

Literacy Research Behind BOP-K

The teaching methods used in *BOP-K* are based on a combination of research on teaching children to read and research related to teaching reading with braille. The writers of *BOP-K* began with two important reports, the first from the National Early Literacy Panel (NELP) and the second from the National Reading Panel (NRP). Both sets of findings are relevant for kindergarteners, whether they read print or braille, as they transition from preschool to formal academic schooling. In addition, the *BOP-K* curriculum incorporates important findings from the Alphabetic Braille and Contracted Braille Study (ABC Braille Study), the first research project to follow young braille learners' acquisition of literacy skills over a multi-year period (Emerson, Holbrook, & D'Andrea, 2009).

The **National Early Literacy Panel** (NELP), a collaboration initiated in 2002 by the National Institute for Literacy along with other agencies, undertook an extensive analysis of early literacy. The panel conducted a review of approximately 500 research studies to identify evidence-based strategies that effectively support the development of literacy skills in young children, from infancy through five years old. Part of their comprehensive study involved exploring how children's literacy development is influenced by their home and family environments. The conclusions of this study include the following (Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH, DHHS, 2010):

Six variables were moderate to strong predictors of later achievement in conventional literacy skills:

- alphabet knowledge: recognition of letter names and sounds
- phonological awareness: the ability to perceive and manipulate the sounds of spoken language independent of meaning. At the preschool level, this includes blending and segmenting syllables, recognizing rhyming words, and isolating the initial sound (phoneme) of a word.

- rapid automatic naming of letters and digits: the ability to name random sequences of letters or numbers quickly and accurately
- rapid naming of colors and pictures of objects: the ability to name random sequences of colors or pictures of common objects quickly and accurately
- letter writing or name writing: the ability to write letters or part or all of one's first name
- phonological short-term memory: the ability to recall what was said for a short duration

Five emergent skills correlated moderately with at least one conventional literacy skill:

- concepts about books and print: understanding of print conventions (e.g., books include a cover, multiple pages, and text; books are written by authors; text is read from left to right and top to bottom)
- print knowledge: the skills of alphabet knowledge, print conventions, and early decoding
- reading readiness: print knowledge (described above) as well as phonemic awareness, memory, and vocabulary skills
- oral language: competence in listening and speaking. Strengths in definitional vocabulary, listening comprehension, and grammar were associated with later literacy achievement. The correlation was much weaker for just knowing words or having a large vocabulary.
- visual processing: the ability to identify similarities and differences in printed symbols

The NELP study also recommended literacy development interventions suitable for home and preschool environments. These focus on sharing books, activities to promote oral language development, and foundational literacy skills such as letter recognition and sound-symbol associations.

The **National Reading Panel** (NRP), established by the U.S. Congress in 1997, was tasked with evaluating research on reading instruction. Their goal was to identify the most effective approaches. The NRP's findings highlighted key evidence-based practices across five areas of literacy

instruction (National Reading Panel, 2000). These conclusions, as adapted from a table summarizing the findings in *Beginning With Braille* (Swenson, 2016, p. 7), formed the basis for developing the Scope and Sequence and related activities for *BOP-K*:

- Phonemic Awareness (part of Phonological Awareness): The ability to recognize and manipulate the individual sounds of language, or phonemes. Phonemic awareness includes skills such as isolating the sound(s) at the beginning and/or end of a word, segmenting words into a sequence of sounds, and blending sounds to make words. Studies showed that explicit, systematic instruction in phonemic awareness correlated with better word reading and spelling skills. This instruction was most effective when combined with the manipulation of letters of the alphabet (phonics).
- Phonics: The relationship between a written letter or cluster of letters and one or more specific phonemes. Children use phonics to decode unfamiliar words when reading and to spell words when writing. Studies showed that early, systematic instruction in phonics had a positive effect on children's word recognition, spelling, and reading comprehension. However, the NRP cautioned that phonics instruction is only one part of a comprehensive reading program.
- Fluency: The ability to read smoothly and accurately at a normal speaking rate, observing punctuation marks, and using phrasing and expression that reflect the meaning of the text. Fluent reading was related to better comprehension in younger readers. Repeated oral reading of the same text and other forms of oral reading practice aided fluency development.
- Vocabulary: An understanding of word meanings, including both content area words and words characteristic of mature oral and written language. Children learn much of their vocabulary indirectly through oral language, read-alouds, and independent reading. However, direct teaching of individual words and strategies for determining the meaning of unfamiliar words (e.g., using prefixes and suffixes) is also effective in building children's vocabulary.

- **Comprehension:** The purpose for reading. Comprehension demands active participation by the reader before, during, and after reading. Studies found that direct instruction in specific comprehension strategies improved reading achievement. These included self-monitoring, using graphic and semantic organizers, answering and generating questions, recognizing story structure, and summarizing. The panel emphasized that a focus on comprehension should start with the earliest reading instruction.

The **Alphabetic Braille and Contracted Braille Study (the ABC Braille Study)** was designed to follow young children's acquisition of braille literacy skills over a multi-year period (Emerson, Holbrook, & D'Andrea, 2009). It took place from 2002–2007 and tracked the progress of thirty-eight braille readers from pre-kindergarten or kindergarten to second, third, or fourth grade, depending on how long each participated in the study. The impetus for the study arose from a debate among professionals in the field over whether fully contracted materials should be used from the beginning of instruction or whether it was more effective to teach uncontracted, or Grade 1, braille from the beginning and gradually introduce braille contractions. The teachers in the study included a balance between those choosing to start their students with uncontracted braille and those preferring contracted braille. Comprehensive quantitative data related to the students' progress in phonological and phonemic awareness, phonics, fluency, vocabulary, comprehension, and writing were collected by a team of researchers who visited each child twice a year. The researchers also collected qualitative data related to the classroom environment, the children's participation in literacy activities, and the perceptions of teachers, family members, and the children themselves.

