

What Is Academic Vocabulary?

James F. Baumann

University of Missouri-Columbia

Michael F. Graves

University of Minnesota, Emeritus

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Our original plan for writing this essay was to first define academic vocabulary and next to specify sources of and processes for identifying academic words to teach. We assumed that this would be a relatively simple task, thinking that we knew a bit about words and vocabulary instruction and believing that we could complete the essay promptly.

Not so. When we began the “simple” task of defining academic vocabulary, it became obvious that there was an entire family of terms surrounding it, many with disparate definitions. We had expected to find a consistent definition—something like “the words students encounter when they read informational texts”—but we soon realized that our sense was not shared by vocabulary scholars and adolescent literacy educators. Thus, the seemingly simple task became complex.

In this essay, we address the construct *academic vocabulary*. We first attempt to bring some clarity to a constellation of terms surrounding academic vocabulary. Second, we compare and contrast definitions of academic vocabulary. Third, we review typologies that researchers and writers have proposed to organize academic vocabulary. Fourth, we present some of the procedures scholars have recommended for identifying academic vocabulary for instruction. Fifth, we present our scheme for classifying and selecting academic vocabulary for instruction and provide an example of how a content teacher might use it. We conclude by recommending a few sources that teachers of adolescents might draw from for teaching academic vocabulary.

A Plethora of Terms and Meanings

Our search for a definition of academic vocabulary led us to terms that included *general academic vocabulary*, *academic literacy*, *academic background*, *general academic words*, *domain knowledge*, *academic competence*, *linguistic knowledge*, *domain-specific vocabulary*,

content vocabulary, academic language, and academic language skills. After examining their meanings, we realized that some terms had several definitions and that different terms were sometimes used to mean the same thing. In the following sections, we attempt to clarify this situation by discussing the meanings of several of the most commonly occurring terms and suggesting a set of terms with consistent and defined meanings.

Academic Literacy(ies)

Several theorists use *academic literacy* as a broad term. For instance, Lea and Street (2006) argued that there are several academic literacies (among other multiliteracies) and that their perspective “treats reading and writing as social practices that vary with context, culture, and genre” (p. 368). They noted further that academic literacies do not necessarily align with specific subjects and disciplines. Similarly, Gutierrez (2008) asserted that academic literacy “is often narrowly conceived” (p. 149) and that traditional academic literacies ought to be viewed from a sociocritical literacy perspective. Janzen (2008) examined linguistic, cognitive, and sociocultural dimensions of academic literacy and noted that the sociocultural view of academic literacy is “broad, concerning itself with the social context of learning, both at school and in the wider community, and with the ways in which that context affects students’ academic success” (p. 1013). Thus, academic literacy is sometimes viewed pluralistically, with its meaning dependent on the social and critical contexts within which literacy is practiced.

Several other writers have placed academic literacy within the school environment. Moore (2008) defined academic literacy concisely as “the reading and writing used in school contexts” (p. 314), and Lewis and Reader (2009) described it as “the kind of literacy needed for achievement on traditional school tasks and standardized assessments” (p. 105). Torgesen et al. (2007) expressed an even more specific view of academic literacy, defining it as “the kind of

reading proficiency required to construct the meaning of content-area texts and literature encountered in school. It also encompasses the kind of reading proficiencies typically assessed on state-level accountability measures” (p. 3). Thus, conceptions of academic literacy vary from a wide-ranging view of multiple literacies to school-based literacy involving content learning and assessment.

Academic Language

The term *academic language* often appears in the literature in discussions of linguistic registers. Ehlers-Zavala (2008) described academic language as “a specific register . . . that students are expected to use in school subjects” (p. 76). Similarly, Scott, Nagy, and Flinspach (2008) described academic language as “a register of English that has distinctive lexical, morphological, syntactic, and stylistic features” (pp. 184-185).

Snow and Uccelli (2009) stated that “there is no simple definition of what academic language is” (p. 112). Instead, they presented a detailed description of the linguistic features and domains involved with academic language—as opposed to more colloquial registers—such as the precision, diversity, and density of content words. Snow and Uccelli also noted that most of the research on academic language has involved English learners rather than native speakers. They argued that acquiring academic language is challenging for both English learners and native speakers, but that much less is known about the teaching and learning of academic language to native speakers. We concur. Indeed, many of the sources referenced in this review on academic language (as well as on academic literacies and academic vocabulary) are particularly concerned with English learners.

