

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

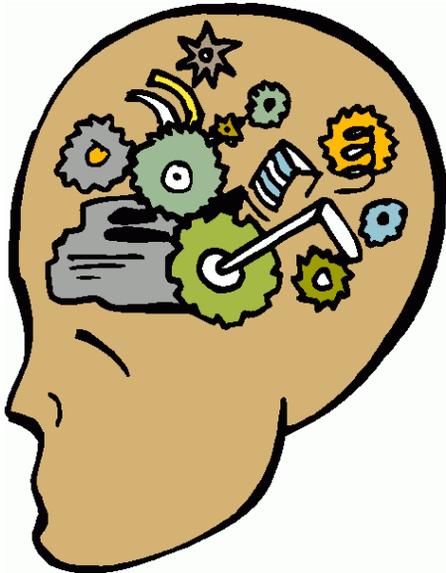
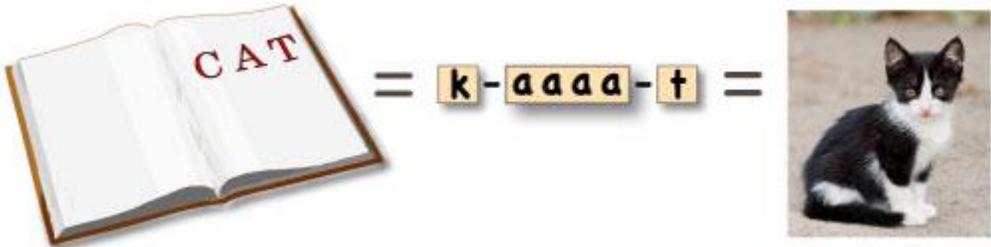
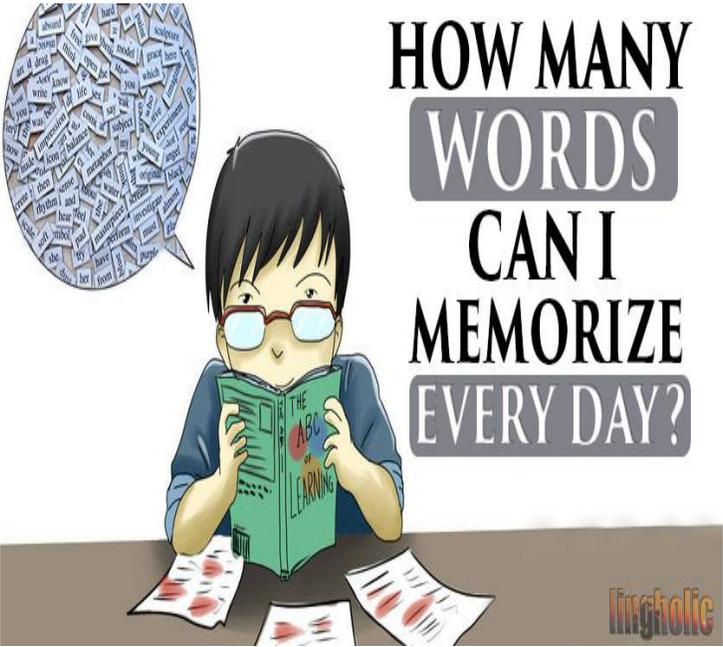
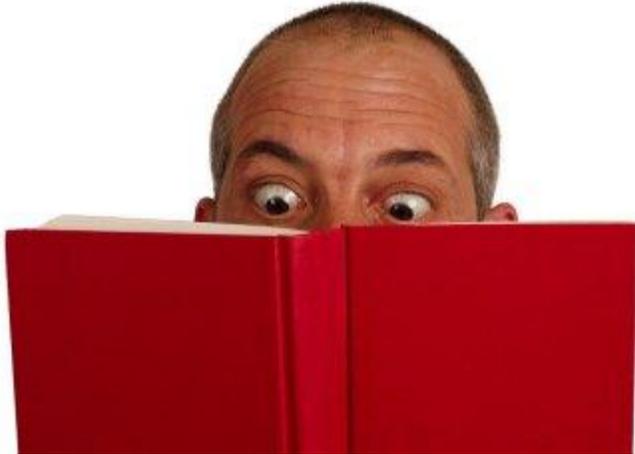
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Questions about Reading Words



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”

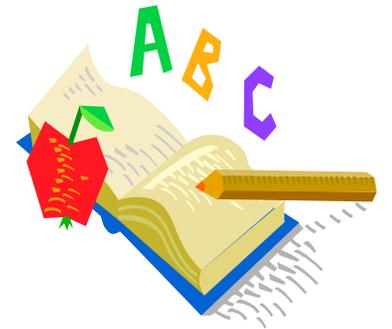


Which ways are used?

