

Facilitating Comprehension and Learning of Content Area Text for English Learners

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Introduction

There has been a steady increase in the past decade of English language learners. The presence of English learners in the classroom has become the norm in many parts of the United States. For instance, in California there are so many English learners in the school system that content area teachers are required to have coursework and training in teaching English learners as part of their credentials. To help English learners succeed in content area classes, teachers now not only have to teach what to learn, but also help English learners develop the skills to know how to learn, particularly how to read to learn from content area text.

English learners may have a wide variety of educational and home backgrounds that may differentiate even those learners who come from the same cultural heritage. Also, in some districts English learners come from sometimes 30 or more cultural and ethnic backgrounds. As a result, it is typical within a diverse classroom to find English learners with a broad range of second language skills in general and first and second language reading skills in particular.

Content area literacy

McKenna and Robinson (1990) define content literacy as “the ability to use reading and writing for the acquisition of new content in a given discipline,” which includes not only general literacy skills, but also “content-specific literacy skills... and prior knowledge of content” (p. 184). Academic language proficiency may be added to this definition, including vocabulary, syntax, functions, text structure and other components that may be common in certain subject areas.

Cummins (1981) discusses two types of language proficiency that English learners develop: basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP), which is the academic language and skills necessary to effectively function in content area classes. English learners may become proficient in BICS and be mainstreamed, but they may not have sufficient CALP to effectively comprehend content area text. Academic English “relies on a broad knowledge of words, concepts, language structures, and interpretation strategies” (Wong Fillmore & Snow, 2000, p. 1). Academic language may contain a high number of specialized vocabulary terms as well as more common vocabulary that might have different meanings in subject matter contexts. Certain syntactic structures tend to occur more frequently in particular content areas. For example, in social studies common syntax may include historical present, sequence words, structures denoting causation, and more (Short, 1994). Science text may contain more passive verb forms, compound subjects, and gerunds (Sutman, Allen, & Shoemaker, 1986). Math may contain frequent use of particular orders of prepositions and

words, comparatives, logical connectors, and other grammatical patterns (Kessler, 1987).

Content area reading can be a very demanding task that for non-native English-speaking students can oblige students to rely more on their linguistic knowledge and decoding skills and less on their own knowledge and higher level skills. Cummins (1982, as cited in Chamot & O'Malley, 1987) described the oral and written language demands of English learners along two dimensions of degree of contextual support and level of demands on cognitive processing. Chamot and O'Malley (1987) succinctly explain these two dimensions:

The first dimension concerns contextual cues that assist comprehension, and the second concerns the complexity of the task. Language that is most comprehensible is contextualized and rich in nonverbal cues such as concrete objects, gestures, facial expressions, and visual aids. Language that is least comprehensible is language in which context cues have been reduced to such a degree that comprehension depends entirely on the listener's or reader's ability to extract meaning from text without assistance from a nonverbal context.

The second dimension, task complexity, suggests that comprehension is affected by the cognitive demands of the task. Examples of less demanding language tasks are vocabulary, grammar drills, and following directions. More cognitively demanding tasks call on the use of language for higher level reasoning and for integrative language skills (e.g., reading and listening comprehension, speaking or writing about academic topics). By combining these two dimensions, tasks involving language use can be classified into one of four categories: easy and

contextualized, difficult but contextualized, context reduced but easy, and context reduced and difficult. (p. 236-237)

Reading subject matter text to comprehend and learn content, along with some of the higher level inferential and critical reading comprehension skills that this entails, places the task of reading a content area text in the dimensions of context reduced and cognitively demanding. The density of text, complexity of structure, vocabulary load, higher order skills, and a multitude of other knowledge, skills and strategies needed to comprehend and learn from content area text make this one of the more difficult tasks that English learners will face.

The goal for teachers is to make reading content area text for English learners less cognitively demanding and more context embedded. This can be done by providing support for English learners in three areas that interact in reading text: language, knowledge, and literacy. In terms of language, learners use their knowledge and skills of decoding, phonology, morphology, syntax, semantics, text structure to process and understand text. In an interactive model of reading, students use their background knowledge in the reading task. Literacy variables include knowledge of how to approach text and what to do with text, such as setting goals for reading, adjusting reading rate and strategies to match the demands of text and task, utilizing cognitive and meta-cognitive strategies. English learners may have problems in any or all of these areas that make the context reduced and cognitively demanding task of reading content area text more difficult.

