Scientific Word Investigations: The importance of Morphology, Etymology, and Phonology

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OUTLINE

• Language History and Evolution

• Scientific Investigation of the writing system
  • Important terms
  • What is reading and how are we teaching it?
  • What SWI is and is not
  • Scientific inquiry and its tools
  • Goal is understanding the writing system

GOALS

Answer the following:

• What is OG? What is SWI?

• What is the difference between phonics and phonology?

• What does linguistics tell us about written language?

• Why should we use the scientific method to investigate written language?

Defining Our Terms

• Linguistics \(\rightarrow\) lingu + ist + ic + s
  • the study of languages

• Phonology \(\rightarrow\) phone/ + o + log(e) + y (phoneme)
  • the study of the psychology of spoken language

• Phonetics \(\rightarrow\) phone/ + et(e) + ic + s (phone)
  • the study of the physiology of spoken language

• Morphology \(\rightarrow\) morph + o + log(e) + y (morpheme)
  • the study of the form/structure of words

• Phonics \(\rightarrow\) phone/ + ic + s
  • literacy instruction based on small part of speech research and psychological research

• Phonemic Awareness
  • awareness of phonemes??

• Orthography \(\rightarrow\) orth + o + graph + y
  • correct spelling

• Orthographic phonology
  • The study of the connection between graphemes and phonemes
Defining Our Terms

• Phoneteme → phoneme / + eme
  • Psychological representation of speech units spelled by a grapheme and distinctive for meaning
  • Example: pant/bant vs hat/hat

• Grapheme → graph + eme
  • Psychological representation of writing units that spell a phoneme

• Morpheme → morph + eme
  • Psychological representation of meaning units that make up words

The Beautiful Brain

Brain Development

• Gray matter
• White Matter
• Pruning/Connectivity
• “Use it or lose it”
• Myelin

Learning

• Learning by experience
  • Use it or Lose it
• Neural networks
• Multi-sensory instruction
  • Tactile/sensory
  • Kinesthetic/motor
  • Auditory
  • Visual

Brain Areas

Dyslexia Basics

• Neurobiological
• Is NOT due to a hearing or vision problem
  • NOT from Convergence Insufficiency
  • NOT from CAPD
• May include deficits in:
  • Phonological working memory
  • Phonological processing
  • Rapid naming
  • Orthographic processing
• Often comorbid with ADHD, EF, sensory issues
The written language is not the spoken language written down.

The primary goal of written language is to represent meaning NOT the pronunciation of the language.

Speech is thought made audible, Spelling is thought made visible.

Spelling makes sense.

Spoken vs. Written Language

Speaking is how we get meaning from our brain into others’ brains via their ears.

Writing is how we get meaning from our brain into others’ brains via their eyes.
History of Spoken English
-410 End of Roman rule of Britain
-400 Beginning of Anglo-Saxon settlement and Viking raids/occupation in Britain
1066 Battle of Hastings
1476 Caxton brings the printing press to England

Renaissance → Now

Evolution of Language
- Spoken Language
  - Meaning
  - Amelioration/Pejoration
  - Pronunciation
- Written Language
  - History of Literacy
  - Scribes/Printing Press
  - Dictionaries

Scientific investigation of the writing system

Meaning, Structure, History AND Phonology

Phonology is important, it's just not the most important
- Phonological Primacy/Phonics
- Homophone principle

“Sight” Words
- Why is there a <w> in <two>?

Schwa
- Why do we spell [dɪfrənt] <different> and not <difrent>

“Sight” Words
What does phonics/OG do?
- High Frequency
- Dolch/Fry lists
- Don’t “play fair”
- Memorize

Instead
- Function Words vs Content Words
- Investigate Morphology, Etymology and Phonology
- Teach schwa and do it accurately
Stress and Schwa

English is stress-timed

Schwa
- occurs ONLY in unstressed syllables
- NOT /ʌ/
- IMPOSSIBLE to spell with phonology alone

Production vs Perception

Orthographic Phonology

Phonemes are spelled by graphemes

Allophones: different phonetic realizations of the same phoneme

\[ /t/ \]

Zero allophone: <prints> <sign> <thing>

What does it mean to “read”??

Sound out/pronounce words??
- Reading aloud adds cognitive load
- Focusing on sounding out can obscure meaningful structures
- Pronounce without gaining meaning

Gain meaning from print??
- Gain meaning without pronouncing
- Focusing on meaning, structure, and history helps us understand spelling

What does it mean to “read”?