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

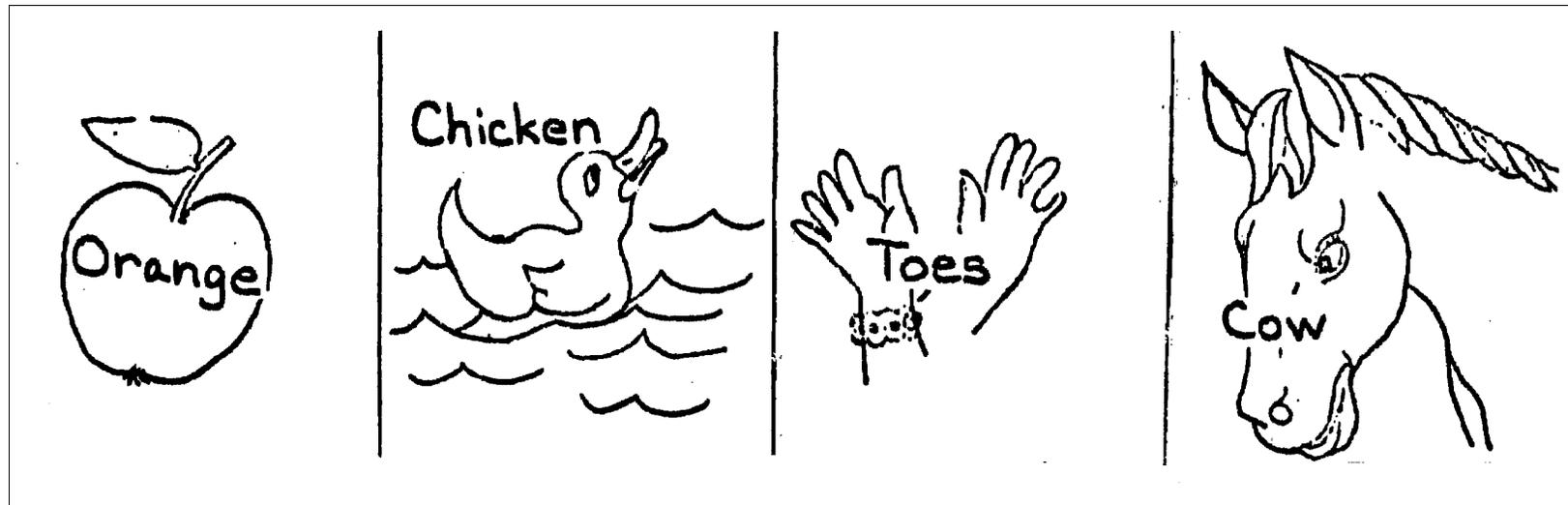
Note: All words when practiced become read from memory by sight.



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?

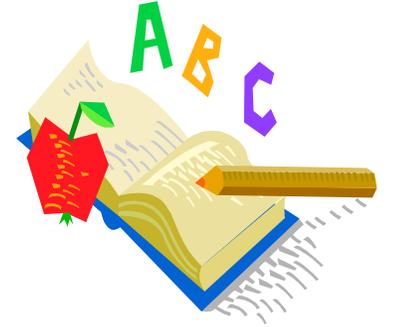
- Phoenigm* – reddening of the skin
- Pication - application of warm pitch to the skin as medical treatment

Both have 8 letters

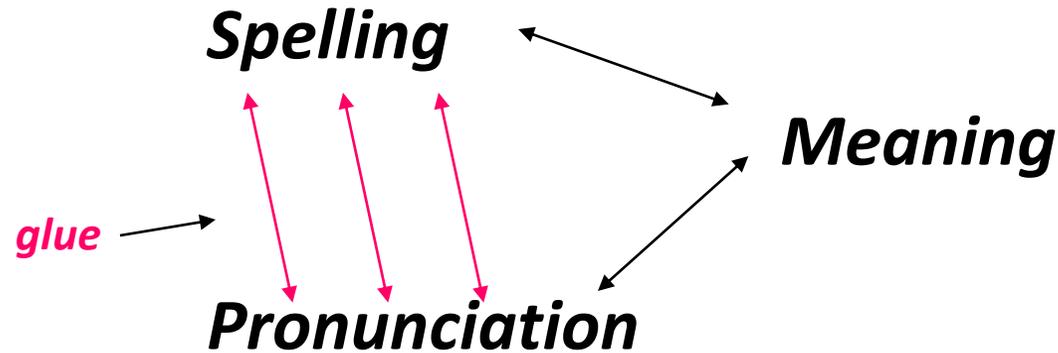
*Pronounced “feen” as in Phoenix, “nime” as in paradigm



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

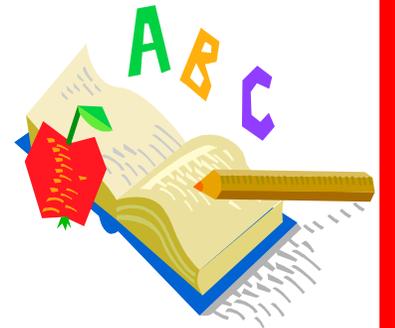
I S* L A N D
↓ ↓ ↓ ↓ ↓
/ay/ - /l/ - /a/ - /n/ - /d/

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)

Drtle (dirty)

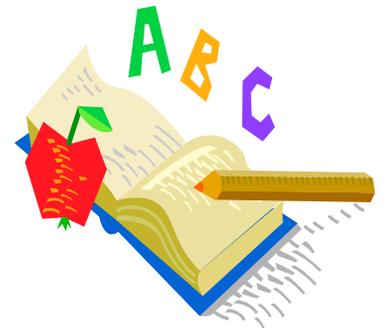
Monst (monster)

Drikn (drinking)



