Follow-Up Resources from sessions by Pete Bowers for
ORTHOGRAPHY IN THE CLASSROOM: 2-DAY CONFERENCE & PRE-CONFERENCE
Chicago, Feb 28, Mar 1-2, 2019

What is Structured Inquiry (SWI)?

The joy that results from instruction which builds understanding of word structure as a context for scientific investigation of the interrelation of spelling and meaning.

Peter Bowers, Phd
WordWorks Literacy Centre
March 6, 2019

Hello all,

I am still processing the learning experience generated by the amazing “Orthography In The Classroom Conference” in Chicago. May this be the “first annual!”

Big props to Mary McBride and Ellen Meyer ([Language Insights](https://www.languageinsights.com)) and Chris Finch (Assistant Superintendent for Teaching and Learning La Grange School District 102) for all their work organizing this event and the support of Western Springs School District 101.

As the Old Grouch offered, no one speaker could provide a truly scholarly experience studying English orthography. The notion of the “three legged-stool” as the most stable, and the idea that “scholarship starts at 3” are wise messages to remind ourselves with.

I was honoured to be asked to invited to present along as part of this “wholly trinity of orthography” with Gina and Doug. I’m still processing my own learning from their presentations I got to see.

The other presentations and the teacher “poster session” were also essential ingredients in this learning.

While the content presented in these sessions was key to the learning, it is actually the learning the participants construct in discussions and study *after* the formal presentations that matter most. I suspect that for many of you it was conversations and personal connections over meals and drinks, in the halls of this conference that will prove to be the key catalysts of learning for participants.

This follow-up from me is just to share links to the digital files of the handouts I provided during the conference and some additional resources that you may find useful for your continued revisiting and restudying of this content. Make sure you go beyond this document and take advantage of the resourced offered by Gina, Doug and others.

**Links to Handouts for Pete’s presentation:**

Note, my handouts and resources are not intended to be stand alone documents. My hope is that they make sense to those who were in the session. But feel free to study the handouts of sessions you didn’t attend. I hope they do make sense, but understand that they don’t always come with “descriptions” and “instructions” as they are designed to be something I introduce.

Also, I do not have official handouts for the keynote or the research talk. I will point to resources for those and if you work through you will see more resources as well.

Note that the final page has links to all sorts of resources for you to explore.

See the final page for a reference section and links to tons of resources.

For now, on to the next page and links to my handouts!
Handouts from Pete’s session

- Pre-Conference handout (Click HERE)
  - Words for “in our out of the family” activity (You can and should make your own sets of words with real word family connections and foils, but I’ve found this list productive for teachers to get started with.)
- K-2 Session (Click HERE)
- Deeper into Morphology and Etymology (Click HERE)

Other Resources

Research talk

There was not a handout for the SWI in the Research talk. You can go to THIS LINK to see a video on this topic I gave for a virtual SWI conference put on by the Dyslexia Training Institute. I recommend considering signing up for their upcoming Virtual Conference (3rd annual) running from April 15-May 3. you can register HERE.

For that talk, I created THIS PDF that you could print off and follow as you watch the video linked above.

For now, I will paste just a few screen shots of from that talk that may help you -- especially those who were in attendance.

Those who were there will remember that I started with something that was not specifically about literacy at all, but instead a description of a well-established psychological theory of Learning called “Cognitive Load Theory”.

Cognitive Load Theory and Structured Word Inquiry

Click HERE for more on this theory including a term paper I wrote in grad school that attempted to unpack the key concepts of cognitive load theory and how structured word inquiry reflects the principles of that theory so well. The practice of “writing-out-loud” and “spelling-out-loud” is directly linked to understanding from this theory and the idea of building well-integrated mental representation of schema through multiple memory routes. The use of word sums and the matrix act as “worked out examples” of complex relationships. All of this is discussed in my term paper. However...

