Computer Based Assessment System for Reading (CBAS-R) 1.0:
Hierarchy and Item Development for Concepts of Print

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Date Initiated: 12/14/06
Finalized Draft: 10/12/10
Reviewed by Advisory Board: TBA

Preparation of this technical report was supported in part by a grant from the Office of Special Education Programs, U.S. Department of Education (H327A060014). Opinions expressed herein do not necessarily reflect the position of the U.S. Department of Education.
Abstract
The purpose of this report is to define the domain of Concepts of Print and illustrate how this domain is assessed. Concepts of Print includes the general understanding of how print works and how it can be used (Snow, Burns, & Griffin, 1998); skills such as identifying letters and identifying correct directionality in book handling are included within this domain. CBAS assesses students as young as kindergarten where students may or may not have mastered these skills. In order to assess the widest range of students’ reading skills, it is necessary to include this component.

Keywords: concepts of print, CBAS-R
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Concepts of Print

Concepts of Print includes the general understanding of how print works and how it can be used (Snow, Burns, & Griffin, 1998). Concepts of print is the set of skills used in the manipulation of text-based materials, which include effective orientation of materials (directionality), page turning, identify the beginning and ending of sentences, identify words, identify letters, sentences, and sentence parts. Concepts of print are normally developed in the emergent literacy phase of development and enable the development of meaningful early reading skills: “Emergent literacy consists of skills, knowledge, and attitudes that are developmental precursors to conventional forms of reading and writing” (Whitehurst & Lonigan, 1998; as cited in Britto, Fuligni, & Brooks-Gunn, 2006, p. 312). These skills typically develop from preschool through early first grade— with some more advanced skills that develop through second grade, such as understanding punctuation, standard spelling, reversible words, sequence, and other standard conventions of written and spoken language. Introductory level of logical and analytical abilities as in understanding the concepts of print has an impact on early student reading achievement (Adams, 1990; Clay, 1972; Downing, Ollila, & Oliver, 1975; Hardy et al., 1974; Harlin & Lipa, 1990; Johns, 1972; Johns, 1980; Lomax & McGee, 1987; Nichols et al., 2004; Tumner et al., 1988).

These emergent literacy skills are a “product of a stimulating and responsive environment in which children are exposed to print, observe the functionality and uses of print, and are motivated and encouraged to engage with print” (Britto, Fuligni, & Brooks-Gunn, 2006, p. 312). When children have an awareness of the concepts of print, they are ready to benefit from reading instruction.
Sample Assessments

These skills can be assessed with *Concepts About Print* (Clay, 1985, pp. 27-30). This is an assessment administered individually to children in kindergarten through early first grade to diagnose and identify students who are at-risk for early reading difficulties. The “test reflects changes in reading skill during the first year of instruction but is of less significance in the subsequent years for children who make average progress” (p. 27). Concepts measured here are those that Downing (1984), Blum (1980) and others have found to be indicative and supportive of normal reading development. Assessing a child’s concepts of print provides information on what the child already knows and what the child is attending to (Clay, 2000). Children who are not developing normally in their reading tend to have problems with the following concepts:

- Identifying the front of a book (familiarity with books, evidence of having been read to)
- Locating the beginning and ending of a passage
- Recognizing the “concept that print, not picture, carries the message” (Clay, 1985, p. 28).
- Directionality (left to right; top to bottom)
- Identify or locate one letter, two letters, one word, and two words (later—a sentence)
- Knows a capitol letter starts a sentence
- Can find matching upper and lowercase letter pairs (ex: T, t)
- Identify first letter and last letter of a word
- Knows function of space between words
- Knows the function of punctuation (periods, commas, quotation marks, question marks
- Can read or track with “word by word pointing” (Clay, 1985, p. 28).
• Can identify out-of-place elements (inverted picture, inverted or out-of-sequence print, out-of-sequence lines, out-of-sequence pages, misspelled words, words in a sentence out-of-order, out-of-sequence page numbers)

• Can identify correct words for reversible words (ex: saw and was, on and no)
Procedure

Hierarchical Structure

The contents of this section provide an overview of the a priori hierarchical structure for item and CAT development. This structure will be evaluated and updated as the items are developed and field tested.

Concepts of Print Item Categories

A. Category 1: Letter Identification
   1. Subcategory 1: Identifies Uppercase Letters
   2. Subcategory 2: Identifies Lowercase Letters

B. Category 2: Print/Book Handling
   1. Subcategory 1: Identifies the Front of the Book
   2. Subcategory 2: Identifies an Open Book

C. Category 3: Print Carries a Message and Directionality
   1. Subcategory 1: Identifies the Beginning of the Book
   2. Subcategory 2: Knows Left to right Directionality
   3. Subcategory 3: Knows Top to Bottom Directionality
   4. Subcategory 4: Knows Bottom to Top Directionality

D. Category 4: Word to Word Matching (Tracking)

E. Category 5: Identifying Specific Elements of the Text
   1. Subcategory 1: Recognizes Two Letters in a Word
   2. Subcategory 2: Recognizes One Word
   3. Subcategory 3: Recognizes Two Words
   4. Subcategory 4: Recognizes Capital Letters in Words
5. Subcategory 5: Recognizes End Marks
6. Subcategory 6: Recognizes Spaces between Words
7. Subcategory 7: Identifies the First Letter of a Word
8. Subcategory 8: Identifies the Last Letter of a Word

F. Category 6: Matching Upper and Lowercase Letters

G. Category 7: Recognizes Other Punctuation
   1. Subcategory 1: Recognizes Quotation Marks
   2. Subcategory 2: Recognizes Commas
   3. Subcategory 3: Recognizes Question Marks
   4. Subcategory 4: Recognizes Exclamation Marks

H. Category 8: Understands Page Turning Process

I. Category 9: Recognizes Reversible Words
   1. Subcategory 1: Recognizes Was/Saw
      a. In Isolation
      b. In Context
   2. Subcategory 2: Recognizes On/No
      a. In Isolation
      b. In Context

J. Category 10: Out of Sequence Elements
   1. Subcategory 1: Recognizes Words Mixed Up in a Sentence
   2. Subcategory 2: Recognizes Upside Down Words in a Sentence
   3. Subcategory 3: Recognizes Upside Down Picture
   4. Subcategory 4: Recognizes Out of Sequence Lines
5. Subcategory 5: Recognizes Misspelled Words

6. Subcategory 6: Recognizes Errors with Page Numbers
References


Appendix

Sample Concepts of Print Items

This section contains screen shots of sample test items in the hierarchical structure as defined in the Procedure section.

Letter Identification

Audio: “Click on the line with the same two letters.”

Audio: “Click on the capitol letter.”
**Directionality**

Audio: “Click on the picture that shows the front of a book.”

Audio: “Click on the word where you start reading.”

*Sally ate her lunch outside.*
Recognizing Punctuation

Audio: “Click on the sign that tells you to stop reading.”

Here comes a big yellow bus.

Audio: “Click on the sign that tells you to pause.”