In contrast to the notion that academic language is a linguistic register, Pilgreen (2007) argued that academic language involves the knowledge of specific words, “the basic terms used

to communicate the tools and tasks across content areas” (p. 239), such as “*title, chapter, paragraph, table, caption, and excerpt*” (p. 241). In most instances, however, academic language is represented as a rather extensive construct, somewhat akin to academic literacy.

Academic Domain Knowledge

Several researchers and theorists place academic literacy, academic language, and academic vocabulary within the context of *academic domain knowledge*. Alexander and Jetton (2000), for example, argued that fields of study—particular subjects like science, history, and mathematics—have not only specific content but also specific ways in which the content is organized. “Academic domains have varied characters that have a direct bearing on the texts created to represent them” and each domain has “a highly abstracted body of knowledge aligned with a designated area of study” (p. 293).

The body of knowledge within a domain is typically “organized around core concepts or principles that distinguish one domain from another” (Jetton & Alexander, 2004, p. 16). As an example, Jetton and Alexander noted that biology is often organized around systems, whereas history may be organized according to time periods or geographical areas. Additionally, they argued that domains “have their own lexicons or vocabularies” and “students who do not become fluent in the ‘language’ of academic domains are unlikely to achieve competence” (p. 17). Therefore, it is critical for learners to acquire the vocabularies of specific academic domains if they are to understand and learn the body of domain knowledge.

Defining Academic Vocabulary

Researchers, writers, and theorists tend to define academic vocabulary in one of two ways: (a) as *domain-specific academic vocabulary*, or the content-specific words used in disciplines like biology, geometry, civics, and geography; or (b) as *general academic*

vocabulary, or the broad, all-purpose terms that appear across subject-matter disciplines but may vary in meaning due to the discipline itself. We address each in turn.

Domain-Specific Academic Vocabulary

Domain-specific academic vocabulary is probably the most common sense of academic vocabulary. Marzano and Pickering (2005) place this type of academic vocabulary within the context of academic domain knowledge: “Teaching specific terms [academic vocabulary] in a specific way is the strongest action a teacher can take to ensure that students have the academic background knowledge they need to understand the content they will encounter in school” (p. 1). Marzano and Pickering present the words and expressions *mean*, *median*, *mode*, *range*, *standard deviation*, and *central tendency* as an example of domain-specific academic vocabulary used in the field of statistics.

Fisher and Frey (2008) refer to these words as “technical vocabulary.” Hiebert and Lubliner (2008) call them “content-specific.” Beck, McKeown, and Kucan (2002) name them “Tier Three Words.” Harmon, Wood, and Medina (2009) use the label “technical terms.” And Jetton and Alexander (2004) use the expression “‘language’ of academic domains” (p. 17). Whatever the exact label, domain-specific academic vocabulary refers to the content-specific terms and expressions found in content area textbooks and other technical writing.

General Academic Vocabulary

General academic vocabulary is used to refer to words that appear in texts across several disciplines or academic domains. For example, Townsend (2009) defined general academic vocabulary as words “which are used across content areas, have abstract definitions, and are a challenge to master” (p. 242). Similarly, Hiebert and Lubliner (2008) provided the definition: “Words whose meanings often change in different content areas (e.g., *form*, *process*).” They

noted further that “writers of texts as well as teachers often assume that students know their meanings” (pp. 111-112).

Coxhead (2000) referred to these words as *Academic Words* and defined them as “lexical items [that] occur frequently and uniformly across a wide range of academic material” (p. 218). In fact, she did much more than define General Academic Vocabulary. Coxhead assembled a corpus of 3½ million running words from college level texts (e.g., journal articles, book chapters, full books) in content subjects such as history, linguistics, economics, marketing, law, biology, chemistry, and physics. She then (a) excluded those words that were among the most frequent 2000 English words and (b) included words that occurred at least 100 times in the 3½ million running words and occurred in 15 or more of the 28 subjects sampled.

The resulting list consists of 570 word families, each of which includes a stem plus “all inflections and the most frequent, productive, and regular prefixes and suffixes” (Coxhead, 2000, p. 218). For example, the *estimate* family consists of 15 words that include the inflected forms *estimates* and *estimated* and the prefixed derivatives *overestimate* and *underestimate*. Coxhead refers to this body of words as the Academic Word List.