Movement into Full Alphabetic Phase

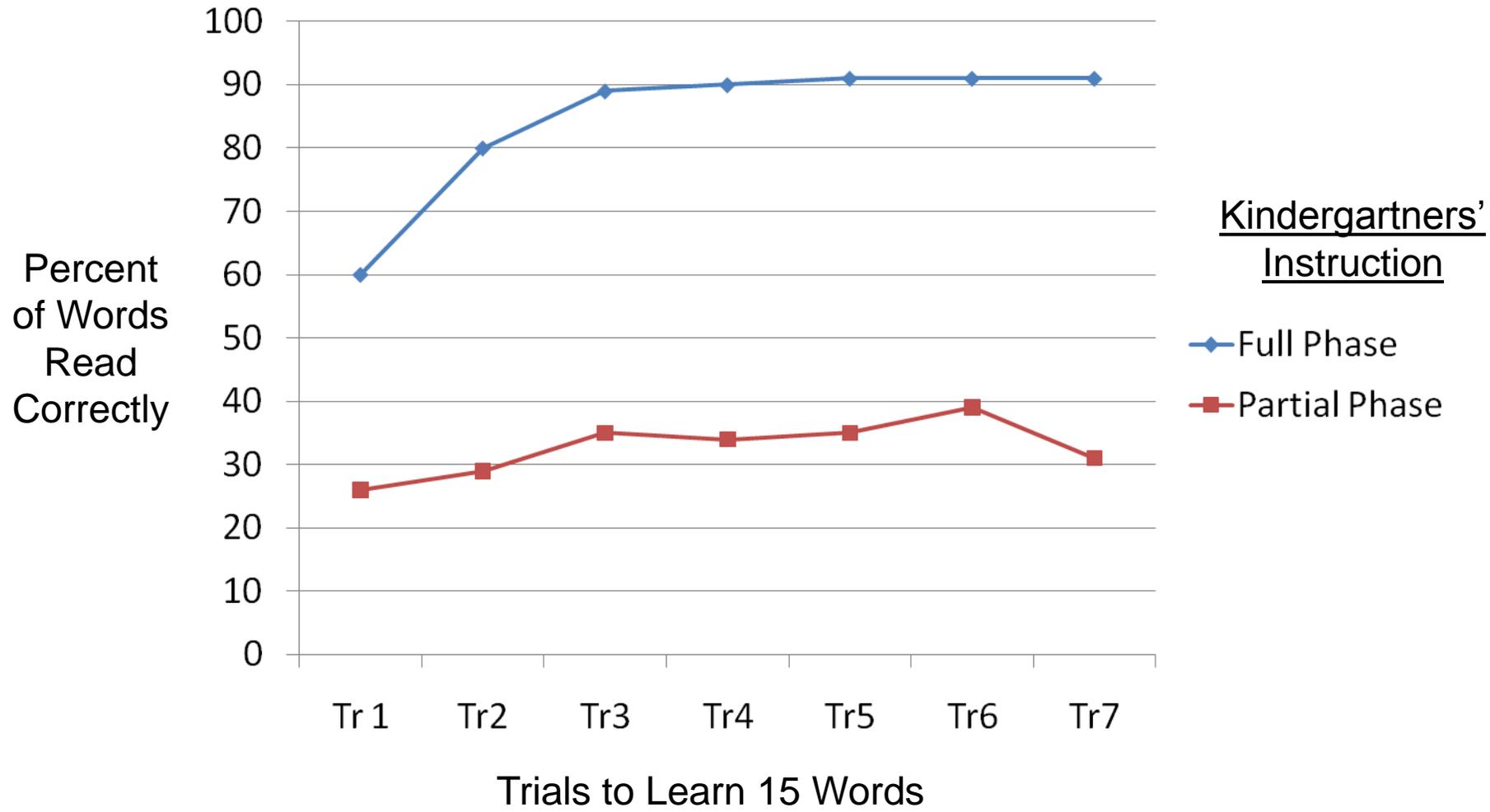
- Learn the major grapheme-phoneme correspondences
 - The **glue**
- Learn to segment words into phonemes
- Map graphemes in spellings to phonemes in pronunciations to store sight words in memory
 - Graphemes are **fully** bonded to phonemes
- Learn to decode new words
 - Sound out and blend letters
 - 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-2nd grades
 - Teach phonemic awareness (PA)
 - Teach major grapheme-phoneme (GP) relations
 - Teach decoding
- Insure teacher knowledge of PA and GP relations

