



Current Knowledge about Instruction in Letter Knowledge, Phoneme Awareness, and Handwriting: What to Teach, When to Start, and Why to Integrate

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Are you deciding what kind of early reading program should be used in your school or school district? Are you a teacher aiming to provide best practices in foundations of reading to your students? The content below summarizes what has been learned about key components for beginners: letter knowledge, phoneme awareness, and handwriting, as well as about the value of combining these elements systematically. In addition, explanations are provided about two misunderstandings about these topics that have led to faulty recommendations in frequently used programs, standards, and legislative requirements for literacy instruction.

The Importance of Linking Phoneme Awareness and Letter Knowledge

The commonly held belief that teaching letter names facilitates learning to read has merit, but letter name knowledge does not foster reading progress by itself. It turns out that knowledge of letter names helps some students learn letter-sound pairs (e.g., m stands for /m/). However, that benefit stems from yet another factor: skill at isolating phonemes in spoken syllables. In other words, young students who have developed some awareness of phonemes in simple spoken syllables are able to draw on the names for many letters to aid their knowledge of letter-sound pairs (e.g., being aware of the /b/ in the word “be” helps recall of the letter-sound correspondence for the letters B and b and supports early spelling and reading). This points to the importance of fostering phoneme awareness and linking that to letter knowledge: just teaching letter names and letter-sound pairs leaves many students in the dark about what those have to do with literacy; they have simply memorized what seem to be arbitrary items. By helping students become aware of phonemes in words and then connecting those phonemes to letters, the “aha” can occur of understanding that the writing system works by using graphemes (letter or letter combinations) to represent phonemes (individual speech sounds) in spoken words. This realization is referred to as gaining insight about the “alphabetic principle” of our writing system, which is necessary for becoming a reader. Integration of instruction in phoneme awareness, letter sounds, and letter names supports learning of each and also contributes to the foundation for parallel processing of neurological information about letters and words that will provide the speed and robustness of decoding and word recognition as reading skills develop.

Research on the relevance of phoneme awareness for literacy development mushroomed after early studies by Isabelle Liberman and Donald Shankweiler were published in the 1970s. Numerous experiments have confirmed the role of phoneme awareness in improving reading success in both the short and long term and have also underscored the value of teaching phoneme awareness as the first step in instruction in letter knowledge. For example, in the early 1990s, Benita Blachman and her colleagues reported the outcomes of providing kindergarten students with direct instruction in phoneme awareness and in corresponding letter names and sounds: the students showed noteworthy gains in ability to segment the sounds in spoken words, in letter knowledge, and in ability to read and spell, despite the fact that no instruction in reading or spelling had been provided. These and many other studies led to the conclusions reported in the National Reading Panel's comprehensive report in 2000 regarding the crucial role of incorporating letters in phoneme awareness activities for beginners. The authors summarized, “It is essential to teach letters as well as phonemic awareness to beginners. *Phoneme awareness training is more effective when children are taught to use letters to manipulate phonemes. This is because knowledge of letters is essential for transfer to reading and spelling* (emphasis added).”¹

¹ National Institute of Child Health and Human Development. (2000). *Report of the National Reading Panel. Teaching children to read: an evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups* (NIH Publication No. 00-4754). Chapter 2: Alphabetic: Part I. Phoneme Awareness Instruction, pg. 2-41. Washington, DC: U.S. Government Printing Office.

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This translation of research for practice clearly emphasizes the value of using letters in phoneme awareness tasks, a matter of widespread agreement in the research community. Because this differs from another recommendation you may have heard, let me address the misunderstanding that manipulation tasks should be done *without letters*. That interpretation probably grew out of early research findings in which ability to do phoneme manipulation tasks orally (e.g., what is smile without the /s/) was the most sensitive measure to differences in phoneme awareness between groups of good and poor readers, leading to the conclusion that this kind of measure reflects the pinnacle of phoneme awareness. However, it has since been confirmed that when good readers hear a word, they automatically activate their knowledge of how the word is spelled, aiding their performance on these manipulation tasks. In short, the incorrect belief that manipulation activities such as substitution, addition, or deletion of a phoneme from a spoken word should just be done orally, without letters, is based on a lack of understanding that manipulation measures tap reading and spelling expertise. Thus, students who are better readers do better on such tasks as a *consequence* of their reading prowess. For students developing phoneme awareness, whether beginners or older struggling readers, using letters in word building activities bolsters memory and helps foster advances in phoneme awareness. Other useful phoneme awareness tasks include isolation and identification, blending, and segmentation.