Challenges ELLs encounter in developing content literacy skills

The following discussion of problems that English learners may face in terms of language, content, and literacy knowledge and skills includes ways to help students deal with problems and develop skills through pre-reading, during reading, and post reading activities, resources, approaches, and materials. Instead of simply assigning a text, providing no support, and then spending much time with problems of understanding during the discussion of the text, teachers can spend more time preparing the students to read before and providing support during the reading so that more time after reading can be spent in discussion of the concepts. In this light, the discussion below includes more focus on what can be done before and during the reading task, along with how post reading assignments and materials can be used to extend and reinforce understanding and learning.

Informal and formal language

Language and text structure of content area text really highlight the differences between BICS and CALP. The vocabulary load for content area text may be too high for English learners when there exists a discrepancy between proficiency level and reading level. This may make the reading process more cognitively demanding if readers are frequently forced to try to figure out meaning. If students have to stop recurrently to look up words, their reading speed may be so slow that they have difficulty in understanding the main ideas of the text. There are several steps a teacher may follow in order to help students and mediate their comprehension of text. First, teacher analysis of the vocabulary is

needed. Several vocabulary words are important for understanding the main concepts, some are important for understanding secondary issues, others may be inferred from the context, and still others may be less important for understanding what a teacher wants students to get out of the text. The second step after the important vocabulary has been identified is to determine which vocabulary can be emphasized in pre-reading activities and which vocabulary can be developed further during reading.

Besides vocabulary load, there are certain syntactic features that can be highlighted in order to facilitate the process of reading, particularly in terms of recognizing cues that identify particular discourse patterns. Organizational words, compare and contrast, cause and effect, transition words, and more are commonly found in certain text structures that are typical in specific content areas.

Language development activities to implement before reading

Pre-reading activities are important to preview both vocabulary and concepts in order to make the reading more comprehensible. In pre-reading tasks, words that represent critical vocabulary, particularly concerning the concepts being studied, can be presented to students, particularly in semantically and topically related sets such as semantic webs or cognitive maps, which have been shown to have a positive effect in student comprehension of text (Hudson, 1982; Johnson, 1982). In semantic or cognitive mapping, the teacher chooses a word that represents the central concept of the text being read and puts the word on the board. The teacher elicits words from students that describe what they know about the concept, writes them on the board, asks students to group words that closely relate to one another into categories and then label the categories. The teacher adds key words from the text and

has the class discuss how the new words relate to the words, concepts, and experiences that students know.

Semantic feature analysis also can be used to show the relationships and connections between concepts and ideas that will help students better comprehend the vocabulary and ideas they are reading. A semantic feature analysis is a grid that has features of a particular topic or concept across the top of the columns and words that are related to the topic or concept listed down the left side of the grid. According to Pittelman, Heimlich, Berglund, and French (1991), the related words listed down the left side of the grid can be elicited from the students as well as contributed by the teacher (particularly key words that are important for students to know to understand the reading). Features or characteristics that describe these words and the concept are also elicited from the students and also provided by the teacher. Students analyze each word to see which feature or characteristic applies to each word, marking the features that apply to a particular word with a plus sign in the boxes that intersect between the word and features. The teacher then leads a discussion of the concept and related words (Pittelman, Heimlich, Berglund, & French, 1991).

Other types of graphic organizers can be used as well. In pre-reading activities it is essential for students to have opportunities to talk about what they know and do, not only to find out what English learners know, but also to expose English learners to main and secondary vocabulary that other native English speaking students know, as well as the vocabulary that the teacher introduces.