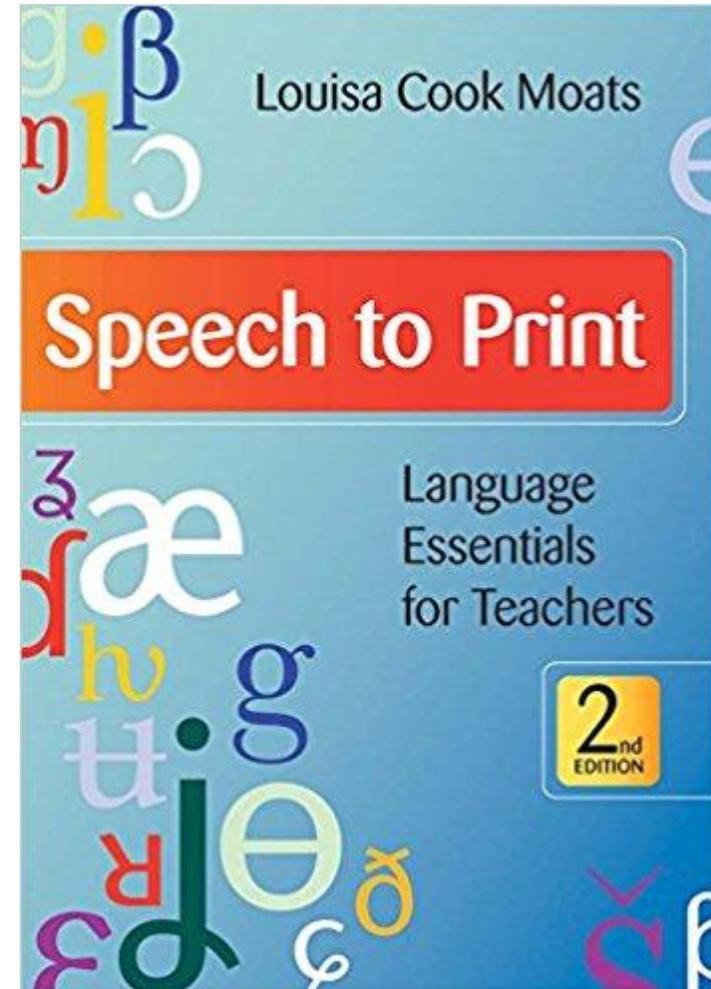




Table of Contents

- 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



Application to Teaching and Instruction

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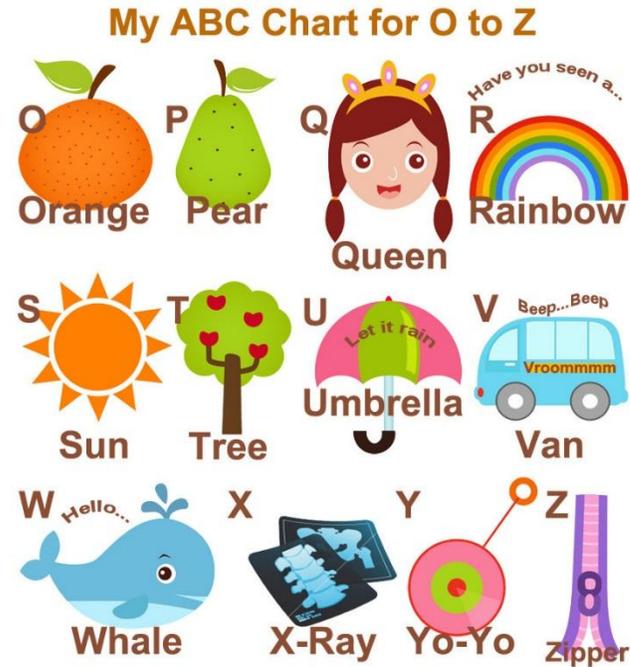
To build sight vocabulary

- 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.



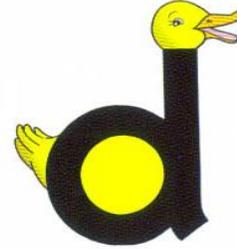
Annie Apple



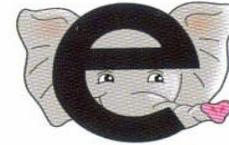
Bouncy Bunny



Clever Cat



Dippy Duck



Eddy Elephant