Coxhead grouped the 570 word families she identified into 10 frequency blocks of about 60 words each. For example, *analysis*, *approach*, *area*, *assessment*, and *assume* are in the most frequent block, while *adjacent*, *albeit*, *assembly*, *collapse*, and *colleagues* are in the least frequent block. These 570 word families are particularly relevant in content areas because they make up approximately 10% of the words in content area texts. They are much less important in literary texts (fiction) because they make up only 1.4% of the words in literary texts. Although we believe that the Academic Word List provides educators and researchers a sound, empirically based set of words that appear reasonably frequently across disciplines, it should be noted that

the list was drawn primarily from college-level academic reading materials published in New Zealand and Britain, with no K-12 material included.

Typologies of Academic Vocabulary

Several authorities have suggested structures for categorizing academic vocabulary.

Fisher and Frey

Fisher and Frey (2008) suggested organizing words into three clusters. The three clusters are (a) General Words: basic, high-frequency words needed for reading; (b) Specialized Words: words that appear fairly frequently across different types of texts but whose meanings are discipline specific; and (c) Technical Words: discipline- or subject-matter-specific terms.

Harmon, Wood, and Hedrick

Harmon et al. (2008) proposed a four-part classification for domain-specific vocabulary: “(1) academically technical terms, (2) nontechnical words, (3) word clusters or phrases, and (4) symbolic representations” (p. 155). Their first two categories correspond to Fisher and Frey’s (2008) Technical Words and Specialized Words, respectively. Harmon et al.’s third and fourth categories are different. Their third category includes “word clusters or phrases that appear frequently within a particular subject matter area,” such as the mathematical phrases “*estimate the amount of*, *less than twice a number is*, and *the product of*” (p. 156). Their fourth category, symbolic representations, includes special symbols and abbreviations such as *NaCl* and 5^3 .

Hiebert and Lubliner

Hiebert and Lubliner (2008) constructed an elaborate vocabulary classification system based on frequency and dispersion data from the *Word Frequency Book* (Zeno, Ivens, Millard, & Duvvuri, 1995). *Frequency* is the estimated number of times a word appears in a given volume of text, usually the average number of occurrences in one million running words. Words like *is*,

of, and *the* have high-frequency values, whereas words like *eclipse*, *penumbral*, and *corona* have low values. *Dispersion* provides an estimate of how widely a word is used across different subject areas like math, science, literature, and social studies. A low dispersion value indicates that a word appears within in a single or very few academic areas (e.g., *penumbral* in astronomy), whereas a high value indicates that a word is likely to appear across several or many content areas (e.g., *law* is likely to appear in social studies, science, math, and literature texts).

Hiebert and Lubliner (2008) specified four groups of vocabulary: (a) Content-Specific Vocabulary, (b) School-Task Vocabulary, (c) Literary Vocabulary, and (d) General Academic Vocabulary. Their Content-Specific Vocabulary category is analogous to the Specific Academic Vocabulary described in a previous section, and these words are relatively low in both frequency and dispersion (e.g., *penumbral*). Hiebert and Lubliner's General Academic Vocabulary is similar to Coxhead's (2000) definition of Academic Words, that is, words have relatively high frequency and dispersion values (e.g., *law*).

Hiebert and Lubliner's (2008) School-Task Vocabulary consists of "the terms that are now presented within English language arts standards [state or national]" and "the many terms that teachers use as part of reading instruction or that writers of textbook programs use to describe instructional processes and tasks" (p. 111). Examples of School-Task Vocabulary that Hiebert and Lubliner provided are *letter*, *phrase*, *capitalization*, *draft*, *outline*, and *summarize*. This type of vocabulary is similar to what Pilgreen (2007) referred to as academic language and is represented by the "English Language Arts" word lists in Marzano and Pickering's (2005) *Building Academic Vocabulary*. School-Task Vocabulary has moderately high frequency and dispersion (e.g., *outline*).

Hiebert and Lubliner's (2008) Literary Vocabulary is a novel category of words. These are the "particular verbs, nouns, and adjectives [used] to describe the states of characters, their actions, and the setting in which these actions occur" (p. 111) that authors of children's and young adult literature use in their works. For example, one finds the following literary vocabulary in the first several pages S. E. Hinton's *Tex* (1979): *imagination, sarcastic, pestering, chilly, admitted, gravel pits, bribing, and terrible*. Literary Vocabulary items tend to be low in frequency and have only moderate dispersion values, but according to Hiebert and Lubliner, these words are important to comprehend and appreciate a narrative. These words might be viewed as akin to Beck et al.'s, (2002) Tier Two words that are found in narrative or literary texts.

