

Optimizing Word Study with VocabularySpellingCity®

A word study interface for the word "check". The word is displayed in a grid with "ch", "ee", and "k" in separate boxes. Below the grid are four buttons: "Spelling", "Syllables", "Sounds", and "Context".

A word study interface for the word "haste". It features a cartoon cow character and a list of words categorized by syllable count. The "1 Syllable" category contains the word "haste". The "2 Syllables" category contains the words "crumble", "bombard", and "muscle".

A word study interface for the word "bell". The word "bell" is displayed in a yellow box. Below it are four image boxes: a wave, a vest, a pigeon, and a ladder. A hand cursor is pointing at the pigeon image.

Sentence Writing Practice

List: Within Word Patterns
Write a sentence for each word.

Word	Write your sentence below:
glass	My glass fell and broke.
whale	A whale is a mammal.

Done

The Affordances of VocabularySpellingCity Technology: Meeting Research Based Practices for Word Study Instruction

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Abstract

An integral aspect of any well-designed literacy program is word study. Word study is the integration of spelling, phonics and vocabulary instruction. (Bear 2012). In a sense, word study teaches learners how to look at words so that they can construct an understanding of how written words work. Word study meets the Common Core Standards and Reading Foundational skills which require students to understand spelling patterns of words, phonics and vocabulary. Word study facilitates reading comprehension. Comprehension and making meaning are the overarching goals of all pillars of literacy practices. (Taberski, 2010).

This study overviews research based practices for learners' word study development and identifies six key word study components. Researchers explored how the Words Their Way®* developmental model and VocabularySpellingCity® can be used in conjunction to achieve these research based best practices. This approach transforms the students' literacy learning experience with available technology tools to achieve desired educational outcomes.

Research Rationale

In schools, there is a high degree of emphasis placed on developing the literacy skills of students as literacy is the key to success in all academic disciplines. For example, in order to understand science concepts, students must know how to effectively engage with a science text. In order to develop fully as a reader and understand text, it is absolutely dependent on fast, accurate recognition of words and their meanings, and fast, accurate production of words in writing. This ensures that readers and writers are fluent and confident in the process of creating the understanding of what a text is intended to convey. Comprehension and making meaning are the overarching goals of all pillars of literacy practices in education. (Taberski, 2010). Letter-sound correspondences, phonics, spelling patterns, high-frequency word recognition, decoding, word meaning, and other attributes are the basis of written knowledge. An integral aspect of any well-designed literacy program is word study. Word study is the integration of spelling, phonics and vocabulary instruction. (Bear 2012). Specifically, a wordstudy program explicitly teaches students the necessary skills and engages students' interest and motivation to learn about how words work.

In a sense, word study teaches learners how to look at words so that

they can construct an understanding of how written words work. Learners need hands-on opportunities to manipulate word features in a way that allows them to generalize beyond isolated, individual examples to making connections across entire groups of words that are spelled with the same pattern. Excelling at word recognition, spelling, and vocabulary is more than memorizing isolated rules and definitions. The best way to develop fast and accurate perception of word features is to engage in meaningful reading and writing, and to have multiple opportunities to examine those same words both in and out of context. The most effective instruction in phonics, spelling, and vocabulary links word study to the text being read, provides a systematic scope and sequence of word level skills, and provides hands-on practice and application.

The purpose of word study is twofold. First, through active exploration, word study teaches learners to examine words and discover the regularities, patterns, and conventions of words. For example, when an early reader first examines word families, they start to understand that the initial sound in the word "cat" changes when a "b" is exchanged for a "c". They build connections and apply the word pattern "at" to create a new word "bat". Second, word study helps facilitate reading fluency and vocabulary development of words. When words are examined for patterns, students begin to recognize the patterns at first glance, enabling them to read the word automatically and without challenge. When word reading is quick and easy, the cognitive load can shift from word recognition to focusing on understanding the content of what is being read. Thus, word study facilitates the development of comprehension.