Language development activities to implement during reading

Resources used in the “during reading” stage can also provide language support that will help students process text more effectively. Glosses, with short definitions, along with explanations of meanings or visual aids, can provide vocabulary support for vocabulary not introduced in pre-reading tasks that may be critical for comprehension. Care should be taken to focus on vocabulary words that are vital for comprehension so that students’ reading is not interrupted frequently. The glosses can be guides or worksheets that students can refer to as they are reading the content area text. When they come across a word that they don’t know and cannot figure out from the context, root words, or some other clue, students can refer to the gloss which has words grouped alphabetically and according to page number to quickly look at the synonym, short definition or picture. Again, not all words have to be included in the gloss, only the ones that are key to understanding the main ideas and concepts, and if students do not see an unfamiliar word in the gloss, they can skip the word at that time, utilizing a simple strategy of “reading on.” The key is lessening the vocabulary load without causing too many interruptions which can occur when students stop and look up every unfamiliar word. Therefore, students may feel more confident knowing that important words necessary for understanding what the teacher wants students to learn have already been selected and glossed for them, and that they don’t have to look up every unfamiliar word or figure out which should be defined and which can be skipped until later. In addition, glosses reduce the amount of time needed to look up meaning.

Reading guides can assist students with academic language while they are reading. Reading guides are teacher-developed

materials that students use and refer to as they are reading text (Wood, Lapp, & Flood, 1992). The materials contain questions, comments, directions, and other items that support students in processing, comprehending and learning from content area text. Reading guides may contain items that focus students on language. Like glosses, they focus students on particular words to aid in comprehension. However, instead of providing a brief definition, they help direct readers' attention to extra-linguistic contexts such as charts, graphics, pictures and other clues, including accompanying words and roots, in the text that may facilitate an understanding of vocabulary terms. In this manner students learn how to use contextual cues to get a sufficient understanding of a term to assist in comprehending a passage.

Additionally, guides are useful in enhancing comprehension of particular syntax with questions to help students focus on and process unfamiliar or complex syntax (Barnitz, 1985). Reading guides may be employed to point learners to language that may hint at particular text patterns, such as compare and contrast or cause and effect, so that they may more easily recognize different expository text structures. As mentioned above, there are function words and syntactic features that indicate specific text patterns, such as however, although, on the other hand, not only... but also, and others that signal comparison and contrast text structures (Vacca & Vacca, 1989). Reading guides, as well as activities for the "before reading" stage, help students learn to better recognize text patterns through learning such grammatical words and patterns.

Sometimes the difficulties with language extend beyond single words and syntactic structures to longer passages of text. Reading guides are valuable for providing expansions of ideas,

simplifications, and comparisons to enhance comprehensibility of text (Richard-Amato & Snow, 1992). For example, sometimes a sentence or passage may need restatement in a simpler form or a more extended discussion to make the sentence or passage more comprehensible. Such simplifications and expansions can accompany the original passage, referred to in the guide by page and paragraph number.

Language development activities to implement after reading

After reading, students may use activities and materials to extend and reinforce their knowledge of vocabulary. Semantic mapping used in the pre-reading stage may be used in the post-reading phase to extend knowledge of a wider variety of vocabulary related to specific concepts, such as related ideas, examples, and characteristics that students read about in content area text. Semantic feature analysis also can be used in after reading activities to extend and reinforce the vocabulary and concepts they read about. In terms of both, teachers can display or pass out copies of the original semantic map or feature analysis that students completed during pre-reading activities. Students should then be guided to individually, in groups, or as a whole class continue to fill out the map or feature analysis with the information that they learned from the readings. This can be a form of assessment of how much the students retained from the reading, a basis for class discussion of the concepts that they read about, or a base of vocabulary and concepts that students are able to use when writing about what they learned.

In short, these and other classifying and categorizing activities help reinforce vocabulary and concept development by providing English learners opportunities to use and manipulate vocabulary

(Vacca & Vacca, 1989). Through group or class discussion English learners are exposed to and become capable of using the vocabulary and syntax they encountered while reading in meaningful contexts in addition to new related vocabulary from peers and teachers that arises from such discussion. Writing activities assist learners in using the language and structure they encountered in the text. English learners benefit from any opportunity to experience more language input related to concepts and to use the vocabulary they read and learned.

Knowledge of content

Embedding text with context can help make concepts and text more comprehensible. Contextual support may be provided in different ways. External contextual support, such as pictures of concepts and charts, help English learners to comprehend concepts. This type of support appears in concrete forms that are external to learners, such as graphic support that helps learners understand ideas and concepts. Another type of context is the internal context that learners possess, which consists of the background knowledge that learners bring to the learning task.