The article that introduced me to cognitive load theory was by Schnotz & Kurschner (2007). If you are interested in this topic, I highly recommend this excellent piece (Click HERE). Remember that the only real criticism I had of this article was one of omission.

Yes, instruction should be designed as well as possible to build well-integrated mental representation of schema -- but we much ensure that the scheme we help construct for ourselves and any learners we work with accurately represents the content of study!

When you understand cognitive load theory, you will begin to deepen your understanding of why this content is so often much harder for teachers that students. We have more to unlearn. Most of my work is helping people unlearn schema for our spelling system that has been built since we were young children that needs to be undone. The phrase “z sound” is a schema we need to get rid of as it hides the fact that the most common grapheme for the /z/ phoneme is the <s>!
Here are some slides related to CLT

Slide 1
Here are some slides related to CLT

Slide 2
Here are some slides related to CLT

Slide 3
Here are some slides related to CLT

Slide 4
Here are some slides related to CLT

Slide 5
Here are some slides related to CLT

Slide 6
Here are some slides related to CLT

Slide 7
Here are some slides related to CLT

Slide 8
Here are some slides related to CLT

Slide 9
Here are some slides related to CLT

The left side of the synthetic word sum is a "worked out example" of word structure (CLT) and corresponds to Carol Chomsky's concept of a "lexical spelling". Instruction without the word sum only looks at the surface. It cannot build understanding of English orthography.
Teaching what are possible grapheme-phoneme correspondences in the context of a single word (phonics) can build your bank of knowledge about possible grapheme-phoneme correspondences. But in addition -- it can help you understand why to use a particular grapheme or orthographic marker for a specific word, when studied in the context of the morphological and etymological relatives. SWI thinks the role of phonology is so important that we must teach how it works within the orthography system. This is why we teach about orthographic phonology rather than phonics. Teaching associations between letters and sounds (phonics) misrepresents what it is trying to teach -- not only grapheme-phoneme correspondences, but how those associations work in the orthographic system -- orthographic phonology.
Structured word inquiry (Bowers & Kirby, 2010) is...

**Word level instruction that reflects interrelation of morphology, etymology and phonology from the beginning for all ages and abilities**

Model of Orthography from Real Spelling

“4 questions” of structured word inquiry

**Found an interesting word?**

1. What is the sense and meaning of your word?
2. How is it built?
   - Can you identify any bases or affixes with a word sum?
3. What related words can you find?
   - Morphological relatives: Look for words that share a base.
   - Etymological relatives: Look for words that share a history.
4. What graphemes function coherently here?
   - Check that they represent the phonemes across the morphological family.
   - Check the influence of word interrelation on grapheme choice.
   - Is what you thought was a grapheme actually an orthographic marker?

**Historical Research Context**

Recommendations from Marilyn Adam’s 1990 book, “Beginning to Read” (cited almost 7000 times.)

“Although teaching older readers about the roots [base morphemes] and suffixes of morphologically complex words may be a worthwhile challenge, **teaching beginning or less skilled readers about them may be a mistake**” (p. 152).

**A hypothesis — not research based conclusion.**

National Reading Panel (2000)

Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg (2001)

In direct contrast to what the phonology-first hypothesis would predict, the meta-analyses of morphological instruction (Bowers, Kirby & Deacon, 2010; Goodwin & Ahn, 2010, 2013) and the reviews (Reed, 2008; Carlisle, 2013) all show that the youngest and less able gained from morphological instruction. The meta-analyses showed that these two groups gained the most from including morphology in early literacy instruction.

Bowers et al. (2010) noted that only 5 of the 22 studies even mentioned the interrelation of morphology and phonology. Bowers and Kirby (2010) was the only study here to use the matrix and the word sum.

**Word level instruction that reflects interrelation of morphology, etymology and phonology from the beginning for all ages and abilities**

Model of Orthography from Real Spelling

Kirby, Bowers (2017)

Learners deserve instruction that represents how their writing system works.