In order to provide some context for what is exactly "word study," it is helpful to articulate what traditional

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spelling instruction has typically been present in the elementary school experience. Traditional spelling practices have a single set of words for the class that is given by the teacher to all students. Each set of words is determined not by level of readiness of the student, but by grade level standards or curriculum.

Children are generally taught by a particular rule such as, “when two vowels go walking, the first one does the talking.” Students are taught these words in isolation and as a separate subject area of the school day. Children often are assigned activities such as “rainbow words” that have students copying and rewriting the words in different colors or completing spelling workbook pages. Words Their Way attempts to modify these instructional practices to word study that incorporates spelling patterns with meaning in context. This is done through a developmental approach as students progress along a continuum.

Affordances

This article describes research based instructional practices and the connections between the Words Their Way model and VocabularySpellingCity’s affordances for word study instruction. For the purposes of this article, affordances are defined as the value-added characteristics and learning opportunities that are enhanced or would otherwise not be possible without the educational technology tool (O’Brien & Voss, 2011; Beach & O’Brien, 2012). Affordances are the particular capabilities that a tool is designed for or the potential uses the educator envisions. First we will explore the key components in research based practices for word study. Then we will investigate the key components in research based practices for word study within the Words Their Way model and through the affordances of VocabularySpellingCity’s educational technology tool. Beyond this, we uncover the value-added affordances

of learner engagement and teacher efficiency in word study when the VocabularySpellingCity’s tool is used in conjunction with the Words Their Way model.

Words Their Way

Words Their Way is a research based developmental model (Henderson, 1990; Templeton & Bear, 1992; Templeton & Morris, 2000). It provides an instructional framework that has students’ progress along an orthographic continuum. This continuum outlines the developmental progression: alphabetic principles, consonant sounds, short vowel sounds, consonant blends and digraphs, long vowel spelling patterns, rcontrolled vowels, more complex consonant patterns, diphthongs and less common vowel patterns, inflectional endings, syllabication, homophones, consonant alternations, vowel alternations, affixes and root words and etymologies.

An initial student spelling inventory (assessment) of words places students in an orthographic developmental stage category for study based on their demonstration of word pattern mastery. Students develop an understanding of word patterns, the exceptions to the rules and the systematic phonics embedded in spelling patterns through word sorts. Word sort activities facilitate cognitive processes of comparing and contrasting features of words into categories. Learners “examine, discriminate and make critical judgements about speech sounds, spelling patterns, and meanings” (Bear et al., 2012, p. 2). A word sort contains a group of words with specific patterns, such as vowels or blends or meanings, that students categorize based upon feature similarities and differences. The Words Their Way continuum model is a series of word sorts divided into four categories of orthographic stages. Word sorts from all orthographic developmental stages

include spelling by regular patterns and irregular spelling patterns, often referred to as “oddball” words.

Words Their Way instruction should include meaningful explicit instruction, for example, explaining that a certain vowel pattern in words can be seen and heard through modeling how the sounds are different. The letter “a” in the word “cake” does not make the same sound as the letter “a” in the word “cat”. Word study should have group and individual work, as well as embedded practice. For example, students in a word study group could work to do the initial identification of the word pattern in a group of words, and then apply the words to their own individual sentence writing. Also, when students make pattern and word connections within their readings, this helps them recognize their words in context throughout the learning day.

The Words Their Way continuum is a series of sorts divided into four categories of orthographic stages. The “Letter and Picture” sorts for emergent spellers use demonstration, sorting, checking, reflecting aloud and writing activities. The ‘Within Word Patterns’ sorts have transitional readers contrast long and short vowels, notice grammatical and semantic features, diphthongs, ambiguous vowel sounds, complex consonants, consonant clusters, contractions, inflectional ending and homophones. In the “Syllables and Affixes” sorts, there are multi-syllabic words, consonant doubling, plural endings and basic prefixes or suffixes. Students discover spelling generalizations of comparable syllable juncture features and patterns. In the “Derivational Relations” sorts, students must be advanced readers and writers. Sorts include base words, root words, prefixes, suffixes, word origins and word spelling relationships.