In an interactive view of reading, comprehension is an interaction between what students know and the input that they are taking in, so the amount and type of background knowledge that English learners possess has an effect on the comprehension of text in a reading task. It is important in the pre-reading of text that learners' knowledge and experiences are brought to consciousness so that the information can be used in the comprehension and interpretation of information and concepts in content area text.

English learners may have trouble using background knowledge to facilitate comprehension of content area text. Yet, some English learners, due to their prior education in their native

country, are actually one or two grade levels ahead of many American students, particularly in science and math. However, if English learners focus too much attention and cognitive capacity on bottom-up processing of text, they may not be able to activate background knowledge to use in processing new input.

Sometimes knowledge that certain concepts presuppose may be lacking in some English learners. Teachers take for granted or assume that related concepts and knowledge possessed by native English speakers as a result of living in this culture are shared by non-native English learners as well. Occasionally, it is not a matter of learners not having background knowledge, it is a matter of background knowledge that is different than that presupposed by particular concepts. Some of the knowledge that English learners have developed through their interaction in their culture, society, community and home may be specific to their culture. A different interpretation of the connotations or denotation of a word due to differences in background knowledge may snowball into a major misinterpretation of a text (Kang, 1991).

Pre-reading activities to build content knowledge

Some of the same activities that are used during pre-reading to introduce vocabulary, such as giving opportunities for students to discuss what they know, use of semantic mapping, semantic feature analysis, and others also work to help activate background knowledge that underlies or supports the concepts that students will be trying to comprehend and learn in the content area text. Free association, brainstorming, and questions before reading with student output and teacher contributions written on the board and categorized by both teacher and students can not only assess what students know but also bring to consciousness background

knowledge that can help provide the internal context that English learners can use in comprehending content area text.

Sometimes teachers need to actively help students build upon what they already know to construct background knowledge that learners can be used in understanding and learning certain concepts, and exposure to related concepts may be necessary to help build such background knowledge. Semantic mapping and discussion during pre-reading activities help teachers to identify relevant aspects of the students' prior knowledge that may be essential to the concept being studied. Teachers can then post such related or comparable concepts and help English learners make connections or analogies between what they know and what they will be studying. Teachers might use visuals from the text or other material in multimedia format to help learners make such connections.

When background knowledge of English learners is different than that presupposed by certain concepts, teachers need to help learners recognize the discrepancies through comparison and contrast, questioning strategies, and other techniques that help learners see the discrepancy between what they know and what they are learning. Teachers ought to identify and introduce contradictions and exceptions between what students know and what they will read or point students to other factors that warrant consideration in order to help students to analyze and evaluate differences and similarities.

Building content knowledge during the reading process

During the reading process, there are reading guides that can be developed that help students focus on concepts and activate background knowledge that will help English learners better

comprehend the text and concepts. Reading guides can direct students to photos, diagrams, and other graphics that can facilitate their use of external contextual aids in comprehending text. Content guides that are helpful in the "during reading" stage enable students to integrate what they are reading about with what they already know by asking questions that prompt students to think about what was previously learned or experienced in other lessons. Guides help students comprehend texts at different levels, such as interpretive and applied levels (Herber, 1978). This is achieved by questions or prompts on the reading guide that focus students on different levels of processing text such as inferring information from the reading, critically evaluate what they are reading, apply knowledge of what they are learning to a real world context, or other types of questions or prompts that encourage students to use higher order thinking skills while reading instead of over-relying on lower level, bottom-up processing of text (Wood, Lapp, & Flood, 1992).

At times it is difficult for English learners to separate main ideas from supporting information due to relatively slow speeds of reading and too much focus on bottom-up processing of text. Guides can also help direct students to main ideas and important parts of the text where teachers want students to concentrate their attention. Reading guides that students can refer to during reading should contain questions, prompts, and directions that advise students on what parts to read carefully and direct their attention to information in the text that is considered important for them to learn (Vacca & Vacca, 1989).

Content building activities to implement after reading

After reading tasks, materials and activities used in reinforcing and extending vocabulary knowledge must be used to reinforce and extend conceptual knowledge.