The phonology-first hypothesis is reflected in Adam’s (1990) quote at left. It posits that children need to be taught about grapheme-phoneme correspondences before other aspects of language like morphology. The studies cited below that a decade later failed to test the hypothesis at all as they made no mention of the need for research about morphological instruction that would be needed to test that hypothesis.

**Meta-Analyses of Morphological Instruction**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Findings</th>
<th>Journal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reed (2008)</td>
<td>Benefits overall</td>
<td>Learning Disabilities Research &amp; Practice</td>
</tr>
<tr>
<td>7 studies</td>
<td>Especially less able (not statistical meta-analysis).</td>
<td></td>
</tr>
<tr>
<td>22 studies</td>
<td>Largest effect for less able</td>
<td></td>
</tr>
<tr>
<td>Effects for Pre-School to Gr. 2 (Gr. 3-8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corlisle (2010)</td>
<td>Benefits overall even with younger students</td>
<td>Reading Research Quarterly</td>
</tr>
<tr>
<td>16 studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goodman &amp; Ahn (2013)</td>
<td>Benefits overall</td>
<td>Scientific Studies of Reading</td>
</tr>
<tr>
<td>50 studies</td>
<td>Significant differences in effects for English speaking students for MA, PA, Vocabulary, decoding, spelling (not PCR)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Larger effect sizes with younger students</td>
<td></td>
</tr>
</tbody>
</table>
A common concern about SWI is the result of a misunderstanding that it reduces explicit instruction of grapheme-phoneme correspondences. Actually, this is central to any instruction of orthographic phonology that is a requirement of any instruction validly called “structured word inquiry.”

If this concern were valid, it would predict that including morphology from the start would reduce literacy learning compared to instruction that focused on phonology first. That hypothesis not supported by the meta-analyses results.

This concern would also predict a lowering of phonological awareness when morphological instruction is included. In direct contrast to that hypothesis, Goodwin & Ahn’s (2010; 2013) found the opposite. Phonological awareness measures gained the most in the context of interventions that included morphology.

The Devonshire et al. (2013) also counters the phonology first hypothesis.

The “synergistic relationship” Goodwin & Ahn (2013) describe below reflects the data better than the phonology-first hypothesis. It also reflects the inherent interrelationship we see in the model of orthography as presented by Real Spelling. It also reflects the “binding agent theory of morphology” (Kirby & Bowers, 2017) in the triangle model with morphology in the middle. That theory builds on Perfetti’s (2007) “Lexical Quality Hypothesis”. That theory and cognitive load theory (represented by the “bound schema image”) also depend on the interrelation of items in a complex system. By contrast, phonics rips phonological aspects of orthography outside of the orthography system - thus negating its inherent nature in the context of an integrated system.

Structured Word Inquiry in Research

Phonology-first hypothesis

Goodwin and Ahn (2010, 2013):
Phonological outcomes had the greatest effect sizes in both meta-analyses. Morphological awareness had the second greatest effect.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Goodwin &amp; Ahn, 2010 Literacy difficulties</th>
<th>Goodwin &amp; Ahn, 2013 All students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonological awareness</td>
<td>0.69</td>
<td>0.48</td>
</tr>
<tr>
<td>Morphological knowledge</td>
<td>0.40</td>
<td>0.44</td>
</tr>
<tr>
<td>Phonological recoding</td>
<td>0.54</td>
<td>*</td>
</tr>
<tr>
<td>Decoding</td>
<td>0.23</td>
<td>0.59</td>
</tr>
<tr>
<td>Spelling</td>
<td>0.20</td>
<td>0.30</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>0.40</td>
<td>0.34</td>
</tr>
<tr>
<td>Fluency</td>
<td>-0.28</td>
<td>-0.05</td>
</tr>
<tr>
<td>Reading comprehension</td>
<td>0.24</td>
<td>0.09</td>
</tr>
</tbody>
</table>

* Not analyzed

Devonshire, Morris, & Fluck (2013)

- 5 to 7 year-old students
- Explicit instruction of Morph., Etym., Phon. vs Phonics
- 120 students in public schools in UK
- “The novel intervention significantly improved the literacy skills of the children including both word reading and spelling compared with the phonics condition.”
Guiding Principles of Structured Word Inquiry

The primary function of English spelling is to represent meaning.

