CHAPTER 4

Reconceptualizing Alphabet Learning and Instruction

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> A few centuries ago, mothers baked gingerbread in the shape of letters, and the child might eat all he could name. Perhaps even now pedagogy would not suffer so much as stomachs from this practice.
>
> —Edmund Burke Huey

We've come a long way since Anne McGill-Franzen's discovery that many of the publically funded preschools in her study were actually withholding direct alphabet instruction until the children were developmentally "ready"—never mind the fact that their more affluent peers in private preschools were getting direct instruction in alphabet recognition and letter sounds for years (McGill-Franzen, 2002). Nowadays, national standards for preschool and kindergarten position alphabet instruction as a nonnegotiable component in early childhood classrooms (National Governors Association Center for Best Practices and Council of Chief State School Officers [NGA & CCSSO], 2010; Office of Head Start, 2015). Still, teachers continue to have questions, some of which have answers, and some of which we are still exploring. These include questions like when to start alphabet instruction and which to teach first—letter names or letter sounds. Or perhaps both simultaneously? What order should the letters be taught in? And how? What should high-quality alphabet instruction look like? And even though most preschool classrooms now include an alphabet curriculum, the issue of readiness keeps turning up like a bad penny. Decades earlier the question may have been when are children

ready for reading instruction. Now the question has morphed into how many letters should a child know at the beginning of kindergarten to ensure success.

This chapter discusses alphabet knowledge. *Alphabet knowledge* has traditionally been defined as the recognition and naming of uppercase and lowercase letters and the paired associations between letter names and letter sounds. More recently scholars have expanded that definition to also include the formation of upper- and lowercase letters and their use or application for reading, spelling, and writing words. We organize this chapter according to the questions teachers have about alphabet instruction and the research that has been done to address these inquiries. We focus on three pivotal studies that have changed the course of our exploration and understanding about these inquiries significantly. The first study changed our thinking about when and how children are ready to learn to read and write (Mason, 1980). The second and third studies opened the door to a consideration of children's personal experiences with letters of the alphabet and characteristics of the letters themselves (Treiman & Broderick, 1998; Treiman, Tincoff, Rodriguez, Mouzaki, & Francis, 1998). These three pivotal studies subsequently spawned new research, using more sophisticated analytic methods, that also addresses critical questions teachers have about alphabet instruction, and this research will be discussed in turn.

WHEN SHOULD ALPHABET INSTRUCTION BEGIN?

Ms. Meyer was assessing her kindergartners' knowledge of letter sounds. She presented a sheet of randomized uppercase alphabet letters to Alfred, who had just turned 5. "Put your finger on the first letter. Tell me what sound this letter makes," she asked. Alfred dutifully placed his finger on the first letter and replied, "It makes the sound of a dog barking!" When Mrs. Meyer moved on to the next letter, Alfred said, "It makes the sound of coffee brewing!" And on the third, "The sound of car horns honking!"

Alfred's response to Ms. Meyer's simple alphabet assessment reveals important insights into his understanding of written language. While Alfred was able to name some letters, he has yet to grasp that letters not only have names, but also represent speech sounds. Although he can write his own name, his other writing shows no connection to sound. He does not yet understand the *alphabetic principle,* or the understanding that speech can be divided into individual units of sound and matched to letters in a systematic way (Liberman, Shankweiler, & Liberman, 1989). For Ms. Meyer, the question becomes:

What do I do now? Is it too soon to start letter–sound instruction? After all, Alfred is on young side for kindergarten!

If Ms. Meyer had been teaching Alfred in the early to mid-1900s when maturation theory dominated reading education, she would have checked Alfred's birth date. According to this theory, determining when to start instruction depended on children reaching a specific chronological age. If Alfred had been a kindergartner in the 1930s, formal literacy instruction would have started when he reached a mental age of 6 years, 6 months (Morphett & Washburne, 1931). His parents would have been discouraged from teaching him themselves because their misguided attempts might have damaged his literacy learning later on. If Alfred had lived in the early 1900s, Ms. Meyer wouldn't worry about him until he reached the requisite age.