Fireman Fred

This **Letterland** book

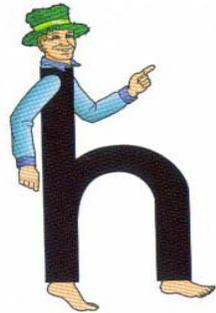
belongs to:

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

Embedded Mnemonics to Teach Grapheme-Phoneme Relations



Golden Girl



Hairy Hatman



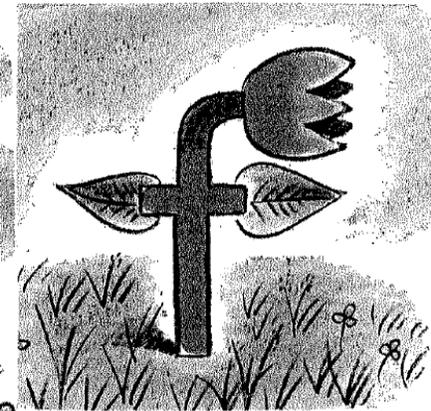
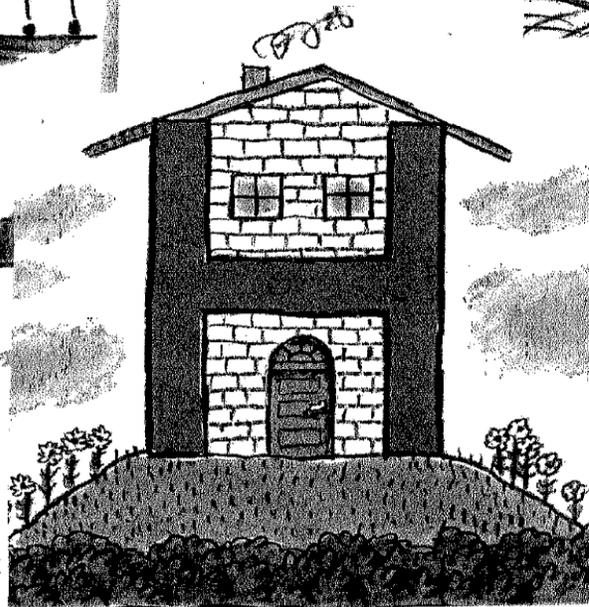
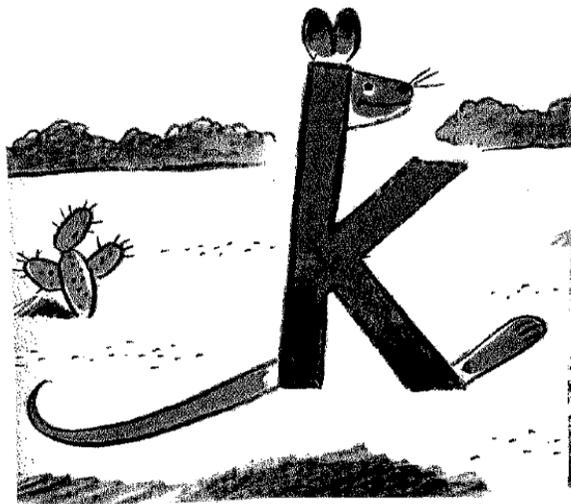
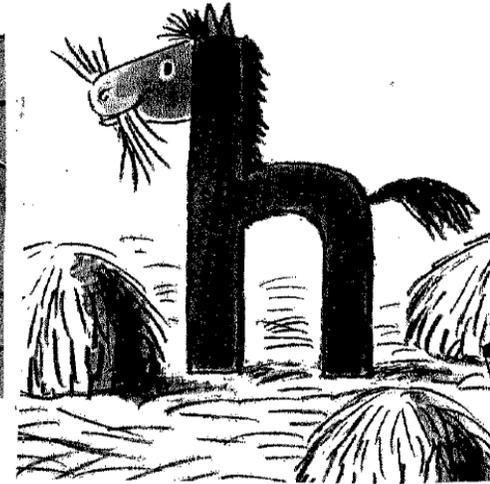
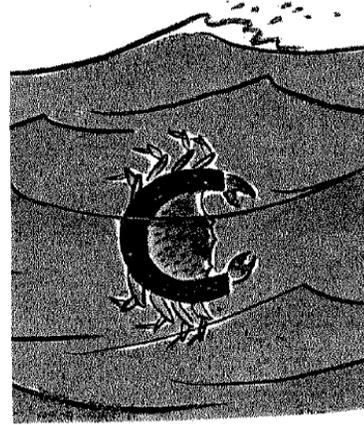
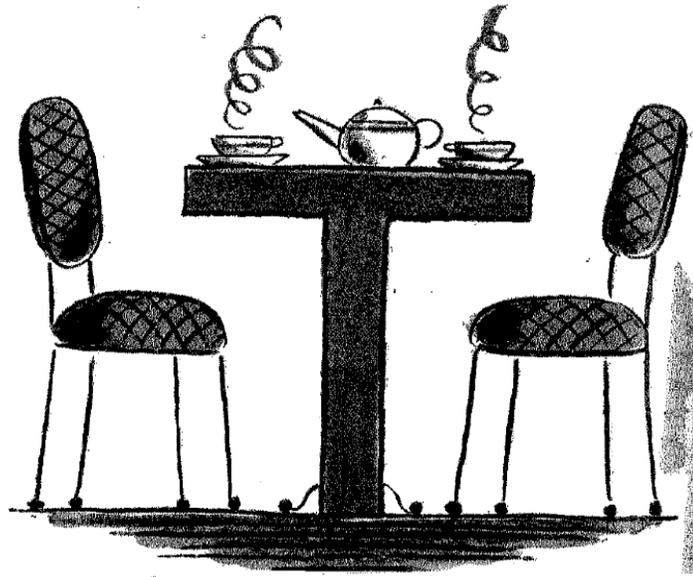
Impy Ink



