



“Student success hinges on vocabulary instruction, and learning content through inquiry can help.”

# Doubling Up

## *Authentic Vocabulary Development Through the Inquiry Process*

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Librarians have invaluable expertise in the school, with major roles in helping students to love reading, master information literacy skills, and successfully navigate research. These outcomes often overlap with the goals of the classroom teacher. It is not surprising that when librarians and teachers collaborate, even more powerful student learning and embedded information literacy learning can occur.

This article offers a strategy to develop rich, content-specific vocabulary through inquiry-based learning. The examples come from an exemplary high school, Westborough High School in Westborough, MA, where Guided Inquiry Design® (GID) was implemented in multiple subjects and courses over the past 4 years. GID is a research-based program for inquiry-based learning. Within this learning context, value-added collaboration abounds.

### DOMAIN-SPECIFIC VOCABULARY

Although librarians are not responsible for the literacy objectives of the Common Core State Standards (CCSS), keyword lessons provide opportunities to integrate literacy skills, content knowledge, and information literacy. By guiding and facilitating learning through inquiry, the classroom teachers and teacher librarian team saw increased vocabulary development in students. When students are guided to be intentional about keyword selection and development, they can search for pertinent information and synthesize and evaluate information with more ease.

The CCSS call for student development and use increasingly sophisticated vocabulary termed “domain-specific” (NGA & CCSSO, 2010a; see table 1). Do-

main-specific words move students beyond academic language into the realm of content-area expertise (see table 2).

#### CCSS.ELA-Literacy 9-10.6 and 11-12.6

Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. (NGA & CCSSO, 2010a)

**Table 1.** College and Career Readiness: Anchor Standards Vocabulary Acquisition and Use

As described in CCSS, students are required to learn much more sophisticated vocabulary than ever before in order to read increasingly complex texts in each discipline. Domain-specific vocabulary is a gateway to this level of reading, as it is key to understanding content. Student success hinges on vocabulary instruction, and learning content through inquiry can help.



## Tier 1: Everyday speech

- Words acquired through everyday speech, usually learned in the early grades—rarely taught

## Tier 2: General academic words

- Academic words that appear across all types of written text (informational, technical, and literary)
- ❑ Precise words that are used by the author in place of common words (e.g., *gallop* instead of *run*); change meaning with use

## Tier 3: Domain-specific words

- ❑ Specific to a domain or field of study. (e.g., *legislature*, *aorta*, *circumference*)
- ❑ Key to understanding content
- ❑ Typically included in glossaries, highlighted in textbooks, and addressed by teachers
- ❑ Low frequency requisite within the disciplines to be “fluent” in the subject area (NGA & CCSSO, 2010b, p. 33)

**Table 2.** Common Core Defines the Three Tiers of Vocabulary

## GUIDED INQUIRY AND VOCABULARY DEVELOPMENT

Beck, McKeown, and Kucan (2013), as well as Nagy and Townsend (2012), have shown that vocabulary is best learned in context when students have meaningful encounters with the words. So what defines a meaningful encounter with words? Beck and colleagues (2013) explain that a meaningful encounter includes the use of a word in thinking and conversation.

In an inquiry context, students have more opportunities to use content-specific vocabulary in conversations about their topic. For example, in guided inquiry, students converse with their teachers and one another about their

## YA FICTION

### WONDERFUL WORLD-BUILDING

Skye, Evelyn. **The Crown’s Game**. B&B, 2016. 416 p. \$17.99. 9780062422583. Grades 8 up. St. Petersburg in 1825 serves as a glorious backdrop for the tale of two teenage enchanters. When the Tsar realizes that his political problems require magical help, he calls for the Crown’s Game, a traditional duel to the death between those who can wield magic. Only two such enchanters exist in Russia. Confident Vika, who was raised on an island by a loving father, specializes in nature-based magic. Nikolai, an orphan from Kazakhstan, was adopted and trained in magic by a cold-hearted countess. His specialty combines magic and mechanics. When they begin competing with increasingly elaborate feats that turn the city into a wonderland, Nikolai falls in love with Vika as does his best friend, the Tsar’s son. This rich, dramatic novel wraps up with an intriguing, unexpected conclusion.

Reeve, Philip. **Railhead**. Switch, 2016. 352 p. \$16.95. 9781630790486. Grades 7 up. Teenage thief Zen Starling is a railhead. He loves to ride the trains of the Interstellar Express which travel quickly across the galaxy. He commits robberies in one solar system, then takes a train home to another, to his unhappy mother and sister in their cramped apartment. When a mysterious man called Raven hires Zen to steal a priceless object from the Emperor’s train, Zen is drawn into dangerous political dealings that lead to violence he didn’t foresee. He’s left not knowing if he can trust anyone: Raven? Zen’s new companion, a female android? the elusive Guardians who run the Empire? He barely has time to ponder his choices yet they might affect the future of everyone around him. With a well-crafted geography, history, government, and social structure, Reeve’s fantasy world is as convincing as it is exciting.

