How Spelling Supports Reading and Why It Affords a Chance to Teach Language

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Take This Spelling Test

What knowledge do you employ when you spell:

______________________?
______________________?
______________________?
______________________?

Check the research:

• Better spelling leads to better writing (Berninger and Wolf, 2012; Moats and Foorman, 2004; Graham & Perrin, 2007)
• Spelling knowledge facilitates vocabulary growth and speed of word recognition (Vellutino et al., 2007, SSSR; Treiman, 2017)
• Spelling is more highly correlated with reading comprehension than word recognition (Mehta et al., 2005)
Research suggests that spelling involves more than "visual" (orthographic) memory; those who spell well can think about the internal details of words:

• the sounds (phonology)
• individual sound-symbol correspondences
• letter patterns (orthographic conventions)
• meaningful parts (morphemes)
• what language the word came from
• the meaning of the word in a sentence

(Ken Apel, Julie Masterson)

Would you teach these as “sight” words?

<table>
<thead>
<tr>
<th>about</th>
<th>again</th>
<th>beautiful</th>
<th>because</th>
<th>black</th>
</tr>
</thead>
<tbody>
<tr>
<td>caught</td>
<td>car</td>
<td>don’t</td>
<td>every</td>
<td>found</td>
</tr>
<tr>
<td>gym</td>
<td>have</td>
<td>how</td>
<td>it’s</td>
<td>junk</td>
</tr>
<tr>
<td>knew</td>
<td>little</td>
<td>more</td>
<td>nice</td>
<td>one</td>
</tr>
<tr>
<td>our</td>
<td>phone</td>
<td>quit</td>
<td>right</td>
<td>use</td>
</tr>
<tr>
<td>when</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Five Principles for Understanding English Orthography

1. Language of origin.
2. Phoneme-grapheme correspondences.
3. The position of a phoneme or grapheme in a word.
4. Letter order and sequence patterns.
5. Meaning (morphology) and part of speech.
Principle #1

LANGUAGE OF ORIGIN
(The language from which a word came and its history in the English language.)

Match It Game

<table>
<thead>
<tr>
<th>Word in English</th>
<th>Language of Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>algebra</td>
<td>Latin</td>
</tr>
<tr>
<td>curriculum</td>
<td>Greek</td>
</tr>
<tr>
<td>blitz</td>
<td>Spanish</td>
</tr>
<tr>
<td>incommunicado</td>
<td>Yiddish</td>
</tr>
<tr>
<td>cello</td>
<td>Italian</td>
</tr>
<tr>
<td>chutzpah</td>
<td>French</td>
</tr>
<tr>
<td>ballet</td>
<td>Arabic</td>
</tr>
<tr>
<td>athlete</td>
<td>German</td>
</tr>
</tbody>
</table>

Characteristics of English Words according to Language of Origin

<table>
<thead>
<tr>
<th>Language of Origin</th>
<th>Features of Words</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglo-Saxon (Old English)</td>
<td>Short, one syllable; common words; irregular spellings</td>
<td>sky, earth, moon, sun, water, sheep, dog, horse, cow, hen, head</td>
</tr>
<tr>
<td>Norman French</td>
<td>Soft c and g; special endings; words for food, fashion</td>
<td>amuse, cousin, cuisine, country, peace, trage, rouge, baguette</td>
</tr>
<tr>
<td>Latin / Romance</td>
<td>Multi-syllable words with prefixes, roots, suffixes; content words</td>
<td>firmament, terrestrial, solar, stellar, equine, aquarium, mammal</td>
</tr>
<tr>
<td>Greek</td>
<td>Combinations of forms; science and math terminology</td>
<td>hypnosis, agnostic, neuropsychology, decathlon</td>
</tr>
</tbody>
</table>
Language layers allow for a variety of ways to express thoughts!

• No brains (English)
• Stupid (Norman French)
• Ignorant, ignorumus (Latin)
• Atrophy in the frontal-temporal gyri of the cerebral hemispheres (Greek)

Dimensions of English Orthography

<table>
<thead>
<tr>
<th>Sound-Symbol</th>
<th>Syllable Patterns</th>
<th>Morpheme Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anglo Saxon</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consonants</td>
<td>single, digraphs, trigraphs, blends</td>
<td>closed open sibilant, vowel /r/ pattern</td>
</tr>
<tr>
<td>Vowels</td>
<td>short, long /æ/, vowel team, vowel+r patterns</td>
<td>vowel-team, consonant –l(e) (oddities)</td>
</tr>
<tr>
<td><strong>Latin</strong></td>
<td></td>
<td>prefixes, roots, suffixes</td>
</tr>
<tr>
<td><strong>Greek</strong></td>
<td>ph for /f/ (graph)</td>
<td>Combining forms, plurals</td>
</tr>
<tr>
<td>ch for /k/ (chorus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>y for /j/ (gym)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Principle #2

Phoneme-Grapheme Correspondences
Graphemes

- A letter or letter pattern that spells a phoneme (speech sound).
- Graphemes can be one, two, three, or four letters in English!