The conventions by which English spelling represents meaning are so well-ordered and reliable that spelling can be investigated and understood through scientific inquiry.

Scientific inquiry is necessary to safely guide spelling instruction and understanding.

Scientific inquiry is the only means by which a learning community can safely accept or reject hypotheses about how spelling works.

Guides and some basic terms for Structured Word Inquiry


Go to www.realspelling.fr to download the Real Spelling Gallery that is full of remarkable rich film tutorials. Explore the “Morphology Album” to learn more about these and many other terms and concepts. The film on “Connecting Vowel Letters” is a particularly rich way to make sense of this term that is absent most teacher resources. I encourage you to offer a fair payment on the “Benefaction” button for this amazing resource. But feel free to download first to see what it is. This is a reference that you can learn from for the rest of your career.
What words are in the middle?

Etymological and Morphological Relatives

**mode**

L. mod(us) "measure, extent, quantity; proper measure..."

<table>
<thead>
<tr>
<th>Total</th>
<th>Mean (average)</th>
<th>Median</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>30 ÷ 5 = 6</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

Above is an image of work a kindergarten student did for fun at home to explain to her parents what she had learned about the word <medieval>. Note that she used <play> and <playing> to model word structure. See this and other stories in WW Newsletter #81 HERE.

Click HERE for a video of Pete walking through the concepts of morphological and etymological families with this document.

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**Etymological family**

All the words within the oval (including those represented by the matrix) are in the same *etymological family* because they share the Latin root ‘medi(us)’ with the sense of “middle, between”.

*Note that <mode> is not in the circle (etymological family) because it has a different root.*

- See how the words <middle> and <median> can share a meaning *without sharing a base*?
- When you understand the math concepts of <median>, <mean> and <mode>, why does it make sense that <median> and <mean> are related by a family that has to do with the idea of “between, middle” but <mode> is NOT related?
- Which sense, *extent, quantity or proper measure*, do you associate with the math concept of “mode”?

**Morphological family**

The words represented by the matrix with the bound base <medi> share not only that same *root*, but they also share the same *base element* spelled <medi>. To test whether a word belongs in this matrix, ensure that is has the same root, and then construct a word sum linking to the base <medi>.

- When you understand the math concepts of <median>, <mean> and <mode>, why does it make sense that <median> and <mean> are related by a family that has to do with the idea of “between, middle” but <mode> is NOT related?
- Which sense, *extent, quantity or proper measure*, do you associate with the math concept of “mode”?

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*Italian medi(um) "middle, between"*

*Latin medi(us) "middle, between"*

*French milieu (as in “average”)*

*meridian*

*mode*

*mean*
This image from a Grade 1 class at Nueva helps remind us that when we are reading English text, we don't see “roots” of words, but we do see “bases” of words represented. We need to dig beneath the surface into the history of words in an etymological reference like Etymonline.com to see where a current English word derived from. When I draw a model of this, I often show a root popping above the ground to signal that sometimes we do happen to see roots that are actually non-English words that we use as though they are English. For example look at this entry for the word <vacuum> in Etymonline:

**vacuum (n.)**
1540s, "emptiness of space," from Latin vacuum "an empty space, vacant place, a void," noun use of neuter of vacuus "empty, unoccupied, devoid of," figuratively "free, unoccupied," related to vacare "be empty" (see vain).