If Ms. Meyer had been teaching Alfred in the 1960s or 1970s, she would have had a different response: She would have encouraged him to pretend to "read" and "write" words, using what he knew, as best he could. Marie Clay had just written a groundbreaking dissertation in which she described children's behaviors as they interacted with books and writing well before they could actually read or write conventionally (Clay, 1966). Based largely on her work, young children began to be viewed as *emergent readers,* who were constantly progressing along a continuum of literacy development that begins at birth (Clay, 1977). Instead of viewing children as "mature" or "not mature" enough to begin formal instruction, researchers began to explore the similarities between children's early language development and their emerging concepts about print. Prior to this groundbreaking research, it was believed that children could not, and indeed should not, write before they could read and spell conventionally, a view that was challenged by researchers such as Chomsky (1971) and Clay (1977). Their work sparked an interest in exploring the relationship between children's early writing attempts and their evolving capabilities to notice letters and read words.

Still, even with this explosion of interest in emergent literacy in the 1970s, the degree to which these emergent readers could actually "read" signs or labels or how they learned to do so before formal schooling was unknown. Although studies examined what preschoolers knew about reading (Downing, 1970; Ehri, 1975; Read, 1971), few researchers had actually followed the *development* of prereaders' knowledge or their changing competencies in letter naming, letter writing, using letter sounds, or their early "reading" of signs and labels. At that time, no one knew whether children's understanding about how to print and recognize letters and words on signs and labels in their environment was even related to their recognition of words in books later on. If such was the case, then teachers like Ms. Meyer would have had more confidence about how to leverage emergent literacy behaviors, such as noticing letters and signs, toward the next level of understanding: the alphabetic principle.

Mason (1980): *When Do Children Learn to Read?*

This charge was taken up by Mason in a landmark study exploring 4-year-old children's changing letter and word reading expertise (1980). In her study, Mason followed two classrooms of preschool children for 9 months. One classroom exposed children to letters (e.g., alphabet strips, beginning-letter picture cards, and spelling) but not to words, while the other class was exposed to printed words (e.g., color and number words, word–picture cards) but not to letters. Both classrooms listened to stories, looked at books, wrote their names, labeled pictures, and did cooking activities using recipes. Parents in both classrooms were surveyed about their child' s curiosity, awareness, and knowledge of letters and words, and they were asked to describe what they did to help their child learn their letters and figure out words in reading and writing. In addition to observing the children's evolving literacy behaviors in the classrooms across the 9-month period, Mason assessed them at regular intervals to measure their alphabet knowledge and their ability to read words and to document their changing approaches to learning and remembering words and how to spell them.

Children from both classrooms "underwent striking changes" in their letter and word knowledge during the 9 months, even though half of them did not receive classroom instruction in either letters or words (p. 215). Further, children in both classrooms learned similar numbers of letters and words, suggesting that their gains were attributable, at least in part, to their home environments. Parents from both classrooms reported that most children learned to write (using uppercase letters before lowercase letters) during this year and that almost all could recognize and name the letters of the alphabet. Most parents reported that their children first learned to recognize letter forms, then learned to connect letters to the act of reading and writing, and finally, learned to associate speech sounds with letters. Mason concluded that emergent readers attain important literacy skills, including alphabet knowledge and awareness of speech sounds (phonological awareness), well before formal instruction, and that these skills evolve into conventional reading with considerable parental support.

Mason's study was pivotal in our understanding of emergent readers not only because it contributed to the reconceptualization and solidification of emergent literacy theory, but also because the number and sophistication of words and labels that parents reported that their children had learned to read by the end of the study could be predicted by the measures of alphabet knowledge that Mason had collected earlier in the preschool classroom. For example, children who attended to contextual cues surrounding words, as opposed to the specific letters within them, had difficulty learning and remembering any of the words they were taught. On the other hand, children who had mastered letter names and how to print them and who showed some interest in using

letters to "spell" words began to notice specific letters in signs and labels and were able to remember a few of the words Mason attempted to teach them. Mason's longitudinal data suggested a "natural hierarchy of knowledge development in learning to read words" (p. 203), starting with the alphabet. Had Ms. Meyer understood this hierarchy, she would have known exactly how to instruct Alfred to help him move forward.