Jumping Jim

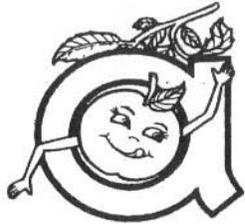


Kicking King



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 **a**pple)



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



i

itchy itch



o

olive octopus



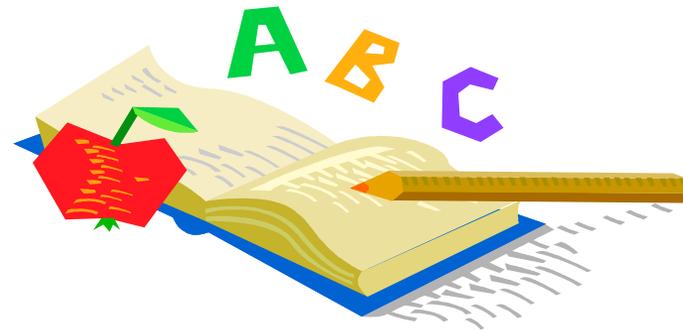
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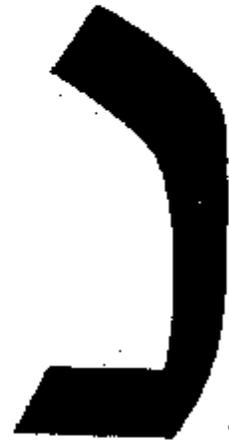
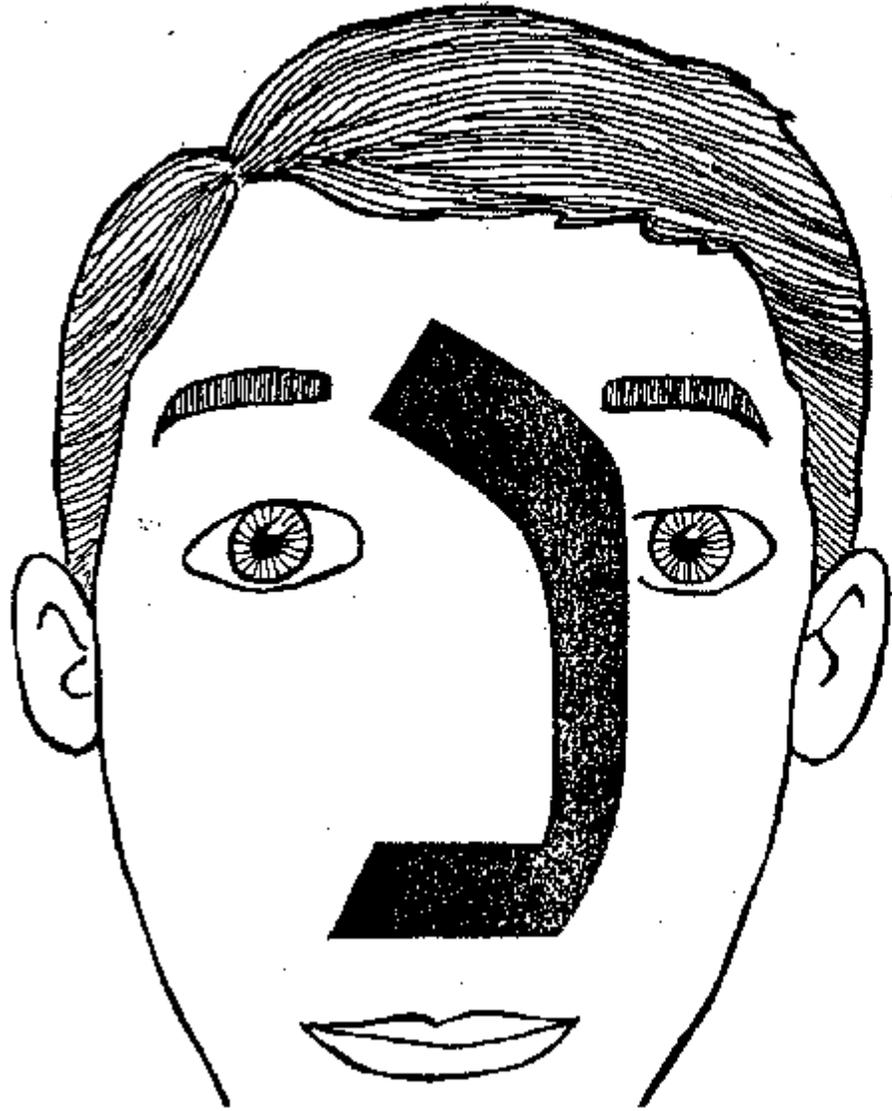
uppy umbrella