Notice that the entry <vacuum> that we do read in English texts uses exactly the same spelling as the Latin root that is cited in italics ‘vacuum’. This means that when we use this word we are using it as a loan word from Latin. This also explains the surprising <uu> sequence. This is not an exception to the convention that “no English word uses <uu>, as this is not an English word!
### Synthetic Word Sums

<table>
<thead>
<tr>
<th>Substructure</th>
<th>Surface Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>spring</td>
<td>spring</td>
</tr>
<tr>
<td>care + ful + ly</td>
<td>carefully</td>
</tr>
<tr>
<td>spell + ing</td>
<td></td>
</tr>
<tr>
<td>cute + er</td>
<td></td>
</tr>
<tr>
<td>cut + er</td>
<td></td>
</tr>
<tr>
<td>act + ive + ity + es</td>
<td></td>
</tr>
<tr>
<td>busy + ness</td>
<td></td>
</tr>
<tr>
<td>busy + body</td>
<td></td>
</tr>
<tr>
<td>graph + eme + ic</td>
<td></td>
</tr>
<tr>
<td>phone + o + log + y</td>
<td></td>
</tr>
<tr>
<td>un + heal + th + y + ly</td>
<td></td>
</tr>
<tr>
<td>nate + ure + al + ly</td>
<td></td>
</tr>
</tbody>
</table>

### Analytic Word Sums

<table>
<thead>
<tr>
<th>Surface Structure</th>
<th>Substructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>reach</td>
<td>→</td>
</tr>
<tr>
<td>react</td>
<td>→</td>
</tr>
<tr>
<td>does</td>
<td>→</td>
</tr>
<tr>
<td>pliers</td>
<td>→</td>
</tr>
<tr>
<td>duckling</td>
<td>→</td>
</tr>
<tr>
<td>spilling</td>
<td>→</td>
</tr>
<tr>
<td>rightfully</td>
<td>→</td>
</tr>
<tr>
<td>logically</td>
<td>→</td>
</tr>
<tr>
<td>disruptive</td>
<td>→</td>
</tr>
<tr>
<td>assistance</td>
<td>→</td>
</tr>
<tr>
<td>sisterhood</td>
<td>→</td>
</tr>
<tr>
<td>bookkeeper</td>
<td>→</td>
</tr>
</tbody>
</table>

### Videos of teachers and students spelling out word structure with word sums and working with matrices

- The word sum is the basic linguistic tool for analysis of morphological word structure. See Real Spelling tutorial films on this topic and so much more [here](#).
- Visit the [WordWorks YouTube page](#) for many videos illustrating and integrating spelling-out word structure into everyday instructional practice.
- See a [Skype tutoring session](#) with a Grade 2 student using spelling out of word structure with word sums and the matrix.
Orthographic etymology: diachronic and synchronic influences on spelling

Synchronic etymology: The words above illustrate two ways spelling has evolved to mark meaning with spelling. They are spellings that evolved at the same time (synchronic) to (1) mark connected meanings with connected spellings or (2) distinguish words with no meaning connection but the same pronunciation with different spellings -- “the homophone principle”.

Orthographic etymology: diachronic and synchronic influences on spelling

See examples of synchronic etymology above and an example of diachronic etymology described below.

Learn more about etymology and how it helps understand the spellings of the words from the examples below from the tutorial films in the “Orthographic Etymology” folder in the Real Spelling Gallery. Gina Cooke’s LEX resources and LEXinars are another rich source for understanding orthographic etymology.

Morphology, etymology and phonology: The slide immediately above and left illustrates the structure of a morphological family as revealed by a matrix and word sums. It also shows how that structure interrelates with phonology. Note the varied pronunciation of the base <struct> depending on the word. The pronunciation shift of the <t> grapheme is shown with the grapheme chart. Not only does working with matrices and word sums help us make sense of the morphology and meaning of words -- it helps us understand the grapheme-phoneme correspondences.

All of words in the <struct> family derive from the Latin Root stru(ere) for “to build”. Diachronic etymology marks connections of meaning and spelling across time (diachronic) back to an etymological origin (root).
The word matrix represents members of an orthographic morphological family. Such word families share a connection in both structure and meaning. (Real Selling tutorial films on morphology here.)