Mason described this developmental hierarchy as divided into three levels based on the kinds of words children recognized and the strategies they appeared to use to do so. Children in the *context-dependent* level didn't appear to recognize printed words "differently from pictures" (p. 217). That is, the words were recognized only in a particular context, such as the MacDonald's sign cued by the golden arches. While these children were able to recognize a few signs or labels this way, they couldn't recognize these words if they appeared in a different context. They couldn't even recognize words they had been taught when they were presented in a different case, even though most children had been able to identify both upper- and lowercase letters in isolation. As they became increasingly interested in letters though, Mason described how children seemed to gain a more *visual recognition* of the words themselves, noticing specific letters within them. Children at this second level in Mason's study had learned the names of letters and could recognize a few familiar words. More important, they started to recognize those words in different contexts because, Mason believed, they were noticing specific letters in the words, and this visual analysis of letters within words aided their recognition of them in different contexts. This conjecture was supported by the kinds of mistakes the children made when they miscalled a word—mistakes that seemed to reflect their reliance on letter names. They often miscalled a word that began with same consonant, saying *bat* for *bin,* for example. Mason's parental data also supported this speculation. Parents reported that as their children learned to print letters on their own, they showed a greater interest in using letters to spell and puzzle out words in reading and writing. Mason's level-two children (visual recognition) were better than her level-one children (context dependent) in learning and remembering words in different contexts, even when they were presented in different cases.

As children's letter–sound knowledge solidified, they increasingly drew on this knowledge to sound out unfamiliar words. Mason classified such children at level three, or the *letter–sound analysis* level. These children could spell three-letter words, could read most of Mason's three-to-five letter words, and "had no problem learning or remembering new words" (p. 217). The parents of such children reported that they were learning to read words so quickly that they could no longer guess how many words they actually knew. Some were already reading storybooks independently.

Mason's study was remarkable for several reasons. First, it was the first study to follow children's literacy development longitudinally and to document

their changing competencies in alphabet knowledge in tandem with other early literacy behaviors, such as the reading and writing of signs, labels and words. Second, Mason's study was the first to link emergent reader skills and behaviors, such as letter naming, sign reading, and letter writing attempts to later word reading and spelling skills, a linkage that strengthened and expanded the emergent literacy theories advanced earlier by Clay (1977). Mason's study provided evidence that the emergent reading and writing behaviors previously described were linked to children's depth of alphabetic understanding and were actually precursors to and predictive of later reading success. Third, Mason documented children's early literacy development from preliterate, context-dependent strategies to increasingly literate graphophonic tactics that pressed the analysis of letter sounds into the service of word reading and spelling. Incremental growth in alphabet knowledge was at the core of this developmental continuum. Had Ms. Meyer recognized that Alfred's level of literacy development was context dependent, she might have considered bringing him to the next level of emergent literacy development by drawing his attention to the letters within personally important printed words, like his own name, and by leveraging his growing knowledge of letter names to learn and remember letter sounds.

Thanks to Mason's seminal study, alphabet knowledge started to be regarded as a catalyst that moved children along a developmental trajectory toward conventional literacy even before formal schooling. Her work suggested that the main contribution of letter knowledge to emergent literacy was to advance the onset of visual word recognition. Ehri and Wilce (1985) claimed that her label, *visual recognition,* was misleading, and that a better label for word learning at Mason's second level would have been "visual-phonetic recognition learning" (p. 174). Later research would confirm that letter–name knowledge plays an important role in the early phases of literacy development by stimulating more phonologically based strategies in early reading and writing (Foulin, 2005). In fact, the sizable correlations between knowledge of letter names in kindergarten and reading achievement in first grade have led some researchers to argue that a simple assessment of letter names "appears to be nearly as successful at predicting future reading as is giving a more comprehensive readiness battery" (Scarborough, 1998, p. 83).

Alphabet knowledge is now the Ouija board of literacy success across the United States, where kindergarten children are routinely administered tests of letter naming and letter sounds at entry to school to determine their degree of risk for developing reading difficulties. Now, instead of determining maturity or "readiness," we determine whether children meet a benchmark or an ideal number of letter names and letter sounds that research has shown that children should already know at kindergarten entry to ensure later literacy success. Piasta, Petscher, and Justice (2012a) found that the optimal number of upper- and lowercase letters that end-of-preschool children should be able to name is

18 and 15, respectively. Invernizzi, Juel, Swank, and Meier (2015), set the bar at 12 lowercase letters and 5 letter sounds for kindergarten entry. In either case, Alfred is performing well below either of these benchmarks, and Ms. Meyer must get to work on implementing classroom instruction and additional literacy interventions that will help him make progress. But where exactly does Ms. Meyer start? Should she start with letter names or letter sounds?

