



Dimensions of Informational Text Comprehension

***(as measured in the Concepts of Comprehension
Assessment (COCA))***

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About the COCA

- The COCA was designed to assess four hypothesized dimensions of comprehension of informational text.
- There are, of course, many more than four dimensions. We selected these four primarily because they are all amenable to instruction. That is, a teacher could do something to improve a student's knowledge or skills in this area (as contrasted, for example, with working memory capacity, which contributes to comprehension but does not appear particularly amenable to instruction).
- We also avoided some dimensions to comprehension that are already widely assessed and instructed (e.g., word recognition skill).

More about the COCA

- Confirmatory Factor Analyses suggest that COCA items do align with the hypothesized four dimensions (see technical report for further information).
- The four dimensions are:
 - Comprehension Strategy Use (CS)
 - Knowledge of Informational Text Features (TF)
 - Comprehension of Graphics in the Context of Text (GCT)
 - Vocabulary (V): specifically vocabulary knowledge of high utility science words and vocabulary strategies for rarer wordsMore about each of these in later slides.

Comprehension Strategy Use

- Items for this construct are intended to measure whether the child is engaging in the kinds of thought processes used by good readers when they read (excluding vocabulary strategies, addressed in another construct). In particular:
 - Are they making predictions about the text?
 - Are they activating and/or making connections to prior knowledge?
 - Are they making inferences as needed to understand the text?
 - Are they summarizing, or comprehending in such a way that they can summarize when asked, as they read?
- Of course, good readers engage in many more thought processes than these, but we could not measure all of them and these four certainly seemed important and measurable.

Why Comprehension Strategy Use?

- Good readers engage in certain kinds of thought processes when reading (Pressley & Afflerbach, 1995; Duke & Pearson, 2002).
- There are differences in good and poor readers with respect to strategy use and degree or quality of strategy use appears to be related to comprehension achievement (e.g., Duke, Pressley, & Hilden, 2004).
- The relationship between comprehension strategy use and comprehension achievement seems to be causal in that instruction in comprehension strategies has been shown to improve comprehension (e.g., Duke & Pearson, 2002; National Reading Panel, 2000).
- We included inferencing in this area although that is often spontaneous rather than strategic in the traditional sense.

Knowledge of Informational Text Features

- Items for this construct are intended to measure whether the child has knowledge of some common features of informational text, including:
 - Table of Contents
 - Index
 - Glossary
 - Diagrams
 - Labels
 - Pronunciation Guide

Why Knowledge of Informational Text Features?

- There are differences in good and poor readers with respect to knowledge of some text features: text structure, at least (e.g., Dickson, Simmons, & Kame'enui, 1995).
- There is some causation at work in that text structure instruction can improve comprehension (e.g., Dickson, Simmons, & Kame'enui, 1995), as can instruction in searching (using index, headings, etc.) (Symons, MacLachy-Gaudet, Stone, & Reynolds, 2001).
- Research has not yet established differences in good and poor readers, or causation, for a number of other informational text features.

Comprehension of Graphics in the Context of Text

- Items for this construct are intended to measure the child's understanding of graphics or illustrations within a text, particularly as they relate to the written text.
 - Can the child integrate information provided by the text and illustrations?
 - Can the child use information from the written text to help them understand what is depicted in the illustrations?
 - Can the child derive information from and understand conventions within diagrams, flow charts (e.g., life cycles) and maps -- graphical devices common to informational text?

Why Comprehension of Graphics in the Context of Text?

- It appears that illustrations can have a facilitative effect on comprehension for at least some readers, although this does not seem to divide neatly along lines of good versus poor readers (see Gyselinck & Tardieu, 1999, for a review).
- To our knowledge, it has not yet been shown whether informational text comprehension can be improved by instruction in building meaning through illustrations as well as text.
- For now, we are assuming that the ability to comprehend graphics in the context of text is important and amenable to instruction.

Vocabulary Strategies

- **These vocabulary construct items are intended to measure children's skills related to learning new words in/from text.**
 - Does the child recognize it if/when the text defines a word or provides other clues to a word's meaning? (For example, in this sentence-- "When salmon are one year old they eat small fish called minnows." --*minnows* is defined by the words *small fish*.)
 - If the illustration or a graphical device such as a diagram provides a clue to the word's meaning, do they use that to approximate the word's meaning?
 - Understanding that glossaries are tools that provide definition of words
- **These items are not intended to measure whether children already come to the text knowing a word but rather whether they can figure it out from the text.**

Why Vocabulary Strategies?

- Readers do learn word meanings from context, and higher ability readers are better at doing this (Swanborn and de Glopper, 1999).
- However, it is increasingly clear that teaching students to use contextual cues to ascertain word meaning and/or providing practice in that improves vocabulary (Fukkink & de Glopper, 1998; Kuhn & Stahl, 1998).
- There is little empirical evidence that this instruction translates into improved reading comprehension (see Bauman, in press, for a discussion). However, there is reason to think it might over a longer period of time and with more substantial intervention than has thus far been studied.

Vocabulary Knowledge

- These vocabulary construct items are intended to measure children's knowledge of some words commonly used in informational text. Words for this construct are not specific to one particular topic of study but rather are found across the discipline or even many disciplines, words like *examine*, *observe*, *kinds*, and so on. As measurement terms, that is, terms telling specific lengths, times, weights, etc., are common in informational text, knowledge of these is also assessed (e.g., *months*, *years*, *inches*).
- Unlike the vocabulary strategies items, in these items we are trying to assess whether the child comes to the text *already knowing that word* and expecting it might be found in informational text. In this construct we are *not* trying to assess whether the child can figure out the meaning of the word from the context.

Why Vocabulary Knowledge?

- There is a strong relationship between vocabulary knowledge and comprehension achievement (Blachowicz & Fisher, 2000).
- The relationship seems to be causal in that instruction in vocabulary has been shown to improve comprehension (e.g., Baumann, Edwards, Boland, Olejnick, & Kame'enui, 2003).
- We focus on knowledge of high-utility vocabulary as we view these words as important to informational text comprehension and knowledge of them, unlike more topic-specific words such as *alimentary* or *sedimentary*, to be assumed by many informational texts, even for young readers (e.g., Hiebert, 2005).



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