

The ABC Braille Study: Results and Implications for Teachers

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Before reading this summary of the ABC Braille Study, predict whether the following statements are true or false. The correct answers appear at the end of this article – some may surprise you!

In the ABC Braille Study . . .

1. The majority of the young braille readers were good spellers.
2. Children who learned uncontracted braille first were better spellers than those who started with contracted braille.
3. Students made very few braille errors (e.g., reversals) when reading aloud.
4. Students who knew more contractions read faster.
5. Most kindergarten and first grade braille readers demonstrated age appropriate skills in phonemic awareness and phonics.
6. 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.
7. The majority of the study's participants, none of whom had a disability other than their visual impairment, performed as well as their sighted peers on tests of vocabulary and reading comprehension.

The Alphabetic Braille and Contracted Braille Study (the ABC Braille Study) was the first research project to follow young children's acquisition of braille literacy skills over a multi-year period (Emerson, Holbrook, & D'Andrea, 2009). The impetus for the study arose from a debate among professionals in the field over the introduction of braille contractions during early reading instruction. Traditionally, many teachers have used fully contracted materials from the beginning and taught contractions as they appeared in students' reading texts. Other teachers, however, have argued that it is more effective to teach children uncontracted, or alphabetic braille first, with a gradual introduction of contractions. These differing approaches are reflected in the principal research question of the ABC Braille Study:

“Are there differences in the reading rates, comprehension, vocabulary, word recognition, and reading achievement levels of children who are initially taught contracted braille and those who are initially taught uncontracted braille? “

The ABC Braille Study took place over a five year period (2002-2007) with major funding from the American Printing House for the Blind and additional support from the Canadian Braille Literacy Foundation. Thirty-eight US and Canadian children with no disabilities other than their visual impairment participated, starting as pre-K or kindergarten students in one of the first three years of the study and continuing until 2007, the final year of data collection. At that time, the students who enrolled in 2002 were in fourth grade; later enrollees were in second or third grade.

The teachers in the study included a balance between those choosing to start their students with uncontracted braille and those preferring contracted braille. Interestingly, many teachers who initially opted for the uncontracted approach began to teach contractions within the first year. Because the contracted and uncontracted groups became less clearly defined, researchers developed a measure of “contractivity” that reflected the average number of contractions a particular student learned each year. Students with high contractivity scores knew more contractions than those at the same grade level with lower scores.

Children in the study were visited twice a year at school by a member of the research team who collected data related to their progress in learning the braille code and acquiring age appropriate literacy skills. Qualitative measures included a description of the classroom environment; observation of the children’s participation in literacy activities; and interviews with teachers of visually impaired students, classroom teachers, family members, and the children themselves. Quantitative assessments tapped students’ skills in the areas of phonemic awareness, phonics, fluency, vocabulary, and comprehension. The following instruments, all available in braille, provided researchers with a broad picture of each child’s literacy skill development over time:

- Texas Primary Reading Inventory (TPRI; 2003) for students in kindergarten through grade 2. Focus: Phonemic awareness and decoding skills.
- Johns Basic Reading Inventory (BRI; Johns, 2001) for students in grades 1 through 4. Focus: Oral reading fluency, accuracy, and comprehension.
- Brigance Comprehensive Inventory of Basic Skills—Revised, Reading Vocabulary and Spelling sections (Brigance, 1999) for students in grades 1 through 4. Focus: Vocabulary and spelling.
- Assessment of Braille Literacy Skills (ABLS) Braille Contraction Checklist (Koenig & Farrenkopf, 1995). Focus: Checklist of contractions taught; maintained by teachers of visually impaired students throughout the study.

The findings of the ABC Braille Study are of enormous value to professionals in the field, particularly those who work with beginning braille readers.