SHOULD WE TEACH LETTER NAMES OR LETTER SOUNDS?

> A Montessori preschool teacher was explaining to a child's parent how, in Montessori schools, they teach letter sounds, not letter names. The parent asked if they encouraged children to write phonetically using their own invented spelling. To assure the parent that they did, the teacher showed her a letter that her child, Parmis, had written earlier that day: YN R U K M? It said, When are you coming?; and the message was written using letter names.

The relationship between knowledge of letter names and knowledge of letter sounds is complex, and whether to teach letter names or letter sounds first is often debated. Parents in the United States tend to emphasize letter names as opposed to letter sounds by spelling out their children's names by while pointing to or printing the letters (e.g., Sam—*S, A, M*!), and by exposing their children to alphabet toys, books, and educational television shows, such as *Sesame Street,* that privilege letter names—all well before sending their children to school (Ellefson, Treiman, & Kessler, 2009). Most early childhood curricula in the United States also emphasize letter names first, with some exceptions, such as the Montessori curriculum and the approach advocated in the Core Knowledge Sequence: Content and Skill Guidelines for Preschool (Core Knowledge Foundation, 2013; Montessori & Gutek, 2004). This fact alone may well explain why Parmis wrote her message using letter names to represent the sounds instead of using letter sounds. The *when* in "*When are you coming?* starts with a /w/ sound, and so does the letter name *Y* (*why*). The /k/ sound at the beginning of *coming* is also heard when pronouncing the letter name *K* (kay). So, in spite of Montessori's practice of teaching letter sounds instead of letter names, Parmis most likely used what she already knew, letter names from her home environment.

In England, however, letter sounds are privileged. Parents *sound out,* rather than *spell out* the children's names while pointing to printed letters (e.g., SAM—/s/, /ae/, /m/), and the government mandates a national curriculum requiring first instruction in letter sounds, not letter names. In England, letter names are not even introduced until *after* the first year of school. Like Parmis's

teacher at the Montessori school, British teachers instruct their students to label letters with the phonemes they represent. But unlike Parmis, most English children don't already know the letter names.

So, which is best to teach first: letter names or letter sounds? And does it matter in the end? Evidence to date suggests that it does not (Ellefson et al., 2009). At the outset, early in development, children in the United States do better than children in England on tests of letter naming, whereas children in England do better than children in the United States on tests of letter sounds. These differences diminish over time. In either case, children work with what they know about the labels they use to refer to letters as they write words they don't already know how to spell. While Parmis might use letter name *Q* to represent the first sound in the word *cute,* spelling *cute* QT, her counterpart in England might use the letter sound of *Q* (e.g., /kwu/) to represent the initial sound in Kwanza, spelling *Kwanza* QONZO. In either case children use what they know to invent a spelling for a word they don't know how to spell conventionally. In Ellefson et al.'s words, " . . . children learn what they are taught. There are no intrinsic differences in the ease of learning between conventional letter names and sounds that are strong enough to overcome the effects of experience" (p. 338).

Treiman and Broderick (1998): *What's in a Name*

The effects of experience are personal and profound. Thanks to the seminal research of Treiman and Broderick (1998) we've moved beyond the either-or thinking of letter names versus letter sounds to consider the effects of children's earliest experiences with letters, specifically the letters in their own names. Treiman and Broderick demonstrated that the identity and characteristics of the first letter of a child's first name (or nickname) has a significant effect on the child's knowledge of letter names, such that children named Sam or Sarah are more likely to know the name of the letter *S* than are children named Alfred or Parmis. While they did not find similar effects of children's first name on their knowledge of letter sounds, future researchers, using larger samples and more sophisticated analytic strategies, have demonstrated an "own-name advantage" for letter sounds as well (Huang, Tortorelli, & Invernizzi, 2014, p. 190). When children are exposed to the spellings of their own names, they have many opportunities to associate the first letter with the first-letter name and the first sound of their name. The own-name advantage discovered initially by Treiman and Broderick (1998) has important implications for personalizing and differentiating instruction.

