught with embedded picture mnemonics
- Learn the letter-sound relations
- Test your memory











**TEST**

ל

ש

ד

נ

ש

sh ship

ל

l lizard

נ

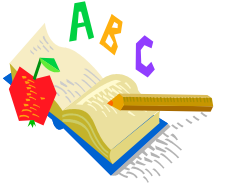
n nose

ד

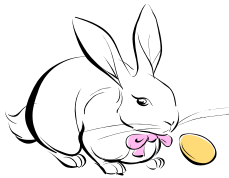
d desk



# Teaching Phonemic Awareness (PA)



- 40-41 phonemes in English
- Definition: Teaching children to detect and manipulate sounds in spoken words (not letters)
- Examples of PA tasks for preschoolers:
  - Say the first sound in “fish.” Say the last sound.
  - Find two objects that begin with the same sound



# Teaching Phonemic Awareness (PA)

What makes PA difficult?

Shifting attention from meaning to sounds

Sounds are ephemeral, fleeting, disappear

No breaks between sounds in words

Sounds overlap, coarticulated



# Teaching Phonemic Awareness (PA)

What helps children detect sounds in words?

Concrete markers such as letters

Example: Move letters in boxes to show sounds in “mop”

Fill with letter tiles:

--	--	--	--

Sound Segmentation Boxes





# *Teaching PA: Articulation*

What else helps children learn phonemic segmentation?

Awareness of mouth movements and positions

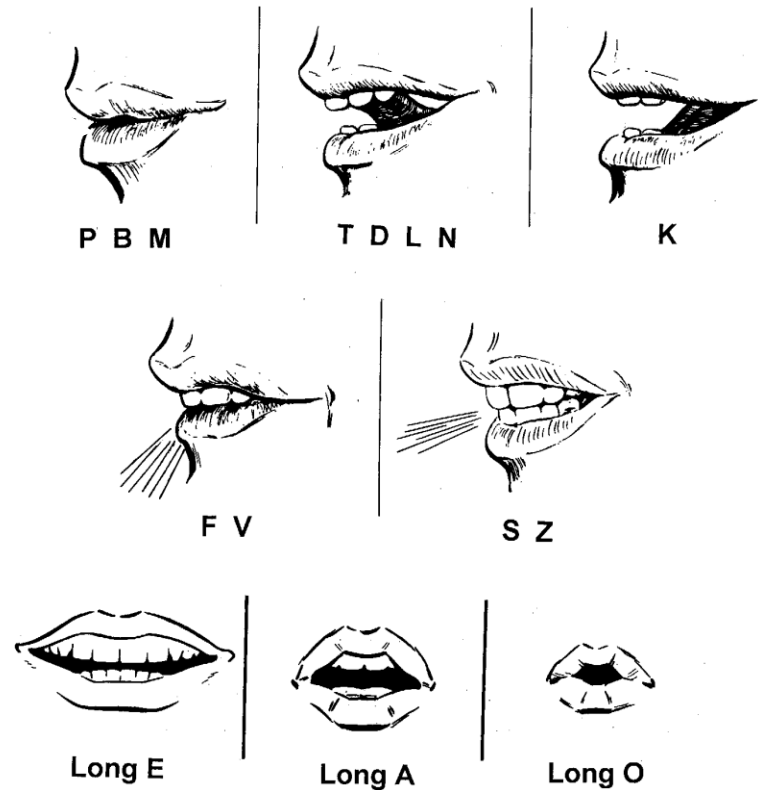
Motor theory of speech perception

Phonemes are represented in the brain by articulatory gestures,  
not by sounds

“What sounds do you hear?”

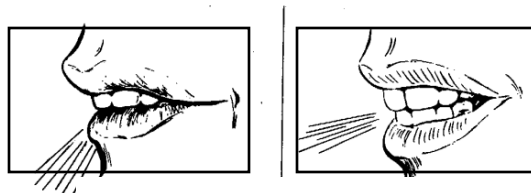
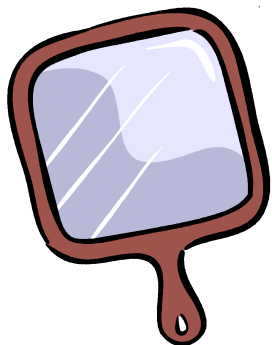
“How is your mouth moving?”