Examples:
1 letter: ‘a’ as in strap
2 letters: ‘ay’ as in ray
3 letters: ‘tch’ as in ditch
4 letters: ‘eigh’ as in neigh

What is a vowel?

- NOT a letter: a, e, i, o, u are LETTERS used to represent vowels
- NOT a “middle sound”
- Vowels are open speech sounds, made with little obstruction of the tongue, lips, teeth, or air passage
- Vowels are continuous and voiced phonemes
- Every syllable has a vowel phoneme
- There are 18 vowel phonemes in English, plus schwa (which is not technically a phoneme)
Vowel Grapheme Types

**Single Letter Spellings**, Long and Short:
- ro-bot, ca-pon, mo-ped

**Vowel Teams**: east, south, night, blue

**Vowel-r Combinations**: her, bird, fur, car

**Vowel-consonant-e**: cape, kite, cube, rode

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Vowel Sounds of English, by Articulation

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The Vowel Chart (from LETRS, Units 2-4)

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What About the Vowel Errors?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>fan</td>
<td>pet</td>
<td>dig</td>
<td>mob</td>
<td>rope</td>
<td>11</td>
<td>dream</td>
<td>12</td>
<td>bead</td>
<td>13</td>
</tr>
<tr>
<td>wait</td>
<td>chunk</td>
<td>sled</td>
<td>coach</td>
<td>rope</td>
<td>14</td>
<td>snowing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Allophonic Variation and Coarticulation

- elephant
- egg
- echo

What Can Be Done to Demystify Vowels?

- teach the identity of each vowel sound
- have children produce phonemes clearly
- use mirrors, mouth pictures
- introduce a key word for each
- introduce spellings (graphemes) one at a time until children know at least one major spelling for each vowel
- add in other spellings gradually
Refer to Mouth Position When Teaching Speech Sounds

• How high is the tongue?
• What part of the tongue (tip, middle or root) is lowered or raised?
• What is the position of the lips?
• Is the sound stopped or continuous? Nasal or not nasal?

Ehri, L. (2014) Scientific Studies of Reading

“Key Words” for Short Vowels

GOOD NOT GOOD
apple ant
itch igloo, iguana, Indian
up umbrella, uncle
octopus dog, owl
echo, Ed, edge egg, elephant, engine

Sort Words by Front Vowels

babe, pat, pie, be, pet, pit, flea, beg, fly, bag, big, paid

/æ/ /i/ /ā/ /ā/ /ā/ /i/
Sort Words by Low, Mid Vowels

pop caught swat laundry
love father trouble off
frog putt thought of

\(/\text{aw}/\) \(/\text{\textasciitilde{5}}/\) \(/\text{\textasciitilde{u}}/\)
(saw) (ox) (up)

Use Sound Boxes for Segmentation

• Say the word.
• Model: listen as I say the sounds.
• Guided practice: let’s do one together.
• Now you map the sounds.

\(/\text{sh}/\) \(/\text{ar}/\) \(/\text{k}/\)

Building Words With Graphemes

a) Say a word; students build the word.
b) Students make as many words as they can, working in teams.
Sound Substitution With Colored Blocks

• Show me “shop”
• Now show me “shape”
• Now show me “shade”
• Now show me “shied”.

Attention to Subtle Differences

Sort these words by vowel sound /ʊ/ and /yʊ/

rude  soon  cute  new  few
music  soup  coupon  student

Phoneme-Grapheme Mapping

<table>
<thead>
<tr>
<th></th>
<th>m</th>
<th>oo</th>
<th>se</th>
</tr>
</thead>
<tbody>
<tr>
<td>moose</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cool</td>
<td>c</td>
<td>oo</td>
<td>l</td>
</tr>
<tr>
<td>few</td>
<td>f</td>
<td>[y]</td>
<td>e w</td>
</tr>
<tr>
<td>rude</td>
<td>r</td>
<td>u</td>
<td>d(e)</td>
</tr>
<tr>
<td>cute</td>
<td>c</td>
<td>[y]</td>
<td>[u]</td>
</tr>
</tbody>
</table>
Principle #3: We Spell by Position of a Phoneme (or Grapheme) in a Word

How many words have these patterns?