Teachers should use the same tools and activities that they used in helping students learn and retain the vocabulary from the reading, such as semantic mapping and semantic feature analysis. Post-reading questions as well as small group and whole class discussion can be used to not only assess what students have learned but also to assist in reinforcing what they learned and helping them apply what they have learned to other contexts.

Literacy skills

English learners may have good reading skills in their first language, but if they are not proficient enough in their second language, they may not be able to use these skills in the second language reading context. Readers generally make use of syntactic, semantic, and discourse cues in reading, but if the second language proficiency of a reader is low, he or she may not be able to effectively use these cues in reading (Clarke, 1988).

Even if English learners have learned how to read in a second language, they may not have made the transition to being able to read to learn with expository text. Reading and learning from content-area text is more difficult and demanding than reading narrative text as it contains more abstract and specialized vocabulary, sometimes with nonstandard meanings, and more complex sentence structure. Content area reading is also more information packed and concentrated, and is written in a different style than narrative text with different kinds of visuals (Lee, 1991). Learners encounter different text structures in expository text, such

as compare/contrast, problem/solution, definition/examples, and more. Content area text focuses on concepts that are often abstract and new to the learner. Reading content area text entails using specific reading skills such as finding the main ideas, scanning and skimming for specific ideas, interpreting graphs and diagrams, reading tables, differentiating fact and opinion, and other skills not commonly used in reading narrative text for pleasure (Lee, 1991). By the time that they are mainstreamed, English learners may not have developed the skills and strategies to do the higher level processing of complex, dense abstract text that they need to learn from content area text (Shih, 1992).

Literacy development prior to reading

Pre-reading activities help English learners develop the skills and strategies to direct their own reading and learning. In pre-reading activities or teacher think-alouds, teachers model previewing skills by focusing students on signaling devices such as headings, subheadings, words or phrases in bold or italics, illustrations, notes or call outs, questions at the end of the chapter, and other clues that might give a student a sense of what the text is about before reading. That way teachers help students learn about the variety of features that signal or indicate what the text may be about and help students activate background knowledge. Teachers may also model using information to predict what they will be reading about or asking questions to help guide their reading. Learners sometimes have a tendency to try to read and remember everything, and pre-reading activities help them learn about, as well as to set, different purposes for reading and how to adjust rate and style of reading accordingly (Moore, Readence, & Rickelman, 1982).

Literacy development during the act of reading

During reading, there are a number of reading approaches, such as the Directed Reading Thinking approach, the Reciprocal Teaching approach, the SQ3R approach, and others that focus students on development of cognitive and meta-cognitive strategies to utilize to direct, regulate and monitor their comprehension and learning. In addition, there are reading guides that focus students on process instead of content or language. Such guides can model effective ways of interacting with text by having students respond to prompts and questions that serve to direct students reading behavior (Vacca & Vacca, 1989). Reading guides can direct students to use particular reading or study strategies such as predicting, looking for information that confirms or disconfirms predictions or inferences, or problem solving strategies when encountering contradictions or difficulties in comprehension. Reading guides can also help students develop flexibility in reading rates by prompting students to read at different rates (quickly, carefully, scanning, skimming, etc.) at different points of the text. Guides can also contain prompts that remind students to monitor their comprehension and learning. In short, reading guides can help English learners develop a variety of strategies and skills to read, study and learn content area text.

Literacy development after reading

Post reading activities lead English learners to extend the concepts or information that they have read about as well as use the organization structures they encountered in their reading. Questions or debriefing with teachers or peers can help illuminate and reinforce strategies and skills that learners used while reading

text. Activities can also help learners make connections between the processes of reading and writing.

Conclusion and recommendations

The point of this article is to heighten awareness of the types of problems English learners may face, the types of knowledge and skills they need for reading content area text, and ways that English learners can be helped to develop the knowledge, skills and strategies needed to effectively read and learn content. The overview of what teachers can do before, during, and after reading is not exhaustive. There are many activities, approaches, materials, resources, and techniques available for further research regarding what content area teachers may do to help their English learners. Reading content area text is considered a context-reduced and cognitively demanding task. The goal of educators should be to afford enough support in the classroom to make this task more context-embedded and cognitively less demanding by increasing the context that learners can use and reducing the cognitive load.