Selecting Academic Vocabulary for Instruction

Given the diversity of definitions for academic vocabulary and associated terms and the several classifications available, you might be thinking, "This is all fine, but how do I decide which words to teach?" Fortunately, researchers and theorists have addressed the gnarly topic of identifying academic vocabulary for instruction. We now describe several of those suggestions.

Graves

Graves (2006, 2009) proposed a three-step process for selecting words to teach. First, compare words in the texts your students are currently reading to words on existing word lists such as (a) Graves, Sales, and Ruda's (2008) *The First 4,000 Words*, www.thefirst4000words.com (for the most basic words); (b) Biemiller's (2010) *Words Worth Teaching* (for somewhat less basic words); (c) Marzano's (2004) *Building Background Knowledge* (for domain-specific words); (d) Coxhead's (2000) Academic Word List, <http://www.victoria.ac.nz/lals/resources/academicwordlist/default.aspx> (for word that occur fairly frequently in informational text on

various subjects but are infrequent in literary texts), and (e) Dale and O'Rourke's (1981) *The Living Word Vocabulary* (for words representing a range of complexity). These comparisons will provide you an initial idea of the words you might teach. Second, increase your understanding of the sorts of words your students do and don't know by administering teacher-constructed tests on words from upcoming reading selections; alternately, you could simply ask the students to identify unknown words. Third, ask yourself a series of five questions about the words you are considering teaching (e.g., "Does the word represent a specific concept students definitely need to know?") and then select words on the basis of the number of "Yes" answers to the questions.

Fisher and Frey

Similar to Graves's (2006, 2009) approach, Fisher and Frey (2008, pp. 23-29) recommend that teachers identify candidate words for instruction by first examining the text to be read and determining which words fit within their Technical Words and Specialized Words categories (generally analogous to what Beck et al., 2002, refer to Tier 2 and Tier 3 words, respectively). Then they suggest that teachers respond to a series of questions such as "Is the concept represented by the word critical to understanding the text?" and "Will the word be used again during the school year?" (p. 26). Fisher and Frey argue that this process enables teachers to select "big-bang-for-your-buck words that crack open key content understandings" (p. 27).

Marzano and Pickering

Marzano and Pickering (2005) have suggested a process for selecting vocabulary from their graded lists of academic words in 11 different subject areas. For a middle or high school subject-matter teacher, the following process (which includes some adaptation and elaboration of Marzano and Pickering's plan) could be implemented. First, identify the domain-specific words at an appropriate level (e.g., a middle school math teacher would work from Marzano and

Pickering's Level 3 math words, which correspond to Grades 6-8). Second, identify words deemed to be important for instruction (e.g., words from the Level 3 math list that appear in the adopted math textbook, curriculum, or state standards). Third, select words for instruction by asking "Is this term critically important to the mathematics content I will be teaching this year?" (p. 7). Fourth, organize the selected words according to how they occur in your curriculum.

Our Scheme for Classifying and Selecting

Academic Vocabulary for Instruction

Drawing from the extant work on typologies of academic vocabulary, we propose a classification scheme for academic vocabulary. We then provide an example of how the scheme could be employed for selecting words within a specific academic domain.

A Classification Scheme

Our scheme includes five types of academic words and conceptual representations: (a) Domain-Specific Academic Vocabulary, (b) General Academic Vocabulary, (c) Literary Vocabulary, (d) Metalanguage, and (e) Symbols. The types are taken directly from or adapted from labels and descriptions in the works reviewed thus far in this paper and are listed in Table 1. The first column lists and defines each type. Examples of words within each type are shown in the second column. Terms scholars have used that at least roughly correspond to the five types are in the third column, and the final column lists sources of words, when available, for each type of vocabulary. Although the components in Table 1 are not novel, the classification scheme may provide teachers a way to think about different types of academic words and when and how they might be selected for differing instructional goals and purposes (see Baumann, Kame'enui, & Ash, 2003; Graves & Prehn, 1986).

Selecting Academic Vocabulary for Instruction: An Example

Following is an example of how the classification scheme might be used by a middle or high school mathematics teacher. We believe that a math teacher could identify words from four of the five academic vocabulary types listed in Table 1. Only the Literary Vocabulary type would not contribute to a pool of potential words for instruction by a mathematics teacher.