- **structure**: common underlying spelling of the base
- **meaning**: common ultimate etymological origin of the base

Inclusion of a word in a matrix is tested with a word sum. The word sum isolates the constituent morphemes (bases and affixes) on one side of the rewrite arrow (marking all morphological suffixing conventions) and on the other, the realized surface structure of the word.

An “echo” of the denotation of the root meaning of the base of any word represented by a matrix can be detected in the connotation of that realized word. The denotation of the root meaning of a word is checked with an etymological reference (e.g. etymonline.com).

### Word Sums (examples listed by pronunciation of base)

<table>
<thead>
<tr>
<th>base spelled</th>
<th>base pronounced</th>
<th>Word Sums (examples listed by pronunciation of base)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>&lt;quest&gt;</em></td>
<td><em>/kwɛstʃ/</em></td>
<td><em>quest + ion</em> → <em>question</em></td>
</tr>
<tr>
<td></td>
<td><em>/kwɛst/</em></td>
<td><em>quest + ion + able</em> → <em>questionable</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>in + quest</em> → <em>inquest</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>con + quest</em> → <em>conquest</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>re + quest + ed</em> → <em>requested</em></td>
</tr>
</tbody>
</table>

### Word Sums (examples listed by pronunciation of base)

<table>
<thead>
<tr>
<th>matrix</th>
<th>base spelled</th>
<th>base pronounced</th>
<th>Word Sums (examples listed by pronunciation of base)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>do</em></td>
<td><em>&lt;do&gt;</em></td>
<td><em>/duː/</em></td>
<td><em>do + ing</em> → <em>doing</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>/dʌ/</em></td>
<td><em>do + es</em> → <em>does</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><em>do + ne</em> → <em>done</em></td>
</tr>
</tbody>
</table>
Is <does> really an irregular spelling?

Typically instruction leads children to believe that <does> is one of many irregular spellings they have to memorize. In contrast, the word <goes> is treated as regular.