- **Phonemic Awareness and Phonics:** Most kindergarten and first grade braille readers demonstrated age appropriate skills in phonemic awareness and phonics, regardless of whether their initial instruction included contracted braille or not. However, the higher level decoding skills assessed on the second grade TPRI were challenging for a number of students from both groups.
- **Spelling:** Over 80% of the study's participants were at or above grade level in spelling at the end of the study. Children who had learned many contractions early were the best spellers.
- **Reading Speed:** Oral reading fluency rates did not correlate with the number of contractions taught. Children who knew more contractions did not read faster or slower than those who knew fewer. However, as a group, the braille readers read much more slowly than their sighted peers.
- **Miscue Analysis:** The children made very few miscues related to the braille code (e.g., reversals) as they read aloud, although, like sighted children, they did make reading errors. The researchers concluded that the use of braille does not increase the number of miscues experienced by readers.
- **Vocabulary:** By the last year of the study, only about half of the students were at or above grade level in vocabulary, based on results from the Brigance . The researchers noted that vocabulary appears to be a challenging area for braille readers.
- **Comprehension:** The percentage of below grade level scores in reading comprehension increased as children moved through the grades. About half of the third and fourth graders who participated in the study were reading below grade level. Like vocabulary, reading comprehension appears to be a significant area of need for young braille readers.
- **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. However, 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. So, while there was a correlation between greater mastery of contractions and higher reading achievement, it was not possible to establish a direct cause and effect relationship.

Implications and Recommendations

While the ABC Braille Study suggests that early introduction of contractions correlates with stronger reading skills for students without additional disabilities, its more important finding is the failure of many elementary-aged braille readers to achieve grade level expectations in reading vocabulary and comprehension. The researchers concluded that instruction must focus

not just on the braille code (which most study participants seemed to master with relative ease), but on basic reading processes. It is this author's belief that teachers of visually impaired students need to do more than teach the braille code to beginning readers. They also have a responsibility to incorporate reading processes into their instruction, monitor student progress along with the classroom teacher, and be ready to take the lead in seeking further assessments, resources, and interventions if students start to fall behind.

Answers to True / False Statements on page 1:

1. True 2. False 3. True 4. False 5. True 6. True 7. False

Suggested Teaching Strategies

Note: The following suggestions were generated by the author of this article in response to the outcomes of the ABC Braille Study.

1. Spelling:

- Always spell contractions letter by letter when referring to them orally. For example, "The word *vacation* includes the **a-t-i-o-n** contraction."
- Have students learn the contracted and uncontracted forms of their spelling words.
- Consider individualizing students' spelling lists by substituting contracted words from their reading and writing for some of the regular spelling words. This will reinforce new contractions that students need for their current literacy learning.
- Start keyboarding instruction in the primary grades. Typing work on a computer with a screen reader reinforces the conventional spelling of words.

2. Contractions

- Whether a teacher chooses to begin braille instruction in contracted or uncontracted braille does not appear to be as important as introducing contractions early. Teachers may choose to have their students learn high frequency contracted words (e.g., "go", "like", "and") right along with the alphabet and continue with fully contracted braille materials. Or, they may decide to teach the alphabet first and have the students read words in uncontracted or customized braille for a limited period of time.
- Young children do not learn contractions the way they are taught in a braille class or to a person who already knows how to read in print. For example, introducing all the lower signs or dot 5 contractions as a group isolates them from the actual

process of reading. Instead, it can be very effective to integrate the introduction of contractions with the connected text (sentences, stories, non-fiction trade books) the children are actually reading. Often an emotional connection with the content of a book helps students internalize new contractions more quickly.

- In this author's experience, it is usually not necessary to provide children with customized braille material containing only the contractions they know. Many young braille readers without additional disabilities are capable of learning contractions as they appear in the fully contracted books they read, with support from the teacher of visually impaired students. Fully contracted materials also provide children with the opportunity to learn contractions incidentally. Note that some braille readers with additional disabilities may benefit from customized braille materials and a slower, more controlled, rate of contraction introduction.
- Color, number, and other common words encountered in kindergarten and first grade instruction present opportunities for introducing contractions, e.g., the "ed" in "red", the "ow" in "yellow", and the "en" in "seven" and "ten". Using the Word PlayHouse letter/contraction tiles (APH), flashcards, games, and other word study activities, teachers can relate these key words to other words with the same contractions. The ability to make connections among words with similar chunks of letters, including contractions, is an important skill for beginning readers. (Pinnell & Fountas, 1998)
- Regardless of their instructional approach, teachers need to maintain careful records of the contractions their students are learning. In addition to a list of contractions introduced, regular assessments (e.g., monthly or quarterly) provide teachers with concrete data showing the contractions their students have mastered.