Treiman and Broderick also broadened our thinking about children's alphabet knowledge. Prior to their 1998 study, "What's in a Name: Children's Knowledge about the Letters in Their Own Names," the term *alphabet knowledge* was used rather vaguely. Researchers rarely disambiguated letter names

from letter sounds and almost never considered children's ability to either print letters or to make decisions about which letters or sounds to use in writing words. Treiman and Broderick, however, found that the own-name advantage made a significant difference in the ability to print letters in addition to naming them. Although their study did not yield similar results for tasks that required the use of letter sounds, children's performance on the letter–sound tasks was affected by the position of the letter's associated sound within the letter name. Specifically, children in the Treiman and Broderick study performed better on letter–sound tasks when the sound that the letter represents was present at the beginning of the letter name. For example, the /b/ sound is positioned at the beginning of the letter name *B* (bee). Researchers refer to such letter names as *acrophonic CV* (consonant–vowel) names because the sound that the letter represents in spoken words is in the beginning position or *onset* of the letter's name. The letters *B* (bee), *D* (dee), *J* (jay), *K* (kay), P (pee), *T* (tee), *V* (vee), and *Z* (zee) are all acrophonic CV letter names. On the other hand, letters, such as *F* (eff), *L* (el), *M* (em), *N* (en), *R* (ar), and *S* (es), share a *VC acrophonic* (vowel–consonant) structure, because the sound that the letter represents is at the end of the letter's name. Other researchers have since corroborated the finding that children learn the sounds of CV letters, such as *B, D,* and *J,* more easily than the sounds of VC letters, such as *F, L,* or *N* (McBride-Chang, 1999; Huang et al., 2014), and both types of acrophonic letter names are superior to nonacrophonic letters, such as *W* (double you) or *Y* (why), that don't contain the sound in their name at all. So, while Treiman and Broderick did not find an own-name advantage for letter–sound tasks or tasks that required children to make decisions about the beginning sounds or initial letters of words, performance on these tasks was improved by the presence of the sound the letter represents in the letter name. This finding was important because it suggested that "children use the names of letters to learn and remember their sounds" (Treiman & Broderick, p. 112). Further, this approach appears to be prompted when the speech sound that a letter represents is positioned at the beginning or onset of the letter's name.

While subsequent research has contributed further nuances about these findings, Treiman and Broderick's seminal study "What's in a Name" (1998) opened the door to unpacking what Rieben and Perfetti (2013) called the *cryptanalytic intent,* which is necessary to acquire the alphabetic principle, something Alfred, Ms. Meyer's student, sorely needed. To acquire the alphabetic principle children must first become aware that there is a "system of correspondences" that exist and must intentionally begin to analyze those correspondences (p. 34). Children's strong attraction to their own names may help them develop the cryptanalytic intent necessary to start to analyze the letters, first within their own names, and later, perhaps in other words. This may help explain the progression from level one to level two in Mason's "natural hierarchy" in the development of learning to read words, when children appear to be analyzing

letters within words. "Just as personal names appear to play a special role in the development of spoken language, so names may be important in the development of literacy" (Treiman & Broderick, p. 114).

WHICH ONES FIRST?

> Lee was at her orientation for the daycare/preschool class she would start attending in the fall. As part of that orientation she was shown the "cubby" area where she would have her very own space to store her backpack and clothes. Each cubby was labeled with a child's name. To Lee's dismay, other children's cubby label also included an *L*, a letter she considered hers and only hers. A temper tantrum ensued.

Given Treiman and Broderick's (1998) findings about the own-name advantage for learning letter names, it stands to reason that Lee would have an intense cryptanalytic intent to decipher all the *els* in the world. Mason (1980) would have applauded her progress along the natural hierarchy of emergent literacy! But does it stand to reason that letter–sound instruction should always begin with the grapheme–phoneme correspondences associated with children's names, or are there other factors to consider? Given the wide range of names within a classroom, does it make sense to start with Alfred and continue in alphabetic order (e.g., Bianca, Cailin, Deja, then Fern)? Should some names be "put off" until later because of ambiguities in the pronunciation of their letter sound? How would we explain the grapheme–phoneme correspondence for the first letter in José's name, for example? And what about names that start with difficult to elongate first sounds, like the first phoneme in the name *Deja,* in which the /d/ sound cannot be held and stretched out without distortion, as opposed to the first phoneme in the name Zavon, in which the /z/ sound can be held indefinitely?