Hamilton, Alwyn. **Rebel of the Sands**. Viking, 2016. 336 p. \$18.99. 9780451477538. Grades 8 up. Amani Al’Hiza, 16, loves the desert where she feels invigorated and at home. An orphan, she finds the restrictive life for females intolerable in her small village, where her uncle wants to take her as one of his wives. She first tries to escape by competing in a sharpshooting contest but it erupts in violence just as she enters the final round, disguised as a boy. She ends up fleeing with a fellow contestant, Jin, a potential love interest, but one with troubling secrets. Despite dangers and grueling conditions as they cross the desert, Amani thrives on the adventure and challenge. When Amani and Jin encounter the followers of a prince who’s leading a rebellion against the tyrannical Sultan, Amani has to make critical choices about her future and how to use her increasingly powerful abilities. Evocative of the Arabian Nights tales and lyrical about the desert, this will delight fantasy readers looking for excitement and romance.

Hartley, A.J. **Steeplejack**. Tor, 2016. 336 p. \$17.99. 9780765383426. Grades 7 up. This first entry in the Alternate Detective series combines history and magic in a compelling mystery with a strong sense of place. Anglet Sutonga, 17, is the only female steeplejack in a large, seemingly South African city in the past. She’s expecting a new apprentice one day but he never shows up. When she sees his corpse on her way home, Ang has reason to believe he was murdered. At the same time, a prized magical artifact goes missing in the city. White politicians, not wanting to sully their hands, hire Ang to investigate both crimes. In their stratified society, whites have money and power, while the indigenous blacks have neither. Ang’s ethnic group falls in-between. Racial tensions, sexism, and corruption swirl around the novice detective as she follows clues and creates enemies who want her silenced. Original and exciting.

work using specific aids (inquiry tools), in pairs, small groups (inquiry circles), or whole-group discussions (inquiry community) (Kuhlthau, Maniotes, & Caspari, 2012).

This high school GID team saw that students' vocabulary was greatly impacted when intentionally developed throughout the phases of the inquiry process. The GID process includes three phases prior to identifying a topic or question for research. The sessions in these phases can be designed to heighten students' exposure to important vocabulary as the inquiry is opened and students become curious, immerse to gain background knowledge, and begin to explore (Kuhlthau, Maniotes, & Caspari, 2012).

In order to have conversations using content-specific words, the content-area teachers model the use of vocabulary and word knowledge during the Open phase of the GID unit. Academic words important for understanding content, possibly from the textbook or other instructional materials, are used in class discussions, for example, *apex* in math, *escarpment* in geography, and *isobar* in science. In the Immerse phase in GID, students continue to get exposure to academic vocabulary as they build content-specific background knowledge in a variety of ways (more on this topic can be found in GID resources).

### RICH AUTHENTIC LEARNING

Lessons where students discover and use content-specific vocabulary in the early phases of the inquiry naturally develop into rich authentic learning about keywords as a way to search for information as the inquiry progresses into research. The students' core and

DATE	KEYWORDS (Include Boolean operators— <i>and</i> , <i>or</i> , and <i>not</i> , when applicable)	<b>NOTES:</b> Document the bread-crumbs from your keywords to results. Include your notes about the searches. <i>What are you thinking now after this search?</i> <i>How was it useful?</i> <i>Why wasn't it useful?</i>

**Table 3.** Using Keywords for Effective Searching: Vocabulary Log  
Inquiry Question: [Student generated inquiry question]

extended vocabulary increases the more specific their research becomes.

Students authentically use increasingly more sophisticated keywords to do research when they dip into the content in Explore. Because the team recognized the importance of this timing, the keyword lesson, described below, was placed when the research begins in Explore in the GID process. At this point, students generally know their area of interest but have not yet identified their inquiry question. The inquiry units developed include embedded information literacy instruction where the focus is on two main strategies relating to keywords and are typically taught in the library:

1. How to find keywords
2. Using keywords to search for information

To begin this process of working with keywords, the intent was to create a worksheet that engaged students in intentionally finding, using, and speaking about the domain-specific words in the early phases of the inquiry. According to Beck and colleagues (2013), students must have 7–12 meaningful encounters with words before “owning” them. This resulted in daily work for students that included identify-

ing words in texts, synthesizing their meaning, and analyzing their inquiry topic while using domain-specific vocabulary.

The vocabulary log called “Using Keywords for Effective Searching” (see table 3) was created so that students would intentionally identify domain-specific words related to their interests and be able to use those words in conversation. This log also made transparent students' use of domain-specific vocabulary as they recorded the words they discovered and were using. Students used it to look back as they searched for different resources across the inquiry. This is much like the inquiry log that is used to track sources across the GID process. This form helped keep conversations with the students focused on the words they were learning (word acquisition), as well as on the process of finding, using, and compiling new keywords for more specific searches.