<table>
<thead>
<tr>
<th>-ate</th>
<th>-ait</th>
<th>-eight</th>
<th>-aight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Brainstorm lists of words with each of these patterns.

Spellings May Be Determined by the Position of a Sound

Spellings for /a/: rain, ray
straight, stray
they, hey, whey
braid, bray

Spellings for /oi/: boil, boy
avoid, annoy
toil, Troy
Principle #4

We Spell by Letter Patterns

Could It Be English?

<table>
<thead>
<tr>
<th>Word</th>
<th>Yes or No?</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>nixxen</td>
<td>no</td>
<td>Cannot double ‘x’</td>
</tr>
<tr>
<td>foiyge</td>
<td>no</td>
<td>“ly” is not allowed</td>
</tr>
<tr>
<td>studiing</td>
<td>no</td>
<td>Cannot double ‘i’ – separate</td>
</tr>
<tr>
<td>diggery</td>
<td>yes</td>
<td>Doubling rule</td>
</tr>
<tr>
<td>lay</td>
<td>no</td>
<td>Words do not end with ‘v’</td>
</tr>
</tbody>
</table>

Syllable Spelling Conventions

<table>
<thead>
<tr>
<th>Closed</th>
<th>Open</th>
<th>VCe</th>
</tr>
</thead>
<tbody>
<tr>
<td>dap</td>
<td>ma</td>
<td>trite</td>
</tr>
<tr>
<td>con</td>
<td>wri</td>
<td>bune</td>
</tr>
<tr>
<td>bot</td>
<td>bu</td>
<td>tane</td>
</tr>
<tr>
<td>Vowel Team</td>
<td>Vowel-R</td>
<td>-Cle</td>
</tr>
<tr>
<td>tain</td>
<td>var</td>
<td>-gle</td>
</tr>
<tr>
<td>sigh</td>
<td>ter</td>
<td>-tle</td>
</tr>
<tr>
<td>weigh</td>
<td>dor</td>
<td>-ple</td>
</tr>
</tbody>
</table>
Why Teach Syllables?

To “chunk” unfamiliar words accurately and quickly: reincarnation; accomplishment
To distinguish similar words: scarred – scary
ripping – ripening
slimmer – slimy
To remember spelling:
written, writing
grapple, maple
misspelled, accommodate

Speech and Writing Are Different

The syllable breaks that seem natural in speech do not guide conventions for dividing written syllables.
Say these words aloud. Where do you hear the syllable boundaries?

bridle – riddle
table – tatter
even - ever

Sort the Syllables

wagon carport careful airhead cable

Closed Open Vce

Vowel Team Vowel-R -Cle
Sort the Syllables (Answers)

wagon carport careful airhead cable

Closed Open Vce
wag – on ca care

Vowel Team Vowel-R -Cle
air – head car – port -ble

Leftovers: Odd and Schwa Syllables

• A syllable with a schwa (empty) vowel sound is found in the unaccented syllable, typically in an affix (prefix or suffix).

  garbage a/bove ac/tive wag on

• Sample words with “odd” spellings:

  con/science par/tial fur/niture

Main Ideas

1. Word history (etymology) influences how words are written in English.

2. Phoneme-grapheme correspondences are largely predictable and explainable.

3. Correspondences are sometimes determined by the position of a sound in a word.

4. There are rules and patterns governing the use of letters, for example, which ones cannot be doubled.
Principle #5

We Spell by Meaning
(Morphemes)

Dividing Words into Syllables and Morphemes

<table>
<thead>
<tr>
<th>Syllable</th>
<th>Morpheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>trac-tor</td>
<td>tract-or</td>
</tr>
<tr>
<td>po-et-ry</td>
<td>poet-ry</td>
</tr>
<tr>
<td>u-ni-cy-cle</td>
<td>uni-cycle</td>
</tr>
<tr>
<td>gen-tie</td>
<td>gent-le</td>
</tr>
<tr>
<td>un-der-played</td>
<td>under-play-ed</td>
</tr>
</tbody>
</table>
Spelling can be explained!

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Free these circled words!

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Take-Aways

We remember what we have thought about. (Dan Willingham)

Print represents speech; teach children how their writing system works to represent oral language. (Seidenberg, 2017; Treiman, 2018)

Knowing the exact spellings of words helps people read them. (Ouellette, Martin-Chang, & Rossi, 2018)

Therefore:

“Know your stuff, know who you are stuffing, and stuff every minute of every lesson.”

-Joe Torgesen

THANK YOU VERY MUCH!