A question you may have is how to coordinate instruction in phoneme awareness and in letter knowledge in the context of early activities targeting the larger sound structures of spoken words: syllables, rhymes, onsets, and rimes (encompassed by the term phonological sensitivity). The answer requires a quick review of research. The results in the early phase of studies of phonological awareness, and in later research, found the appearance of a continuum of development of awareness from larger chunks of sound (i.e., syllables) to smaller units of speech sounds during the preschool to early elementary years, with phoneme awareness generally emerging when students were learning to read at school. This led to the assumption that awareness of the larger elements

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has to be attained before awareness of individual phonemes can be achieved, giving rise to a frequent practice of focusing on a prolonged sequence of instruction and activities that span the “continuum.” If this were a necessary path for achieving phoneme awareness (i.e., the type of awareness that is germane to reading and spelling), that sequence would be appropriate. However, several lines of evidence indicate that this is not the case. One of the compelling research findings is that phoneme awareness can be taught to children who lack phonological sensitivity. For example, students who lack awareness of syllables readily gain phoneme awareness when introduced to activities that target that goal. A further indication is that commercial programs to build phoneme awareness that begin at the level of the phoneme (i.e., not providing prior instruction in rhyme, syllable, onset and rime elements) are very successful with kindergarten students. Recent school-based research projects corroborate the strong benefits of instruction in the first year of school that focuses on awareness of phonemes and that links phonemes with letters, along with other literacy-related activities.

Returning to the question posed in the preceding paragraph, because it is not necessary to provide instruction in phonological sensitivity before concentrating on phoneme awareness (and some findings suggest it is also counterproductive), instruction on the larger sound segments can be dropped. Without those elements, the alignment of teaching phoneme awareness and letter knowledge is easily accomplished, keeping in mind the developmental progression of phoneme awareness. Children generally develop phoneme awareness in terms of the position of the phoneme in a word: Beginning awareness usually proceeds from awareness of the external single phonemes (i.e., of the initial phoneme followed by awareness of the final phoneme) to awareness of the medial vowel in words with simple syllable structures (e.g., the vowel between /m/ and /t/ in meat).

Advanced phoneme awareness consists of becoming aware of the internal consonants in more complex syllables that include consonant blends (e.g., snap, pink, stamp). Letter sounds and names would be introduced at the emergence of phoneme awareness in beginning phoneme awareness (e.g., the /m/ at the beginning of mouse) and, as phoneme awareness increased, would be included in representations of other positions in words as well (e.g., the /m/ at the end of Tim, and, later, in the consonant blend in smell).

To launch this process, both researchers and educators have recommended using a small set of phonemes/letters (i.e., 7 or 8), including one or two vowels, at the beginning of kindergarten. By starting with phoneme awareness activities and introducing letters for those phonemes as awareness is achieved, in short order students grasp the alphabetic principle and can practice writing the letters (see below) and using invented spelling with that first letter-sound set. Linnea Ehri notes that “once children know a small set of grapheme-phoneme correspondences, such as a, m, s, p, f, o, t, they can begin to write phonemic spellings of many words (e.g., mat, pot, Sam, map, mop...)”²

² Ehri, L. (2021). Sight word learning supported by systematic phonics instruction. See section on Phoneme Segmentation (bullet 3). <https://understandingreading.home.blog/2021/04/18/dr-linnea-ehri-list-of-instructional-guidelines-for-enhancing-orthographic-mapping-and-word-learning/>

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Typically, the initial set includes high-frequency consonants that are easier to become aware of because they are produced at the front of the mouth and/or can be stretched. The focus on the one or two vowels in the set is on their “short” sound(s) in order to support spelling regular words.

Small group instruction allows differentiation of instruction according to student progress. Within a few weeks, students can be reading and writing stories with words built from those phonemes/letters and feeling excited about their accomplishments. By following a planned sequence as the school year progresses, additional phoneme awareness and letter-sound knowledge is attained, expanding the repertoire of words that can be written and read at the beginning phoneme awareness level, along with a modest set of high-frequency words useful for sentence reading and writing. This foundation gives children from all backgrounds the initial ingredients for success in reading and writing and sets the stage for learning more advanced phoneme awareness, phonics, and other literacy skills in first grade. Of course, these activities should be offered along with other literacy-related content in vocabulary and background knowledge, as well as in retelling and comprehension, that are beyond the scope of this paper.