Treiman, Tincoff, Rodriguez, Mouzaki, and Francis (1998): *The Foundations of Literacy: Learning the Sounds of Letters*

In a second landmark study, Treiman, Tincoff, Rodriguez, Mouzaki, and Francis (1998) tried to untangle important questions such as these by exploring more deeply the linguistic characteristics of letter names that facilitate or hinder children's learning of letter sounds. Specifically, they explored (1) the relative effects of letter–name structures on learning letter sounds, (2) the ambiguity of the associated letter sound, and (3) linguistic properties of the phoneme associated with the letter sound. *Letter–name structure* refers to the acrophonic existence or nonexistence of the associated letter sound embedded within the

letter name (e.g., the letter *B* has the phoneme /b/ in the name, while the letter *W* does not have the /w/ sound in its name). Letter–name structure also refers to the position of the sound within an acrophonic letter name (e.g., the letter name *B* (bee) has a CV structure, whereas the letter *F* (eff) has a VC structure). The *ambiguity of the letter sound* refers to alternative pronunciations (e.g., the letter sound for *G* can be pronounced two ways: /gee/ or /guh/. The *linguistic properties of the phoneme* associated with the letter sound refer to how the associated phoneme is produced. The letter sounds for *obstruent* consonants obstruct or restrict air (e.g., stop consonants such as *B, P,* and *T* obstruct, then release, air; fricatives such as *S, Z,* and *V* restrict air). *Sonorants* include the vowels and certain consonants that are produced with continuous air flow that is not obstructed or restricted (e.g., /r/). Many educators believe that letter–sound instruction should begin with grapheme–phoneme correspondences that are obstruent, particularly fricatives (e.g., *F, S, V*), because the fricative sound (e.g., /zzzzzzz/ can be "held" and emphasized without distortion. In the latter case, the first sound in Zavon's name, a fricative, would be taught earlier in the lineup of grapheme–phoneme correspondences than Parmis's name, despite the fact that the letter *Z* appears last in the alphabet.

Treiman and colleagues (1998) were the first to explore these issues. In a series of related studies, they found once again that children performed better on letter sounds when the sound was in the letter name than when it was not. In other words, children learned more letter sounds when the letters were acrophonic than when they were not. Children did especially well when the associated letter sound was positioned at the beginning of the letter name (e.g., a CV structure, such as in *B* [bee]). Conversely, children performed more poorly on ambiguous sounds or on letters that had more than one associated letter sound (e.g., *C, G,* and all the vowels). They did not find consistent evidence for the type of phoneme associated with the letter sound (e.g., obstruent versus sonorant). Nevertheless, Treiman et al. (1998) demonstrated that the linguistic characteristics of a letter's name influence children's ability to learn its letter sound, even when other factors were statistically controlled. Specifically, they demonstrated positive effects for acrophonic letter–name structures, deleterious effects for letter–sound ambiguity, and no effects for the linguistic properties of the phoneme associated with the letter sound itself. Future researchers, extrapolating from this work, would corroborate these findings using stricter controls and more sophisticated analytic strategies. Share (2004), for example, demonstrated the letter–name advantage in learning letter sounds in Hebrew, entitling his study *Knowing Letter Names and Learning Letter Sounds: A Causal Connection*.

How can these two pivotal studies inform the questions teachers have about teaching letter recognition and letter sounds? First, their work suggests that one of the most important influences on learning letter names has to do with children's experiences with their own names. As Lee demonstrated,