Domain-Specific Academic Vocabulary. Domain-Specific Vocabulary includes the low-frequency words and phrases that appear in content area textbooks and other technical writing materials. Terms such as *absolute value*, *bisect*, *coefficient*, *constant*, *equation*, *factor*, *functional notation*, *perpendicular*, *inequality*, *irrational number*, and *vertex* are likely to be included in mathematics textbook lessons, a textbook glossary, or local or state standards. It seems appropriate for math teachers to teach the meanings of these mathematics-domain terms within the lessons in which they appear. We recommend using the Marzano and Pickering (2005) procedure described previously in this essay for determining which of the Domain-Specific Academic Vocabulary would be worthy of instruction.

General Academic Vocabulary. General Academic Vocabulary consists of words that are present at modest levels of frequency across multiple academic domains in content area texts but are not nearly as common in literary texts (e.g., *context*, *evaluate*, *integrate*, *predict*). Sometimes General Academic Vocabulary have different senses in different domains (e.g., *brief*, *classic*, and *cycle*). We recommend Coxhead's (2000) Academic Word List as a source for selecting General Academic Vocabulary, and all italicized words in this paragraph are from Coxhead's list. A mathematics teacher could mine the Coxhead list for words that appear frequently in mathematics content in order to provide instruction in them. Examples of General Academic Vocabulary that possess a mathematics sense include words to describe numbers (e.g.,

rational, real, irrational, complex, natural), geometric terms (e.g., *volume, area, parallel, coordinate, sphere*), statistics vocabulary (e.g., *data, mode, norm, interval, normal, range*), or general terms that are used in mathematics (e.g., *discrete, equation, formula, function, ratio, percent*).

Metalinguage. Metalinguage is typically defined as words or expressions used to describe, discuss, or analyze a language, such as *letter, paragraph, or participle*. Metalinguage is usually thought of and taught within the domains of English and Literature (e.g., *idiom, genre, sonnet*). However, metalinguage also includes processes, structures, or routines in other domains. In mathematics, metalinguage occurs in processes or expressions such as “*factor a number*” “*provide a proof,*” “*solve a problem,*” “*compute an answer,*” “*estimate a value,*” “*round to the nearest thousandth,*” and “*what is Euclid’s fifth postulate?*” Thus, mathematics teachers need to be aware of and define these terms as they appear in oral and written mathematical text.

Symbols. Symbols represent objects, processes, or verbal expressions. Mathematics is laden with symbols, which involve another type of academic vocabulary. Symbols used in mathematical expressions such as $x^2 + 3x$ and $\sqrt[4]{625}$ need to be taught, along with graphics such as those used in geometry for line (\leftrightarrow), line segment ($\bullet\text{---}\bullet$), or right angle ($\begin{array}{c} \text{c} \\ | \\ \text{---} \\ \text{b} \end{array}$).

Instruction in Symbols would also include providing verbal expressions for numerical expressions, such as “ $3x + 6$ means six more than three times a number.”

Using the Classification Scheme in Other Domains

Space does not permit us to provide examples of the use of the academic vocabulary classification scheme in other domains. The process, however, would be similar to the preceding whether one were identifying academic terms to teach in American History, Astronomy, Art, or some other academic domain. One exception might be the domain of English language arts and

literature, in which a teacher might draw primarily from the Literary Vocabulary and Metalanguage categories because literary texts often include fewer words from the other types in the scheme.

Conclusion

We have discussed in this essay some of the terms and areas of concerns related to academic vocabulary, defined several types of academic vocabulary, described some existing typologies of academic vocabulary, outlined ways authors have suggested to identify vocabulary to teach, and provided our own scheme for classifying and selecting academic vocabulary. Of course, the ultimate goal of selecting academic vocabulary that students need to know is to teach it. Unfortunately, we do not have space within this brief essay to discuss instructional methods.

In lieu of information on teaching academic vocabulary, we conclude our essay by recommending several books on teaching vocabulary that we believe are particularly useful. The first is Beck, McKeown, and Kucan's (2002) *Bringing Words to Life*. This text presents a detailed description and many examples of robust vocabulary instruction, an approach particularly suited to teaching Literary Vocabulary in depth. The second is Marzano and Pickering's (2005) *Building Background Knowledge*. This book presents a detailed description of a six-step procedure specifically designed to teach Domain-Specific Academic Vocabulary. The last three are Blachowicz and Fisher's *Teaching Vocabulary in All Classrooms* (2010), Graves's *The Vocabulary Book* (2006), and Stahl and Nagy's *Teaching Word Meanings* (2006). Each of these books describes and gives illustrations of a variety of methods for teaching all sorts of vocabulary—General Academic Vocabulary, Domain-Specific Academic Vocabulary, and Literary Vocabulary—as well as methods of teaching other sorts of vocabulary such as more basic words.