Please Don't Skip Handwriting Instruction and Practice with the Letters/Sounds Being Learned

These days, short shrift is being given to handwriting, to the disadvantage of students in early and later grades. Experts in writing such as Virginia Berninger and Steve Graham have long reported that poor handwriting slows and limits the quantity, content, and quality of student products in contrast to skilled, automatic handwriting (not necessarily pretty). A further advantage for individuals with skilled handwriting is that taking notes by hand is documented to bond better with memory than typing notes does. In terms of beginners, brain research has revealed that handwriting practice helps students learn their letters and letter sounds. In addition, neurological studies highlight the interconnectedness of language systems, including the motor patterns for letter writing. In short, despite the availability of electronic ways to communicate, it remains very important for children to develop handwriting from the beginning, optimally by systematically including this component

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as children are acquiring phoneme awareness and letter knowledge with the goal to work toward automaticity. Teachers can help by having mnemonic strategies (such as a snake in a 's' shape to remind students of both the speech sound and the letter formation for that grapheme), by having models of letters that include numbered arrows indicating how and when the strokes are to be made, and by having the student regularly engage in activities requiring writing as ways to practice and to express themselves creatively.

Summarizing the Implications

THE CENTRAL IMPLICATIONS OF THESE DEVELOPMENTS FOR DECISION-MAKING ABOUT CURRICULA ARE THAT:

1) Phoneme awareness is the proper starting point for phonological awareness instruction; 2) This should commence early in the kindergarten year; 3) Teaching letter sounds and names should be integrated with phoneme awareness instruction, along with frequent handwriting instruction and practice.

Further implications:

- There is a need for all involved in early literacy education to recognize that research has clarified what needs to be taught and how and to make corresponding modifications in materials, literacy standards, and legislation about literacy instruction.
- This approach is beneficial to all students, reducing the occurrence of reading casualties and addressing gaps for socio-economically disadvantaged students starting school.
- Anything can be taught poorly or well; there is great potential to use engaging activities and to generate student confidence by teaching this material well.

A sample of resources on the topics in this paper:

Ball, E. & Blachman, B. (1991). Does phoneme awareness training in kindergarten make a difference in early word recognition and developmental spelling? *Reading Research Quarterly*, 26(1), 49-66.

Brady, S. (2020). A 2020 perspective on research findings on alphabets (phoneme awareness and phonics): Implications for instruction. *The Reading League Journal*, 1(3), 20-28. (Also see expanded version available for members on the Reading League website.)

Dehaene, S. (2011). The massive impact of literacy on the brain and its consequences for education. *Human Neuroplasticity and Education*, 117, 19-32. www.pas.va/content/dam/accademia/pdf/sv117/sv117-dehaene.pdf

Gillon, G. (2018). *Phonological Awareness: From Research to Practice* (2nd ed.). Guilford Press.

Gillon, G., McNeil, B., Scott, A., Denston, A., Wilson, L., Carson, K., & Macfarlane, A.H. (2019). A better start to literacy learning: findings from a teacher-implemented intervention in children's first year at school. *Reading and Writing*, 32, 1989-2012.

Graham, S., MacArthur, C.A., & Fitzgerald, J. (2007). *Best Practices in Writing Instruction*. (See chapters by David Coker (Writing instruction for young children: Methods targeting the multiple demands that writers face, Ch. 5, pgs. 101-118) and by Bob Schlagal (Best practices in spelling and handwriting, Ch. 9, pgs. 179-201). New York, NY: Guilford Press.

James, K., Jao, R.J., & Berninger, V. (2015). The development of multi-leveled writing brain systems: Brain lessons for writing instruction. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of Writing Research*, pp.116-129. New York, NY: Guilford Press.

Lieberman, I.Y., Shankweiler, D.P., & Liberman, A.M. (1989). The alphabetic principle and learning to read. In D. Shankweiler, & I.Y. Liberman (Eds.), *Phonology and Reading Disability: Solving the Reading Puzzle* (IARLD Monograph Series). Ann Arbor, MI: University of Michigan Press. eric.ed.gov (ED427291)

Share, D. L. (2004). Knowing letter names and learning letter sounds: A causal connection. *Journal of Experimental Child Psychology*, 88, 213-233.

Treiman, R. & Wolter, S. (2020). Use of letter names benefits young children's spelling. *Psychological Science*, 31(1), 43-50