children have an emotional attachment to the letters in their name, particularly the initial letter, and they will likely learn those letters first. Second, at least in the United States, knowing letter names actually helps children learn letter sounds because most letter names contain the sound within them (*bee* has /b/ in the name). Those that don't are harder to learn. Instead of memorizing letter–sound links as rote-paired associates, children "try to make sense of their relations based on what they know about letter names and the sounds the name contains" (Treiman et al., 1998, p. 1537). Third, their work demonstrated that linguistic differences embedded in letter names demand different amounts of instructional time. Nonacrophonic letters, or those that do not contain the associated letter sound in the name itself, will take more instructional time than acrophonic letters, and letters that have more than one associated sound (*C, G,* and *J* in *José*) will need more time still. Fourth, their work suggests that the linguistic properties related to the way a phoneme is produced (e.g., obstruent or sonorant), has less bearing on children's uptake of the associated letter sound. The first sound in Zavon's name, which can easily be elongated, should be no less difficult than the first sound in Deja's, which can't. Finally, when considered alongside the work of Mason (1980), the research of Treiman and Broderick (1998) and Treiman et al. (1998) suggests that letter–name knowledge can bridge the gap between visual-cue strategies of the prereader to phonetic-cue strategies of early literacy. Letter–name knowledge can facilitate early printed word recognition even before children have achieved an awareness of letter sounds or the alphabetic principle (Foulin, 2005)

IN WHAT ORDER SHOULD LETTERS BE TAUGHT?

Ms. Taylor is a first-year kindergarten teacher. She learned some instructional activities for teaching the alphabet in her teacher education program, such as name of the day (Cunningham, 2016), letter and picture sorts (Bear, Invernizzi, Templeton, & Johnston, 2016), and using student-made alphabet books (Murry, Stahl, & Ivy, 1996). But Ms. Taylor is still uncertain about the exact sequence of instruction. Should she teach a letter a week, starting with *A* and continuing to *Z*? Should she teach uppercase or lowercase letters first—or maybe both simultaneously? Should she teach the consonants in the order in which children learn to produce them in speech development—bilabials like *B* and *M* first, and so on? What about starting with the most frequently occurring letters—the letters that children will see most often in early picture books and on word walls?

Even though we know that U.S. children typically learn letter names before learning letter sounds and that they learn the letters in their own names first, many teachers struggle with decisions about letter order or the optimal

sequence for instruction. A quick internet search for an answer to the question "In what order do I teach the alphabet?" yields a long list of suggestions, ranging from working through the alphabet systematically, starting with *A* and proceeding to *Z* (e.g., letter-of-the-week method) to specific letter sequences that will allow children to form words right way (e.g., Jolly Phonics). Some advocate teaching the letters *s, a, t, i, p,* and *n* first because children can then "build" many words using combinations of those letters right away (e.g., *sit, sat, tap, tip, pit, pat, pan, tan*). Others insist on starting letter–sound instruction with continuants, which are consonants that are pronounced with the vocal tract partially open, allowing the air to pass through and the sound to be prolonged (e.g., *f, l, m, n, r, s, v*). This belief prevails despite Treiman et al.'s earlier finding that the linguistic properties of the phoneme itself (e.g., obstruent vs. sonorant) did not make an appreciable difference (1998, p. 1535).

Advancing the work of Mason (1980), Treiman and Broderick (1998), and Treiman et al. (1998), later researchers sought to tease out other questions related to the association of letter names and letter sounds and to explore additional issues that might inform Ms. Taylor's instructional planning. The research of McBride-Chang (1999), for example, corroborated Mason and Treiman et al.'s findings but also demonstrated developmental changes that occurred from the beginning of kindergarten to the middle of first grade. McBride-Chang concluded that letter names and letter sounds are "differentially associated" with literacy development (p. 302). She particularly noted the strengthening associations between letter–sound knowledge, phonological awareness, and invented spelling as children get closer to actually reading. Germane to Ms. Taylor's dilemma, McBride-Chang's research demonstrated that both letter– name and letter–sound knowledge were indeed correlated with alphabetic letter order, with higher correlations favoring the beginning of the alphabet (p. 304), perhaps because of the cultural emphasis on the beginning of the alphabet song and the primacy effects of reciting the alphabet in order The pervasive use of the letter-of-the-week approach to alphabet instruction, starting with *A* and moving forward, could also result in dissymmetric advantages for letters appearing earlier in the lineup. Of note too is the fact that more nonacrophonic letters appear in the latter half of the alphabet, a fact that would argue for more instructional time to be allotted to those letters (e.g., *w, x, y*).