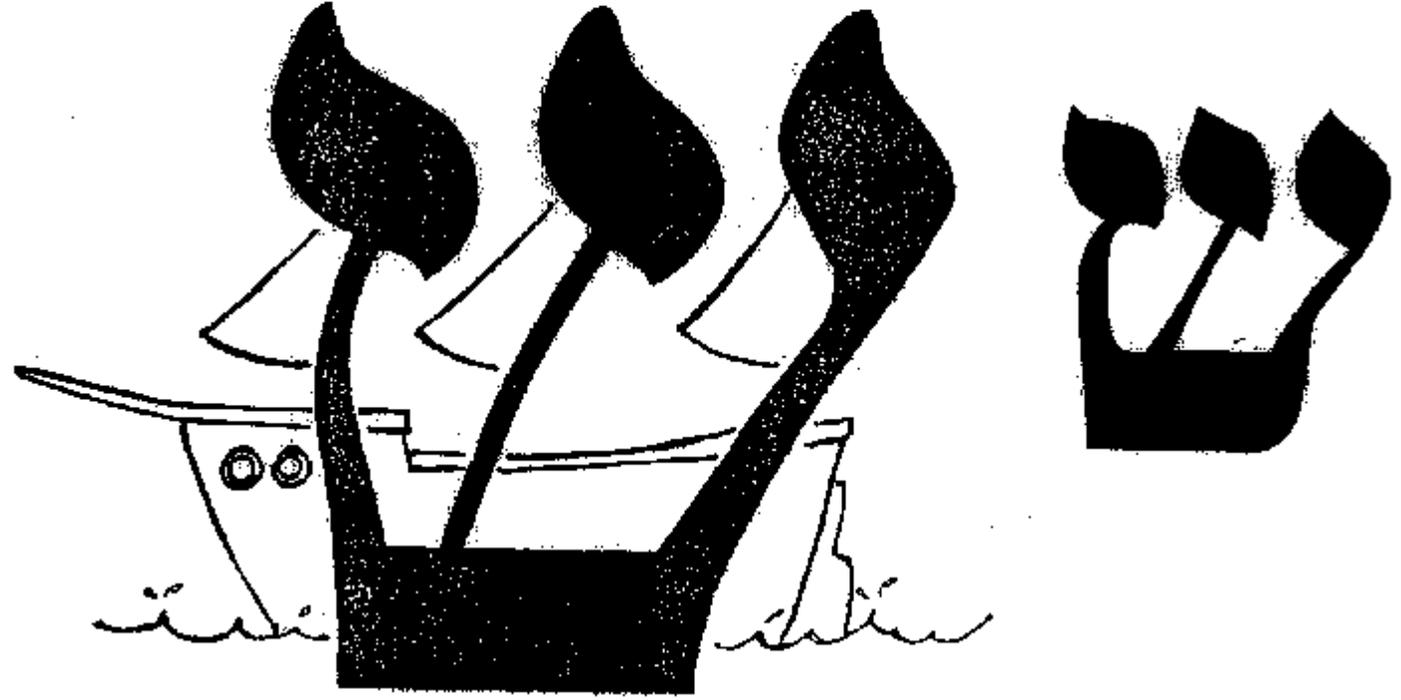


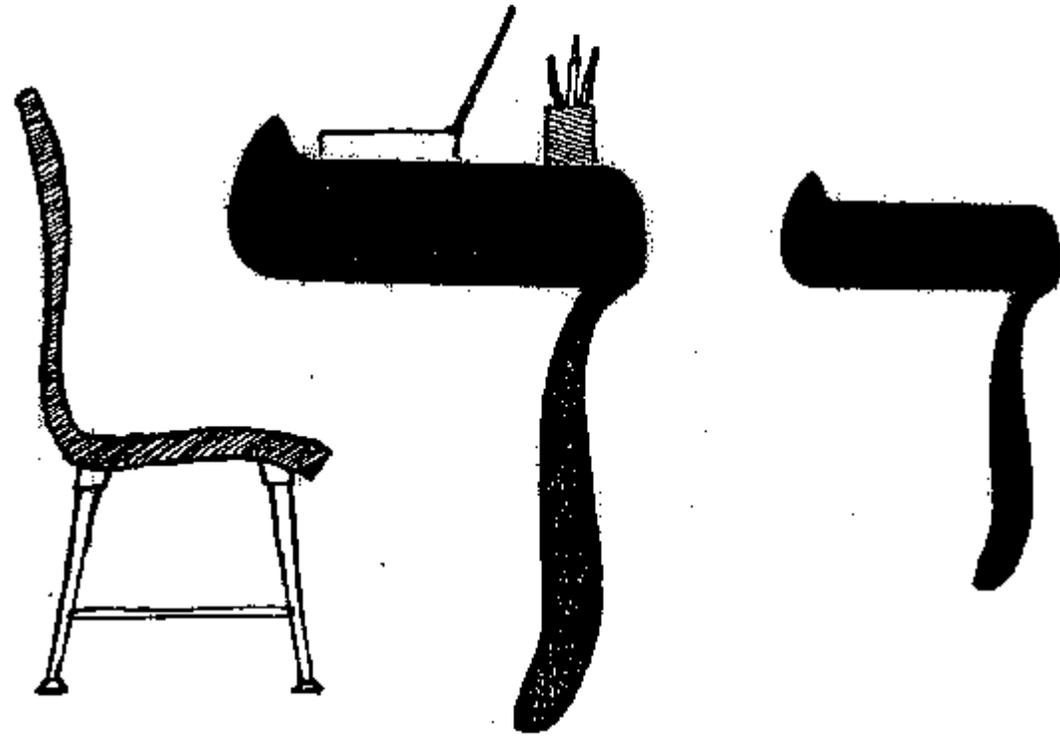
Demonstration

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











TEST

ש

ל

נ

ד

The Hebrew letter Shin (ש) is shown in a bold, black, sans-serif font. It consists of a vertical stem on the left and three diagonal strokes extending from the top to the right.

sh ship

The Hebrew letter Lamed (ל) is shown in a bold, black, sans-serif font. It consists of a vertical stem on the left and a single diagonal stroke extending from the top to the right, curving slightly at the end.

l lizard

The Hebrew letter Nun (נ) is shown in a bold, black, sans-serif font. It consists of a vertical stem on the left and a single diagonal stroke extending from the top to the right, curving slightly at the end.

n nose

The Hebrew letter Dalet (ד) is shown in a bold, black, sans-serif font. It consists of a vertical stem on the left and a single diagonal stroke extending from the top to the right, curving slightly at the end.

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:

S E T M P B O A F

Sound Segmentation Boxes





Teaching PA: Articulation

What else helps children learn phonemic segmentation?

Awareness of mouth movements and positions

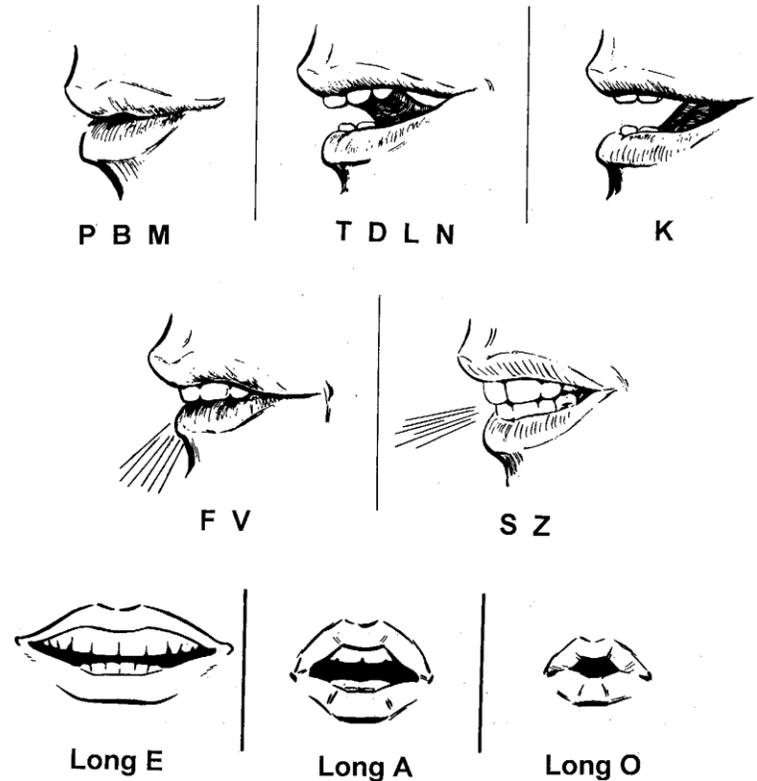
Motor theory of speech perception

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

“What sounds do you hear?”

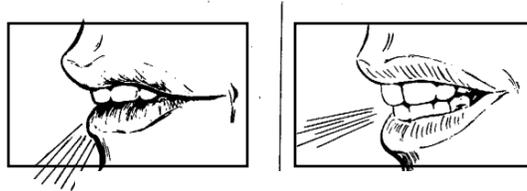
“How is your mouth moving?”