The major benefit of the Words Their Way model is that it provides

systematic, explicit instruction of word patterns. However, in order to make this happen, it is necessary to assess each child in a class, and identify which word sort is appropriate for him/her from the orthographic continuum, prepare and provide activities for working with the words each week. This can be a daunting and extremely time consuming administrative task for most classroom teachers.

VocabularySpellingCity

VocabularySpellingCity is an educational technology tool designed to support the learning of words and their meanings. The delivery of the support includes a website application and an app for mobile devices making it virtually platform agnostic. There is a free version of the tool and a subscription service. There are spelling, vocabulary, writing and language arts activities for K-12 crosscurricular word study. The site has many features to promote engagement in word study and aims to save educators time.

VocabularySpellingCity can automate the delivery of word study learning activities, spelling tests and provide immediate feedback about the student performance to guide datainformed instruction. "VocabularySpellingCity aspires to provide students with engaging games to motivate study and promote academic success," (Retrieved from <http://www.spellingcity.com>). Beyond this, this research study sought to uncover what value-add the tool could provide not in terms of time or engagement, but which research based practice in word study could it ameliorate.

Findings

In attempting to discern research based practices for word study, we conducted a review of the relevant research literature. Employing the research information gathered in the literature review we utilized a data analysis strategy called open

coding. Through the data coding process we identified six key components for vocabulary, phonics and spelling instructional practices. Figure 1 outlines our coding process and findings, followed by examples and citations.

Systematic instruction

Systematic instruction is teaching that strategically and intentionally builds upon prior knowledge from simple to complex concepts. Systematic instruction is designed prior to lesson planning and learning activity creation. Systematic instruction in balanced literacy works across the literacy components (phonemic awareness, phonics, fluency, vocabulary, and comprehension).

Bear, D. R., 2000, Neuman, S. B., & Wright, T. S., 2013, Harris & Hodges, 1995; National Institute of Child Health and Human Development, 2000.

Explicit/direct instruction

Explicit instruction is concise and delivered directly from the teacher with the learners as active participants. Explicit instruction is often provided to whole or small groups.

Although it incorporates strategic routines, it should not be confused with skill and drill type instruction.

National Institute of Child Health and Human Development, 2000; Bear, D. R., 2000; Neuman, S. B., & Wright, T. S., 2013; Tomeson & Aarnoutse, 1998; White, Graves, & Slater, 1990; Dole, Sloan & Tratthen, 1995; Rinalid, Sells, & McLaughlin, 1997.

Making connections (patterns and/or meaning context)

Making connections creates links among concepts, skills, experiences in the learner's brain and is at the core of cognitive activity and brain development. Individual learners will make meaning through the establishment and reworking of patterns, relationships and connections. An example of making connections is I read a text and it reminded me of something I once did, therefore, I understand.

National Institute of Child Health and Human Development, 2000; Bear, D. R., 2000; Neuman, S. B., & Wright, T. S., 2013; Woolfolk, A., 1998; Ewell, P. T., 1997.



Figure 1: Six Key Word Study Components

Repeated exposure

Learners must have the opportunity to use words repeatedly in a variety of contexts and situations to move beyond simple understanding to meaning making with word study. Repeated exposure facilitates the development of background knowledge leading to learners making connections to the word in real-world contexts. When repeated exposure is an embedded part of word study instruction learners ability to recall word patterns and meanings quickly for use in reading and writing is increased. The more a student uses a word, the more embedded it becomes in their literacy practices.

National Institute of Child Health and Human Development, 2000; Bear, D. R., 2000; Neuman, S. B., & Wright, T. S., 2013.