Spoken syllables vs. written syllables
- \([\text{æk}\text{ʃən}]\) VS. \(<\text{act} + \text{ion}>\)
- Which analysis is more meaningful??
- Why do we say it this way? VS. Why do we spell it this way?
- Making connections via Word Families

Gain meaning from print??
- Gain meaning without pronouncing
- Focusing on meaning, structure, and history helps us understand spelling

Introductory Exercises

Semantics
- prints
- rows
- mined
- acts

Graphemes/Phonemes
- cried/cry
- creature/create
- real/reality
- finger

Syllables
- action → act + ion
- animation → anime/ + ate + ion
- tension → tense/ + ion
- musician → music + i + an

Zero allophones
- hymn/hymnal
- sign/signal
- bomb/bombard
- mnemonic/amnesia

Introductory Exercises

Markers
- two/twin/twice/twenty/twelve/between/twilight
- wring/writhe/wrought/wrinkle/wriggle/wrist
- knight/knee/kneel/knob/knuckle/knot

Word Families
- act
- actors
- acted
- actually
- acting
- exact
- action
- reaction
- active
- exactly
Scientific Inquiry

General Steps
- Collect data/evidence
- Develop a hypothesis
- Test your hypothesis
- Collect more data/evidence and refine your hypothesis as needed

Scientific Inquiry

Written Language
- Investigate semantics (meaning)
- Hypothesize about morphology (form/structure)
- Test your hypothesis using etymology (history and relatives)
- Investigate orthographic phonology
- Revise your hypothesis as needed

Scientific Inquiry

The four questions
- Q1: What does it mean?
- Q2/3: How is it built? What are its history and relatives?
- Q4: What can we learn from its pronunciation?

Scientific Inquiry

The Four Questions
- New Perspective
  Not why do we say it that way, but why do we SPELL it that way (no pronounce and guess)
- Mean? Built? Relatives? Pronunciation?
- Word Sums
  act + ion → action
- Matrices
- Online Resources

Scientific Inquiry

<noun>
1 an object, quality, or event whose presence or occurrence indicates the probable presence or occurrence of something else
2 a gesture or action used to convey information or instructions
4 Mathematics the positiveness or negativeness of a quantity

<noun>
1 [with object] write one's name on (a letter, card, or similar item) to identify oneself as the writer or sender
2 [no object] use gestures to convey information or instructions

<noun>
<noun> is a base element
Scientific Inquiry

Q3: What are its history and relatives?

**sign (n.)**
early 13c., “gesture or motion of the hand,” especially one meant to communicate something, from Old French signe “sign, mark,” from Latin signum “identifying mark, token, indication, symbol; proof; military standard, ensign; a signal, an omen; sign in the heavens, constellation,” according to Watkins, literally “standard that one follows,” from PIE *sekw-no-, from root *sekw- (1) “to follow.”

**sign (v.)**
c. 1300, “to make the sign of the cross,” from Old French signier “to make a sign (to someone); to mark,” from Latin signare “to set a mark upon, mark out, designate; mark with a stamp; distinguish, adorn;” figuratively “to point out, signify, indicate,” from signum “identifying mark, sign” (see sign (n.)). Sense of “to mark, stamp” is attested from mid-14c.; that of “to affix one’s name” is from late 15c. Meaning “to communicate by hand signs” is recorded from 1700. Related: Signed; signing.

Scientific Inquiry

Q4: What can we learn from its pronunciation?

- signs → sign + s
- signed → sign + ed
- signing → sign + ing
- signal → sign + al
- signify → sign + i + fy
- design → de + sign
- designate → de + sign + ate
- signature → sign + ate/+ ure
- resignation → re + sign + ate/+ ion

Scientific Inquiry

Other spellings to ponder

- Why is there a <w> in <two>?
- Why do we spell [dɪfrənt] <different> and not <difrent>?
- Why do we not replace the <e> at the end of <change> in <changeable>?
Let’s Investigate!

Resources: Investigation of Written Language


Word Searcher: www.neilramsden.co.uk/spelling/searcher/

Mini Matrix Maker: http://www.neilramsden.co.uk/spelling/matrix/temp/index.html

Resources: Investigation of Written Language

Gina Cooke (LEX): https://linguisteducatorexchange.com/lexinars/


Real Spelling: http://www.realspelling.fr/

Resources: Investigation of Written Language

Blogs:

http://barnettsbuzzingblog.edublogs.org/

http://rebeccaloveless.com/blog/

https://languageinnerviews.com/

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