3. **Fluency:**

- Expect students to reread books until they achieve fluency. Check to be sure their fingers are always on the word they are reading, even if they have memorized the text.
- As children reread familiar text, encourage them to work on developing more efficient hand and finger movements. It's easier for them to focus on tracking patterns when they do not have to think about decoding.
- As students become more proficient readers (usually by second grade), monitor their reading fluency regularly as one measure of reading progress. Informal reading inventories, such as the Johns Basic Reading Inventory, include simple formulas to determine reading rate.
- Talk to students about the importance of reading fluently, and model appropriate rate, phrasing, and expression. Record students reading, and have them critique their own fluency.

4. **Vocabulary**

- Expose students to as many age appropriate words and concepts as possible through hands-on exploration, tactile graphics, models, discussion, books, and the Internet.
- Promote students' curiosity about unfamiliar words and their meanings. Challenge them to become "word detectives", always on the lookout for new words as they listen or read. Help students keep an ongoing braille list or electronic file of interesting words, and encourage them to use their new vocabulary when speaking and writing.
- Encourage students to add one or two personal words to their spelling lists each week, selecting from the list of new words they have learned.

5. **Comprehension**

- Become familiar with Bloom's Taxonomy, which describes six different levels of intellectual behavior: remembering, understanding, applying, analyzing, evaluating, and creating. Use this structure to promote a variety of higher level thinking skills when working with students.
- Read aloud to students, especially if they are very young or appear to have difficulty understanding read-aloud books in the general education classroom. Take the time to explain new words and concepts; provide practice with a variety of comprehension strategies, such as predicting, connecting, inferring, and evaluating.
- Ensure that students have a wide variety of braille reading material at their level, including fiction and nonfiction. Take advantage of the new Early Braille Tradebook sets from APH and sources of free braille books (see attached Resources).
- Monitor students' classroom and take-home reading. Assist with book selection, preview contractions, vocabulary, and concepts, and check for understanding.
- Assess reading accuracy, fluency, and comprehension regularly (e.g., three times a year) using an informal reading inventory, such as the Johns Basic Reading Inventory. This will provide a record of reading progress over time and signal any areas of weakness that need attention.

Lastly, remember that when teaching young children to read braille, the braille code cannot be separated from instruction in other reading processes. Teachers of visually impaired students are also teachers of reading.

SOURCES OF FREE (or on quota) HIGH QUALITY BRAILLE BOOKS

- APH: Early Braille Trade Books: Early print trade books from The Wright Group and Rigby with labels in contracted or uncontracted braille. Access to an interactive website for information about each book (including a list of contractions) and on-line record keeping of the number of contractions a student has learned.

- Braille Institute, Los Angeles: The Braille Special Collection – Any visually impaired child between the ages of 3 and 18 who is living in the United States or Canada is eligible to receive up to twelve free books per year through the Braille Special Collection Program. These are often recently published books, not available elsewhere in braille. "Dots for Tots" board books for younger children include delightful manipulatives to reinforce story content and a tape.
 - For more information, visit www.brailleinstitute.org. Click on "Free Braille Institute Programs and Services" on the right, "Children's Literacy Services" on the left, and "Children's Books".
 - To sign up for the Braille Special Collection:
 - Call 1-800-272-4553 M-F 9:00 AM to 5:00 PM (PST)
 - e-mail ums@brailleinstitute.org
- Seedlings "Book Angel Program": Children may receive two free books a year from the Seedlings catalog. www.seedlings.org
- National Braille Press "Read Books! Program": Book bags containing information about braille in English or Spanish and a variety of literacy-related tactile and braille materials for children ages birth to seven are available to families on request. www.nbp.org

REFERENCES

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Pinnell, G. S., and Fountas, I. C. (1998). *Word Matters: Teaching Phonics and Spelling in the Reading/Writing Classroom*. Portsmouth, NH: Heinemann