# ***Mouth Positions Depicting Sounds Associated with Letters***



Mouth drawings from C. Lindamood and P. Lindamood (1975)

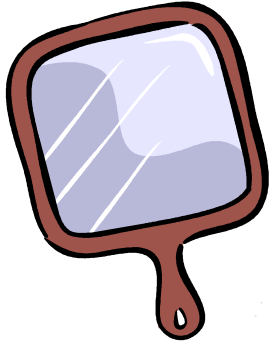




Fill with mouth pictures:

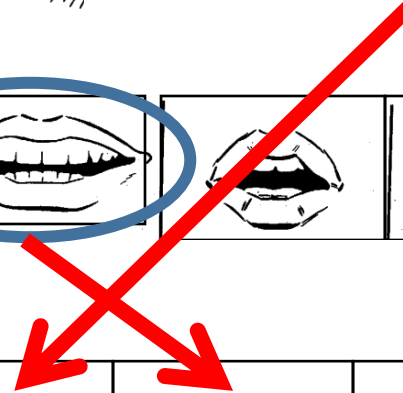
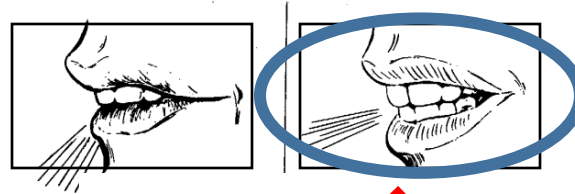
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**Phoneme Segmentation Boxes**



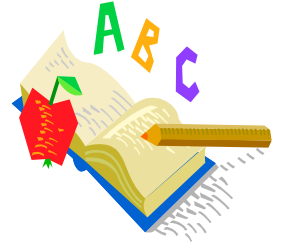
Word to  
segment is  
"see"

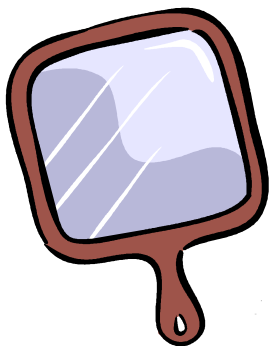
Fill with mouth  
pictures:



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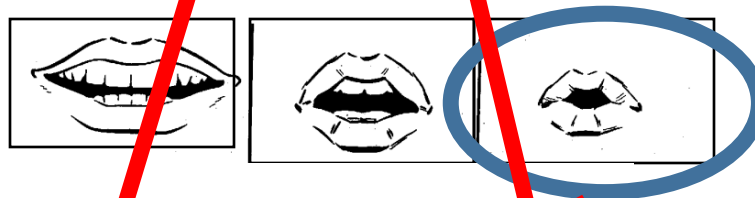
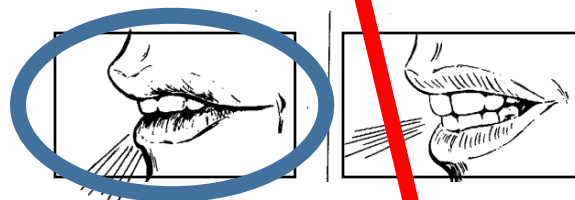
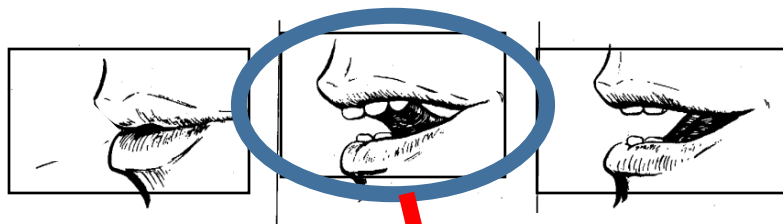
Phoneme Segmentation Boxes





Word to  
segment is  
"vote"

Fill with mouth  
pictures:

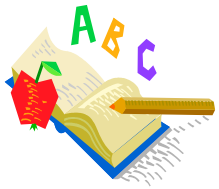


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Phoneme Segmentation Boxes







# Words Read Correctly Over Trials by the Two Groups Taught Phonemic Segmentation and the Control Group

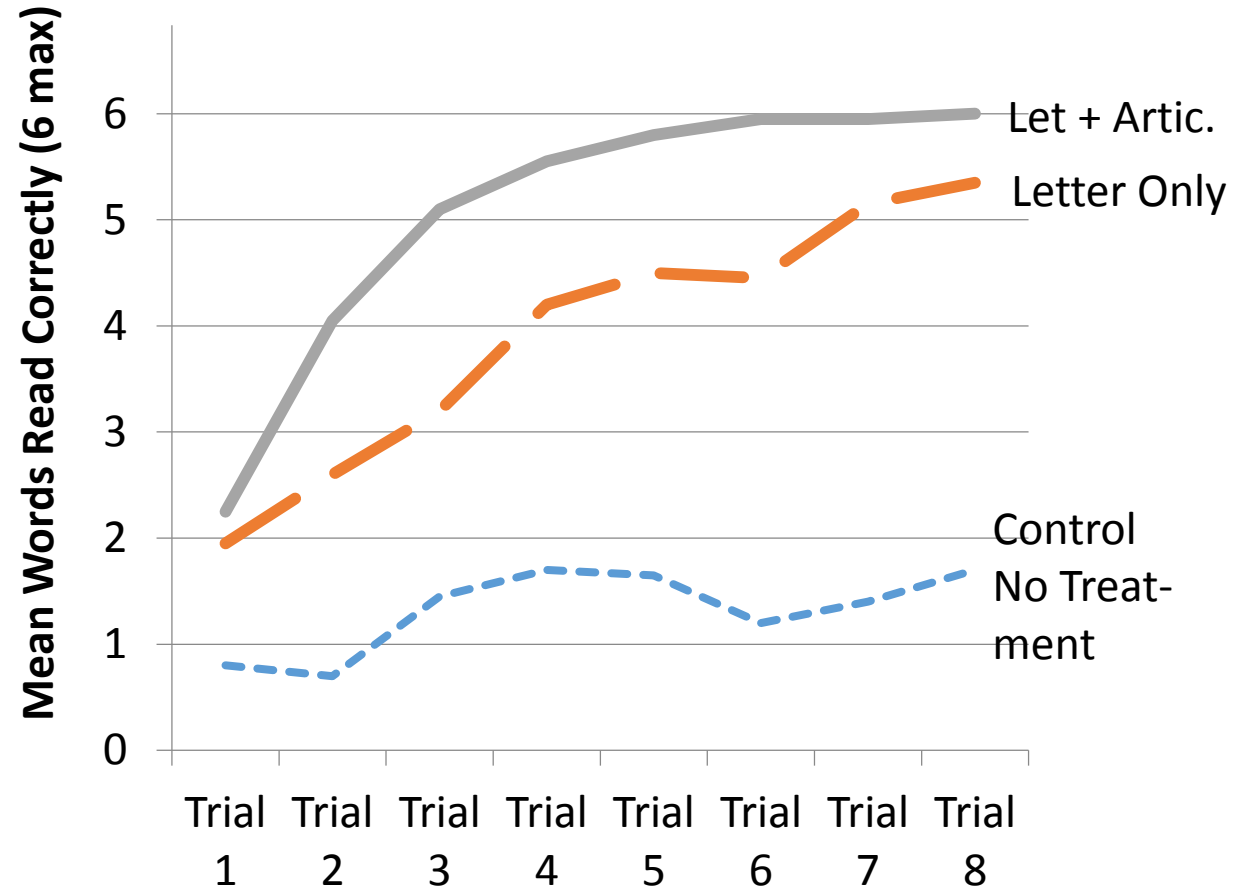
Words Read From  
Memory Over Trials

WRITTEN  
WORD

READ

PRONUNCIATION

BO	"bow"
SA	"say"
TE	"tea"
BED	"bed"
SOP	"soap"
TAL	"tail"





## *Keyword Program: Reading by Analogy*

### Weekly Sets of Keywords Taught

1: in and up

2: king long jump

3: let pig day

4: truck black not

5: cat it go look

6: red fun he

7: name swim my map

8 – 28: .....

From Gaskins et al., (1997) *The Reading Teacher*.



## *Students' Problems with Keyword Analogy Program*

- Relying on word wall to find keywords
- Not storing keywords in memory
- Using context to guess words rather than analogy strategy
- Processing partial letters in words – misreading similar words
- Omitting or misspelling some letters in writing words
- Lacking phonemic segmentation
- Incomplete knowledge of grapheme-phoneme relations
- Partial phase of word reading
- Need to become full phase readers



# Program Revision: Developing Word Detectives

Students taught to fully analyze connections between graphemes and phonemes in keywords.

## Steps

1. Pronounce spoken word
2. Say and count separate phonemes on hand
3. View and examine spelling
4. Match letters to phonemes, reconcile discrepancies  
(i.e., two letters make one sound; letter has no sound)  
“It takes two letters to spell the sound /ŋ/”
5. Identify another keyword with that vowel

“king”

/k/ /ĩ/ /ŋ/

KING

K I NG

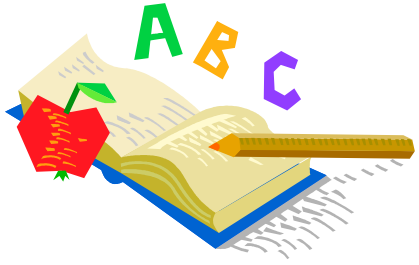
↓ ↓ ↓  
/k/ /ĩ/ /ŋ/

IN /ĩ/

After analyzing the 3 or 4 keywords, students spelled them from memory by recalling grapheme-phoneme connections.

(Ehri, Satlow & Gaskins (2009). *Reading and Writing Quarterly*.)





# Teaching Reading **Is** Rocket Science

What Expert Teachers  
of Reading  
Should Know and  
Be Able To Do

American  
Federation of  
Teachers