Major findings of the ABC Braille Study included the following:

- **Contracted vs. Uncontracted Braille:** Students who learned more contractions earlier in instruction had higher scores in the areas of vocabulary, decoding, and comprehension than those who started with uncontracted braille and learned contractions more slowly. It is impossible to know whether those students who knew many contractions simply had more aptitude for learning

them, or whether the difference lay in the timing and pace at which teachers introduced contracted words. However, the researchers concluded that "... it seems that the introduction of contractions early in a student's reading process is associated with higher literacy performance later in the student's career" (Emerson et al., 2009).

- **The Importance of High-Quality Literacy Instruction for Braille Learners:** Over the course of the study, approximately half the young students failed to achieve grade level expectations in reading, despite having mastered the fundamentals of reading (phonological awareness and phonics skills) in kindergarten and first grade. This was a completely unexpected – and disturbing – outcome. The researchers concluded that whether a student began with contracted or uncontracted braille was less important than the need for high quality literacy instruction. Their findings indicated that the role of a Teacher of Students with Visual Impairments (TSVI) goes far beyond simply teaching the braille code to a young beginning braille learner. Instead, instruction needs to focus on the full range of reading processes – phonemic awareness, phonics, fluency, vocabulary, and comprehension (Emerson et al., 2009). When a child is included in a general education classroom, the TSVI and the classroom teacher should work in partnership to ensure that all aspects of literacy are taught (Barclay, Herlich, & Sacks, 2010; Sacks, Hannan, & Erin, 2011).

In addition to these findings, the ABC Braille Study produced the following recommendations related to effective braille instruction for young children:

- Introduce contractions early in the child's literacy instruction. As noted above, children in the study who knew more contractions scored higher in multiple areas of reading than those who knew fewer (Emerson et al., 2009). Also, children who read contracted braille did not experience greater difficulty recognizing characters than those who read uncontracted braille (Wright, Wormsley, & Kamei-Hannan, 2009).

- Teach the child to use two hands to read braille from the beginning. During the study, this approach led to the development of more efficient tracking patterns and greater reading efficiency than one-handed reading (Wright et al., 2009).
- To improve reading efficiency, work on decoding skills and reading connected text, rather than focusing primarily on hand movements (Emerson et al., 2009).
- Monitor the child's reading fluency regularly, including their reading rate, accuracy, and prosody (Emerson et al., 2009).
- Partner with the classroom teacher to provide writing instruction and feedback. Collect and analyze writing samples regularly to monitor the child's progress in all aspects of writing (spelling, mechanics, vocabulary, composition, etc.), in addition to braille contraction use (Erin & Wright, 2011).
- Recognize the importance of motivation in literacy instruction. Create activities that relate to the child's interests and allow them to make choices (Barclay & Sacks, 2010).

Additional information about the ABC Braille Study and its implications for TSVIs can be found at [The ABC Braille Study: Results and Implications for Teachers – Paths to Literacy](#). This resource also includes suggested teaching strategies in the areas of spelling, introduction of braille contractions, fluency, vocabulary, and comprehension based on the findings of the ABC Braille Study.

References

- Barclay, L., Herlich, S.A., & Sacks, S.Z. (2010) Effective teaching strategies: Case studies from the Alphabetic Braille and Contracted Braille Study. *Journal of Visual Impairment & Blindness, 104*(12), 753-764.
- Emerson R. W., Holbrook M. C., & D'Andrea F. M. (2009). Acquisition of literacy skills by young children who are blind: Results from the ABC Braille Study. *Journal of Visual Impairment & Blindness, 103*(10), 610–624.

Erin, J. N., & Wright, T. S. (2011). Learning to write in braille: An analysis of writing samples from participants in the Alphabetic Braille and Contracted (ABC) Braille Study. *Journal of Visual Impairment & Blindness, 105*(7), 389-401.

Eunice Kennedy Shriver National Institute of Child Health and Human Development, NIH, DHHS. (2010). *Developing Early Literacy: Executive Summary of the National Early Literacy Panel*. U.S. Government Printing Office.
<https://www.nichd.nih.gov/sites/default/files/publications/pubs/documents/NELPSummary.pdf>

National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. (NIH Publication No. 00-4769). National Institute of Child Health and Human Development.
<https://www.nichd.nih.gov/publications/pubs/nrp/smallbook>

Sacks, S. Z., Hannan, C. K., & Erin, J. N. (2011). Children's perceptions of learning braille: Qualitative and quantitative findings of the ABC Braille Study. *Journal of Visual Impairment & Blindness, 105*(5), 266-275.

Swenson, A. M. (2015). *Beginning with braille: Firsthand experiences with a balanced approach to literacy* (2nd ed.). Louisville, KY: APH Press.

Wright, T. S., Wormsley, D. P., & Kamei-Hannan, C. (2009). Hand movements and braille reading efficiency: Data from the Alphabetic Braille and Contracted Braille Study. *Journal of Visual Impairment & Blindness, 103*(10), 649-661.