Comprehension of material read silently or orally

The most powerful piece of reading is the understanding of the text, it is the primary goal of all reading. Reading the phonemes (examples: /h/, /a/ or /t/; the smallest unit of sound in speech) of letters without comprehension is simply being able to articulate the sounds of the letter symbol. Readers that effectively make meaning are truly engaged in texts with the ability to apply the information the text contains to other learning or life situations. Looking at how a child spells and the patterns that emerge as that child first begins to “invent” the ways that the letters and sounds are coded into the child’s writing can give teachers timely information about what phonics or vocabulary skills are needed that would move the student forward in their reading and writing. (Bear 2012). It should be noted that the teaching of the phonetic rules of words is a tool for the ultimate goal of understanding what is written. (Zemelman 2012).

Bear, 2012; National Institute of Child

Word Study Outcomes		WTW	VSC
1.	Systematic Instruction	✓	
2.	Explicit Instruction	✓	
3.	Making Connections	✓	✓
4.	Repeated Exposure	✓	✓
5.	Silent and Oral Comprehension		✓
6.	Oral Reading of Connected Text		✓

Figure 2: Words Their Way and VocabularySpellingCity Word Study Outcomes

Health and Human Development, 2000; Zemelman, 2012.

Oral reading of connected text (accuracy)

Hearing the words aloud in reading is also identified as one of the research based practices for teaching reading. (Zemelman, 2012). Seeing words in written form does not mean that students will accurately be able to articulate or pronounce them. Students often will see a word, not recognize it in written expression and not until it is read aloud does the connection of the meaning occur. The hearing of words, especially in the context of a sentence, when a student can understand the clues that surround the word, help increase the understanding of what the word means.

National Institute of Child Health and Human Development, 2000; Zemelman, 2012.

Current research does not account for how practitioners can effectively implement these word study practices in classrooms where technology tools are ubiquitous. Using these six components of word study as a frame to our investigation, we explored the features of Words Their Way and the affordances of the VocabularySpellingCity technology tool. Figure 2 outlines our findings.

We found that the most important way that the tool of VocabularySpellingCity

can be used is in the ease of administration of Words Their Way developmental word study model. VocabularySpellingCity is not part of a Words Their Way model; it is a transformative educational technology tool. VocabularySpellingCity has (with a paid subscription) the Words Their Way systematic word lists preloaded into the program.

Synergy of Words Their Way and VocabularySpellingCity

Practitioners cannot effectively address all of the key components in research based practices for word study as a stand alone. Our findings, represented in Figure 2, conclude that it is only when Words Their Way is used in synergy with the technology affordances, like those designed in the resource VocabularySpellingCity, that optimal word study practices occur.

Words Their Way can be used without VocabularySpellingCity, but the technology affordances add great value. The conjunction of the two programs makes learning about words a much more engaging and efficient process for both students and teachers. In addition, and quite importantly, VocabularySpellingCity’s affordances in the delivery of Words Their Way developmental model provides the audio format for hearing the words. Furthermore, the words are represented auditorily

in sentences which provides the verbal pronunciation and the meaning and context of the words. Students can hear words to develop understanding in terms of how the words should be used.

VocabularySpellingCity also has writing activities which enable students to actually *create* the contextual meaning for the words in their developmental sort. This is most critical for students to develop deeper meaning of the words as generated by context that is relevant to their own particular frames of reference.

Traditional paper and pencil program approaches to word study do not provide a component for students to hear aloud an example of words, except in the teacher's initial explicit instruction. Once the explicit instruction is complete, the students work with the words in groups or independently. This leads to many opportunities for students to incorrectly pronounce or articulate the words. When repeated articulations are incorrect, the errors become fossilized and more challenging to correct. Essentially, without an oral/audio component in the instruction and practice, the words are rendered into a two dimensional object, rather than a rich representation of meaning both in written and spoken context.