Mouth Positions Depicting Sounds Associated with Letters



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





Fill with mouth pictures:

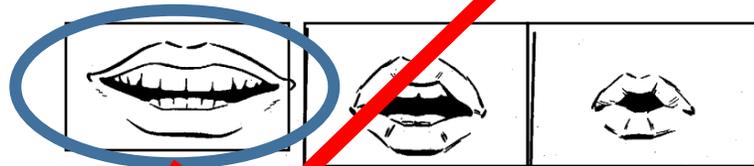
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Phoneme Segmentation Boxes



Word to segment is "see"

Fill with mouth pictures:



--	--	--	--

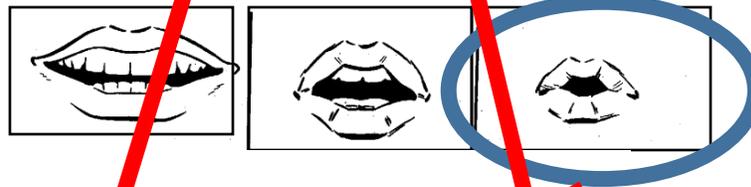
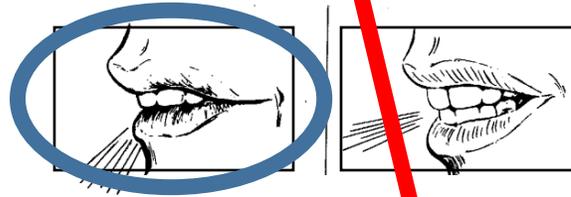
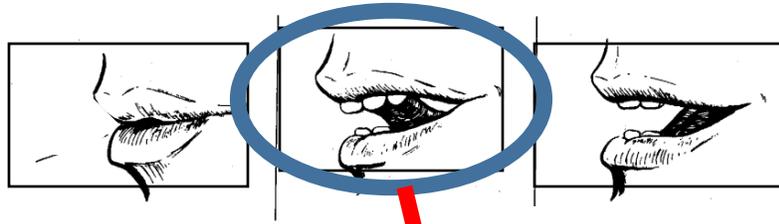
Phoneme Segmentation Boxes





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

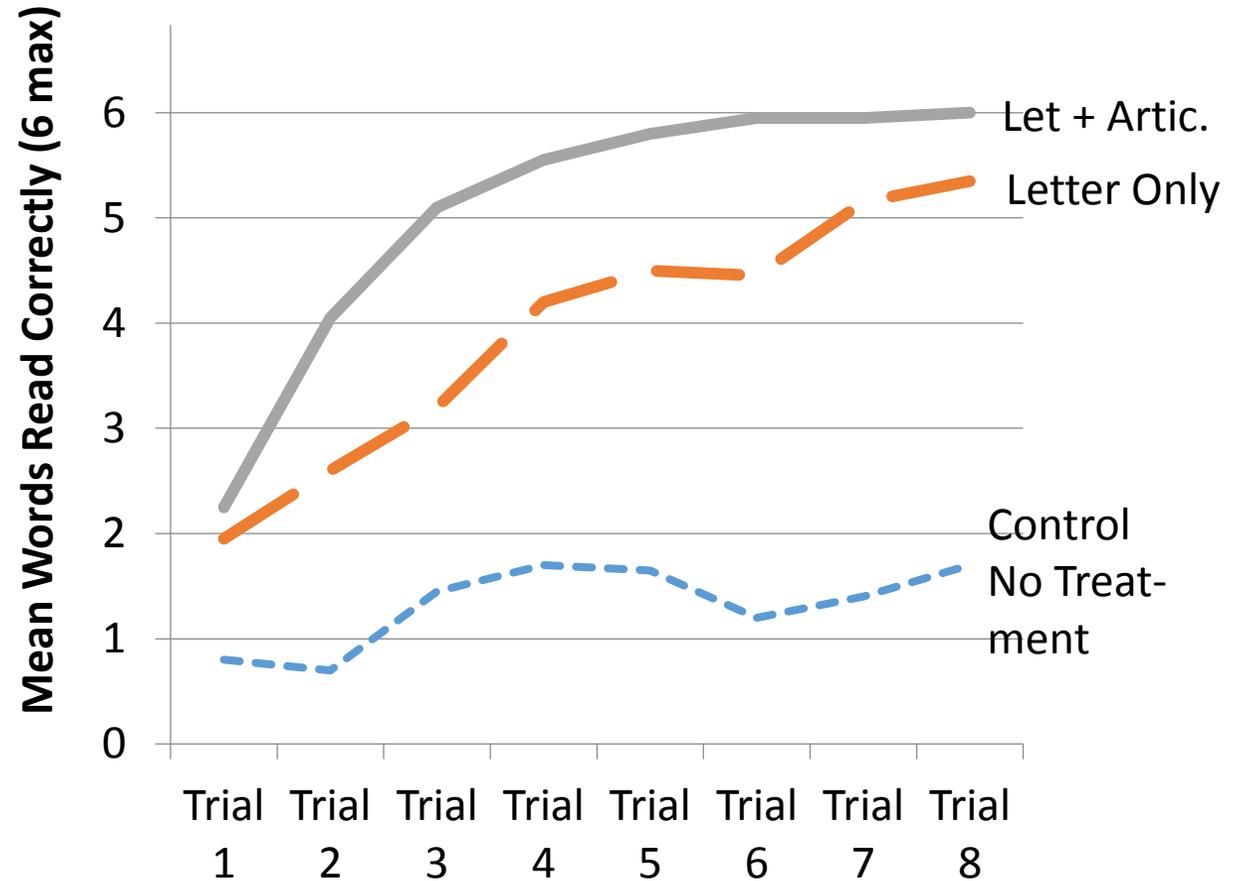
WRITTEN

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/ /i/ /ŋ/

KING

K I NG

↓ ↓ ↓
/k/ /i/ /ŋ/

IN /i/

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*