See how the matrix and word sums below make sense of these spellings by providing a concrete representation of the interrelation of structure and meaning of the <do> and <go> word families.

```
A morphological matrix for <do> and <go>

<table>
<thead>
<tr>
<th></th>
<th>do</th>
<th>ing</th>
<th>go</th>
</tr>
</thead>
<tbody>
<tr>
<td>ing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>es</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ne</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

With these linguistic tools, children can be introduced to <does> as an ingenious spelling because it marks its meaning connection to its base <do> with a consistent spelling. The spelling structure of these word families is a brilliant opportunity to show children why it is useful that most letters (graphemes) can represent more than one pronunciation. Only in this way could the spelling of <do> and <does> use the same spelling of the base!

Instead of adding it to a list of irregular words, teachers who understand morphology can use the spelling of a word like <does> to introduce children to the ordered way their spelling system works.

“Teachers who consider English a chaotic and unprincipled writing system likely foster a similar view among their students. Such pupils may not look for patterns in the system because they believe that few exist to be discovered. Teachers who appreciate the writing system can help students find its patterns, fostering a positive attitude about spelling”

Treiman and Kessler (2005, p. 133)

Links to Structured Word Inquiry Videos

Click [here](#) for a tutorial video showing how beginners can use the Word Microscope to guide an investigation through a stud of the word <discovery>.

Click [here](#) for an inspiring video on Lyn Anderson’s “Beyond the Word” Blot. It shows 5-year-old students investigating the word <carnivore> and some of its surprising relatives in Etymonline.

Click [here](#) for a video of a pre-school class investigating the morphological word family of the base <rain> with a word web.

Click [here](#) for an inspiring video / post from a Grade 5 public school with students describing their experience learning through structured word inquiry. See a WW Update on this post [here](#).

Click [here](#) to see Etymonline author Douglas Harper discuss an investigation with Pete linking <spice> with many surprising relatives. So rich!

Click [here](#) for a Grade 7 student explaining his understanding of the political world through linguistic analysis of the word <dissent>.

- Explore a bank of videos of structured word inquiry in classrooms at this [YouTube page](#).
- See the process of SWI investigations (inc. videos) at [THIS NEW ARCHIVE](#).
Links & Resources

**Wordworks:** [www.wordworkskingston.com](http://www.wordworkskingston.com)
Free resources, images, video clips and descriptions of this instruction in action around the world.

- **YouTube videos** of structured word inquiry in practice.
- **WordWorks Newsletter:** Email us at [wordworkskingston@gmail.com](mailto:wordworkskingston@gmail.com) to receive our free Newsletter with updates, Word Detective Episodes and frequent extra resources. See a recent example [here](http://www.wordworkskingston.com).
- **Teaching How the Written Word Works** (Bowers, 2009). This book builds on my 20 session intervention study (Bowers & Kirby, 2010) in Grade 4 and 5 classes. The lessons with the <sign> and <move> matrices are from that book. [Email Pete](mailto:wordworkskingston@gmail.com) to order a copy.

**Real Spelling** [www.realspelling.fr](http://www.realspelling.fr)
This is not a spelling program or teaching approach. It a reference that explains how English spelling works. Find many free resources and also excellent resources and [on-line courses](http://www.realspelling.fr).

**LEX: Linguist-Educator-Exchange** (Get LEX grapheme cards here)
This excellent blog by Gina Cooke with resources and on-line courses for educators who want to make sense of the linguistic structure of words.

**Real Spellers:** [www.realspellers.org](http://www.realspellers.org)
This website by Matt Berman (Grade 4 teacher at Nueva School in Hillsborough, California) is an excellent site for resources and spelling discussions from teachers around the world.

**Beyond the Word:** [www.wordsinbogor.blogspot.ca](http://www.wordsinbogor.blogspot.ca)
Lyn Anderson’s brilliant blog specializing in SWI in the early years.

**Rebecca Loveless:** [www.rebeccaloveless.com](http://www.rebeccaloveless.com)
Rebecca is a teacher, tutor, education consultant who is an expert in SWI in the Bay Area.

**Language InnerViews for Educators:** [www.languageinnerviews.com](http://www.languageinnerviews.com)
Scott Mills excellent new website including interviews with language experts, rich SWI posts and resources for sale.

**Emily O’Connor:** [www.advantagemathclinic.com](http://www.advantagemathclinic.com)
Emily is both a math and orthography expert. See here Truer Words decks and explore her blog and courses. Wonderful!

**On-line Structured Word Inquiry Tools:**

**The Word Searcher:** A key [free tool](http://www.WordWorksInternational.com) for collecting words according to surface patterns so that word scientists can investigate the substructure of words. This is an invaluable tool for your spelling investigations.

**Mini Matrix Maker:** A [basic tool](http://www.WordWorksInternational.com) for typing word sums and turning them into matrices. See a “how to video” at this [link](http://www.WordWorksInternational.com).

**Sound Literacy:** This [app](http://www.WordWorksInternational.com) for the iPad that offers tools for investigating morphemes and graphemes with word sums and matrices. The creator, Kathy Penn revised this tool after attending a summer course with me and has studied with Real Spelling for years. Her [blog](http://www.WordWorksInternational.com) is exceptional too!

**Teacher Blogs with Videos, Investigations etc:**

- [Dan Allen’s Grade 5 Blog](http://www.WordWorksInternational.com)
- [Ann Whiting’s Grade 7 Blog](http://www.WordWorksInternational.com)
- [Skot Caldwell’s Grade 4/5 Blog](http://www.WordWorksInternational.com)
- [Mary Beth Steven’s Grade 5 Blog](http://www.WordWorksInternational.com)
- [Jen Munnerlyn’s Literacybytes Blog](http://www.WordWorksInternational.com)

**Some References**