Providing more contextualization will help make the content area text more comprehensible. In order to embed more context into the context reduced task of content area reading, teachers should:

- Help provide internal contextual support. Help students activate what they know about a concept or topic, and if they are lacking certain background knowledge, help them build such knowledge. If students' background knowledge is different or contradictory, help students accommodate their background knowledge. In short, help students use background knowledge as contextual support for comprehending what they are learning.

- Help provide external contextual support. Help provide pictures, models, charts, realia, multimedia, and others to provide more concrete contextual support for students to understand abstract concepts and language.

- Help provide skills for students to activate and use background knowledge effectively. For example, help students develop the skills of previewing text, finding and using graphic support from the text, using knowledge of formatting to identify key points, etc. Help students develop strategies on what to do when their background knowledge conflicts with information from the text.

Dense vocabulary loads, abstract concepts, slow reading rates, and reading to remember everything (instead of reading strategically) helps make the task of reading content area text more cognitively demanding. In order to make the difficult task of content area reading less cognitively demanding, teachers should:

- Reduce vocabulary load and help with difficult or unfamiliar syntactic structures and densely written passages with complex structure.

- Help students to discern the difference between important information and less important or interesting information in the text. This will help students who have difficulty separating, for example, main ideas from supporting details, to get students out of the habit of trying to learn and remember everything.

- Help students make use of cues and signaling devices that help them more easily identify, understand, or remember essential aspects of the text. For example, helping students identify syntactic structure and transition words that signify certain textual patterns (compare and contrast, etc.).

- Help students develop skills and strategies to facilitate the process of reading content area text and make it less frustrating. For example, help students learn how to skim or scan certain areas and read other areas more carefully, and help students develop meta-cognitive skills of monitoring their comprehension and recognizing when there are problems in understanding.

In short, making the task of reading content area text more context embedded and less cognitively demanding can be done through the pre-reading, during reading, and post-reading stages with appropriate activities and materials. In doing so, some chief things to remember are:

- Don't wait until after reading to ask questions and discuss the topic and thereby having to deal with problems in comprehension, but help students before and during the reading task as well.

- Integrate activities and materials (in terms of those that focus on language, knowledge, and literacy) whenever useful or needed. For example, activities that help students with language are easily integrated with activities that help students activate, build, or accommodate background knowledge. Instead of having a reading guide focus on one area, reading guides can contain items that focus on all three areas of language, knowledge, and literacy. One reading guide can contain items that help students understand language, some items that focus on processing or organizing knowledge, and some that focus on helping students apply and develop literacy strategies and skills.

- Some materials, such as semantic maps, semantic feature analysis, and other graphic organizers, can be used throughout the reading process in each of the stages.

- Don't try to do too much. Remember, all the suggestions discussed above are what can be done whenever needed, not what must be done in all activities. For example, don't try to help with all potentially difficult vocabulary, but in previewing the passage, look for key vocabulary that might cause problems in comprehending the critical areas that you want students to learn. Don't interrupt the reading process too much during reading, and help make any necessary interruptions quick such as glosses with pictures, synonyms or brief definitions instead of students having to look up full definitions of words. Don't try to help learners develop too many content area reading strategies or skills at once.

- Scaffold the support you provide. As support is provided in specific areas, teachers should lessen the support in subsequent reading tasks so that students begin to develop skills on their own. For example, students may be taught early on to identify the main idea, supporting ideas, and to distinguish peripheral from significant information, through a gradual release of control model.

The last recommendation is: Teachers need not think they have to implement these strategies alone. Problems such as lack of motivation, time, and expertise may inhibit individual teachers from working with students to develop academic language and content reading proficiencies, but collaboration among content area teachers, English as a second language (ESL) teachers, and reading teachers and specialists may alleviate some of these problems (Kang, 1994). Administrators should provide incentives and time to promote collaboration on some of the time-intensive tasks of developing supporting materials. At the least, awareness of the problems and needs of English learners, along with knowledge of and access to instructional resources, approaches, and strategies, is needed for content area teachers to help their English learners read

and learn from content area text, lest their English learners continue to read with frustration and limited success in learning content from textbooks.

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