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Table 1

Classifying Academic Vocabulary

Types and Definitions	Examples	Terms and Scholars/Writers	Sources
<p>1. Domain-Specific Academic Vocabulary: The relatively low-frequency, content-specific words and phrases that appear in content area textbooks and other technical writing materials.</p>	<p><u>Science</u>: <i>meteorology, anticyclone, isobar, barometric pressure, dew point, virga</i> <u>Math</u>: <i>geometry, apex, bisect, scalene triangle, polyhedron, Pythagorean theorem</i> <u>Social studies</u>: <i>geography, atoll, butte, tectonic plate, terminal moraine, escarpment</i></p>	<ul style="list-style-type: none"> • <i>content-specific vocabulary</i> (Hiebert & Lubliner, 2008) • <i>technical vocabulary</i> (Fisher & Frey, 2008) • “<i>language</i>” of <i>academic domains</i> (Jetton & Alexander, 2004). • <i>academically technical terms</i> (Harmon, Wood, & Hedrick, 2008) • <i>technical terms</i> (Harmon, Wood, & Medina, 2009) • <i>Tier Three Words</i> (Beck, McKeown, & Kucan, 2002, 2008) 	<ul style="list-style-type: none"> • <i>Building Academic Vocabulary</i> (Marzano & Pickering, 2005) [all but the “English Language Arts” word lists] • Adopted subject-matter textbooks • Informational trade books • Internet sources
<p>2. General Academic Vocabulary: Words that appear reasonably frequently within and across academic domains. The words may be polysemous, with different definitions being relevant to different domains.</p>	<p><i>Analyze, assume, context, period, role, conduct, range, document, link, minor, register, error, code, project, sum</i> (all selected from Coxhead’s, 2000, list of headwords)</p>	<ul style="list-style-type: none"> • <i>general academic vocabulary</i> (Hiebert & Lubliner, 2008) • <i>academic words</i> (Coxhead, 2000) • <i>general academic vocabulary</i> (Townsend, 2009) • <i>specialized vocabulary</i> (Fisher & Frey, 2008) • <i>Tier Two Words</i> (Beck & McKeown, 2007; Beck, McKeown, & Kucan, 2002) 	<ul style="list-style-type: none"> • Coxhead’s (2000) Academic Word List [http://www.victoria.ac.nz/lals/resources/-academicwordlist/default.aspx]

3. Literary Vocabulary: Words that authors of literature use to describe characters, settings, and characters' problems and actions.

torrid, stern, haphazardly, sun-drenched, tornadic, diffident, mellow, hyperbolic, serene, suavely, chortled, awkward

- *literary vocabulary* (Hiebert & Lubliner, 2008)
- *Tier Two Words* (Beck, McKeown, & Kucan, 2002, 2008)

- “Character Trait Vocabulary” (Manyak, 2007) [the words in fifth grade through secondary in particular]
- Some entries in *Words Worth Teaching*, Biemiller, 2010

4. Metalanguage: Terms used to describe the language of literacy and literacy instruction and words used to describe processes, structure, or concepts commonly included in subject matter texts.

Language of Literacy & Instruction: *outline, sonnet, glossary, table of contents, summarize, main idea, interrogative, epic, idiom, genre, infer*
Processes in Subject-Matter Texts: *proof, estimate, compare, model, observe, explain, calculate, investigate*

- *academic language* (Pilgreen, 2007)
- *school-task vocabulary* (Hiebert & Lubliner, 2008)

- *Building Academic Vocabulary* (Marzano & Pickering, 2005) [just the “English Language Arts” word lists]
- “Academic Terms for Books Parts” (Pilgreen, 2007, pp. 243-244)

5. Symbols: Icons, emoticons, graphics, mathematical notions, electronic symbols, etc. that are not conventional words.

X^{-24} , $>$, $a^2 + b^2 = c^2$, ∞ %, ¶, ;-), ™, ^5, (o_o), \$, ♪, ♀, ☀, 🏥, 🇺🇦, ☢, 🏠, ☮

- *Symbolic representations* (Harmon, Wood, & Hedrick, 2008)

- Computer keyboard, online emoticons, Internet images, clipart, symbol-specific web sites