With VocabularySpellingCity, the delivery of Words Their Way model of systematic instruction becomes extremely efficient as the word lists are readily available and easily assigned to individual students. To fully understand the impact on word study of Words Their Way and VocabularySpellingCity in conjunction, consider the life cycle of a student's word work. A student's learning from using both Words Their Way and VocabularySpellingCity activities might look very different than a word study experience with only the paper/pencil options.

The teacher can assign words from the Words Their Way spelling inventory in VocabularySpellingCity. A student could be assessed on the orthographic continuum using the "Test Me" feature. The inventory is quickly administered and independently completed. The results are immediately processed for both the student and the teacher. Both the student and teacher are aware of the results. The traditional paper and pencil approach often takes 45 minutes of student class time and about three hours of teacher time to complete the correcting of the inventory assessment and assigning of word sort lists. This process of assessing, determining appropriate levels and assigning word sorts is a very short life cycle compared to how the paper and pencil process might work. The tools in VocabularySpellingCity affords students to be working with words at the correct developmental level more quickly, more often, with more performance feedback.

In a traditional Words Their Way model, the teacher would need to create paper copies of the particular word sorts for each student. In any given classroom, there might be as many developmentally different levels of word sorts as the number of students in the class. Most teachers become overwhelmed at the management of six or more different groups of paper word sorts and appropriate activities, and therefore create four to six groups of different word sorts. In essence, it is better than a traditional single spelling list, but no where near the personalized level of instruction available with VocabularySpellingCity's affordances.

Next, in a paper/pencil model a student would have a notebook or paper packet of activities to complete using the word sorts assigned to them. The teacher would need to make individual paper copies for each student and then distribute the paper copies with the designated practice activities.

This developing and distributing process often consumes several hours each week, generates a paper storm and is wasteful with human, financial and ecological resources. Traditional Words Their Way instruction, although research based and effective, is a massive undertaking even for the most organized of educators. With VocabularySpellingCity, the words are assigned to the student in a click of a button and the activities of working with the words are already developed in the tool, in full color and with highly engaging animation that also includes immediate feedback about their progress with the word sort list. The student sees and hears this information instantly and does not wait days for the teacher to check their sorts and listen to the student read the words aloud. This eliminates the habitual loss of the paper word sort cards, spelling the words inconsistently in practice packets of paper, or pronounce them incorrectly. The student is seeing the words, hearing the words and creating an understanding of the words. The teacher is then able to use the time saved on administration and enhance the explicit instruction of words and their meanings.

Implications

Moving beyond the snack of phonics and spelling, through the appetizer of vocabulary and into the meal's meat of word study, our research has indicated the following implications for embracing educational technology to reimagine literacy instruction.

This article aimed to uncover the research based components of word study instruction and the value added of teacher efficiency and learner engagement in word study when the VocabularySpellingCity's tool is used in conjunction with the Words Their Way model. We found that for the most effective instructional approach for word study learning, and in order to implement all six of the key components in research based practices for word

study, neither Words Their Way, nor VocabularySpellingCity in isolation are sufficient. We shared examples of how you can create engaging and efficient research based word study in your literacy program by using VocabularySpellingCity in conjunction with the Words Their Way model. Based upon our findings, we propose that it is when educators operate them in concert that the synergy of optimal conditions for word study learning occur. VocabularySpellingCity is a valuable technology resource that has the capacity to be paired with the Words Their Way approach to accomplish the goals of spelling, phonics and vocabulary instruction. As educational technologies emerge and evolve, it is essential to use a critical eye toward the specific tool affordances when making decisions about instructional practice. ■

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You may also be interested in:
West, L., & Nielsen-Winkelman, T. (2015). Improving Word Study: Moving Beyond Paper and Pencil to Transformative Educational Technology. *Literacy Special Interest: The Journal of ISTE's Literacy PLN*, 4 (2015), 3242. Retrieved from <http://www.scribd.com/doc/269916899/Literacy-SpecialInterestAnnualConference-Issue4June2015>

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