First, the librarian and teachers modeled the process of creating a keyword list (see table 4).

As the use of the log was introduced, the teacher and teacher librarian modeled their own thinking using the content of the inquiry research that

DATE	KEYWORDS (Include Boolean operators— <i>and</i> , <i>or</i> , and <i>not</i> , when applicable)	NOTES: Document the breadcrumbs from your keywords to results. Include your notes about the searches. <i>What are you thinking now after this search?</i> <i>How was it useful? Why wasn't it useful?</i>
9/14	Music therapy	Used for background knowledge Found a lot of general information, what it is
9/14	Music education and <i>musical skills</i>	Not what I am looking for
9/15	Music therapy and <i>mental disabilities</i> and <i>mental disorders</i>	Only a few results that didn't really relate to my interest in my topic
9/16	<i>Brain and brain development/growth</i>	Very general about the brain
9/23	Music therapy and <i>mental illness</i>	Useful for research about this topic
9/26	Music therapy and <i>rehabilitation</i>	I can now see what illnesses this relates to
9/27	Music therapy and <i>dementia</i>	I have decided to focus on dementia
9/28	Music therapy and <i>Alzheimer's disease</i>	This topic is more specific, and I am understanding the uses for music therapy in relation to brain disorders, specifically Alzheimer's disease

**Table 4.** Using Keywords for Effective Searching

Inquiry Question: What are the effects of music therapy on patients with various mental illnesses and disorders?

the students were currently engaged in through these steps:

1. Ask students to brainstorm a list of words that they think relate to their topic.

2. Librarian uses the “Keywords for Effective Searching” handout to model a search for students using a domain-specific vocabulary word that students have already been exposed to within the content (see table 3).

3. Think-aloud is modeled by the teachers and librarians using this example: How does this word relate to the topic? Is there another word that might make more sense? Should the search be combined with another keyword and a Boolean operator?

4. Once a search is performed, model skimming and scanning a paragraph from an article and respond to these questions while reflecting on the content: Are there content-specific words

that can be added to the keyword list? Next, model adding new words to the log.

5. As students conduct their own searches, they are instructed to add vocabulary to the handout, along with notes about their searching as the librarian and teachers modeled.

Students revise and complete their searches independently adding notes to the log for clarity (See table 4). They are instructed to leave all words on their list and to explain the usefulness of each keyword. They are also encouraged to show their thinking and use it as a “working document” (and not to see this as a final product).

### THE LEARNING PROCESS

Keyword development is a process. It tends to be ongoing, looks different for each student, and is not necessarily lin-

ear. Students came to understand that building a core list of keywords useful to research is a continual work in progress.

As students worked, the teachers and librarian were available for informal conferences or “just in time” instruction on keyword and vocabulary development with individual students. This also allowed for meaningful differentiated instruction. By using the log as a reference point in conferences, it became easy to redirect a student’s searching by referring to their keyword log and strategies that they had implemented so far. The log was then functioning as an opportunity for embedded information literacy instruction where students learned search strategies through conferences with the librarian and teachers throughout the process.

Furthermore, the content-area

teachers used this log as a resource for assessing students' use of domain-specific vocabulary. It also worked as formative assessment of information-literacy skill in use, as a way to see the progression of students' keyword development and usage over time. It provided a concrete example of the depth of their searching to date.

More sophisticated keyword searching helps students find the information they need and marks the beginning of individual meaning-making in inquiry. When researching, the process of refining keyword searches increased the use of academic and domain-specific vocabulary. In the two research phases of guided inquiry, Explore and Gather (Kuhlthau, Maniotes, & Caspari, 2016), students benefit from finding and using increasingly specific content-area words to search for ideas and information, first as they determine what they might be interested in researching and then once they decide their direction.

Students' vocabulary continues to extend through the guided inquiry process. Some students become aware of their vocabulary in use as they reflect in their journals. Other times, their awareness is heightened through the use of notecards as they gather information or in conversations with other students or the teacher and librarian. Students intentionally use keywords during conversation with peers and teachers as they reflect and gather information. The log helps them become aware of their use of domain-specific vocabulary.

Students use inquiry tools throughout to reflect on the information they are finding and how they are finding it. What is initially modeled for students quickly becomes comfortably integrated as they consistently use the

vocabulary throughout their interactions within the inquiry community. In guided inquiry, the inquiry tools used work together to ensure the students have the 7–12 encounters needed to solidify these words into their working vocabulary.

There is a strong connection between the literacy goal of increasing students' domain-specific vocabulary in all content areas and using keywords that support students' use of more sophisticated research strategies. This example shows that when librarians and teachers intentionally collaborate to guide student inquiry, even more powerful student learning and embedded information literacy learning can occur. Learning in the inquiry process gives students the authentic context to use vocabulary words for deeper and longer-lasting learning of content, literacy skills, and information literacy.

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