Justice, Pence, Bowles, and Wiggins (2006) explored the letter-order issue further using a more sophisticated analytic strategy that yielded odds ratios expressed as probabilities for knowing letter names. They investigated four hypotheses concerning the order in which 4-year-olds learn uppercase letters of the alphabet: (1) Treiman and Broderick's (1998) own-name advantage; (2) Treiman et al.'s (1998) letter–name structures; (3) McBride-Chang's (1999) letter order; and (4) the importance of Ms. Taylor's concern about the order of consonant production in speech production. They reaffirmed Treiman and Broderick's (1998) and Treiman et al.'s (1998) findings in spades: Children are 1.5 times more likely to know the letters in their first name, 7.5 times more

likely to know the letter of their first initial, and 1.8 times more likely to know acrophonic letter names than nonacrophonic letter names, such as *w* or *y*. They also reaffirmed McBride-Chang's findings: children were 1.02 times more likely to know letter names positioned earlier in the alphabetic lineup. However, they found only a modest advantage for the order of consonant production in speech development.

But what about the order in which uppercase and lowercase letters should be taught and letter frequency in print, other concerns of Ms. Taylor? Turnbull, Bowles, Skibbe, Justice, and Wiggins (2010) investigated this issue too, along with, once again, Treiman and Broderick's own-name advantage. They found that children's familiarity with uppercase letters was the strongest predictor of children's lowercase letter knowledge. In fact, children were 16 times more likely to know a lowercase letter if they already knew the corresponding uppercase one. This is not surprising, given that uppercase letters are more visually distinctive than many lowercase letters that present mirror images such as *b, d, p,* and *q* (Clay, 1975). The degree of visual similarity between the upper- and lowercase letters also predicted children's lowercase letter knowledge. Letters like *C, K, O, S, V, W, X,* and Z are visually identical in the upper- and lowercase forms and differ only in size, whereas letters like *B* or G have completely different shapes in the upper- and lowercases. Lowercase letters that had dissimilar shapes compared with their lowercase forms were much less likely to be known. The frequency with which lowercase letters occur in printed English also predicted children's lowercase letter knowledge. The letter *e* (the most frequently occurring lowercase letter in printed English) was 3.8 times more likely to be correctly identified than the letter *q* (the least frequent lowercase letter), while controlling for the familiarity of the corresponding uppercase letter, for upper- and lowercase similarities, and for whether the letter was the first one in the child's name. But unlike the previous research, Turnbull et al. (2010) also demonstrated interactions among the variables, meaning that the effects of one variable on a second variable depended to some extent on the involvement of a third variable. Specifically, they demonstrated a connection between uppercase familiarity and the own-name advantage and between uppercase familiarity and upper- and lowercase similarities. Overall, Turnbull et al.'s (2010) results suggest that knowledge of uppercase letters generalizes to the learning of lowercase letters, the acquisition of which is multiply determined by other factors, such as whether the letter is the first initial of the child's name and the degree of visual similarity between corresponding upper- and lowercase letters.

Huang and Invernizzi (2012) extended this line of research by investigating five hypotheses about knowledge of lowercase letter names simultaneously—many of the same ones previously discussed and some new ones, such as visual and phonological confusability. *Visual confusability* was based on a letter's visual similarity to other letters (e.g., *b/d*; *p/q*), whereas *phonological confusability* was based on shared phonemes within the letter name (e.g., *bee* and *pee* share the

phoneme *ee*). All of the hypotheses were tested simultaneously within a single multilevel model in which the variables included also acted as controls for all the other hypotheses tested. For example, a child named *Oscar* may know the lowercase letter *o* because this letter is the first initial of his name, because the upper- and lowercase similarity of the letter is high, and/or because *o* is a frequently occurring letter. Like Turnbull et al. (2010), their results showed that lowercase letter knowledge is determined by multiple factors that are intrinsic to the child (i.e., knowing the letters their own name), based on the letter itself (i.e., letter name structure, similarity to other letters, uppercase similarity, and letter order), or influenced by the environment (i.e., letter frequency). All five hypotheses contributed to a child's lowercase letter knowledge, although odds ratios and effect sizes indicated that the own-name advantage, upper-and lowercase similarities, and visual confusability had the greatest association with lowercase letter–name knowledge. Letter order, phonological confusability, and letter frequency, which also yielded statistically significant results, had effect sizes that were much smaller in comparison. Altogether, Huang and Invernizzi's (2012) findings indicate that that the own-name advantage and upper- and lowercase similarities help children learn lowercase letter names, while visual confusability among lowercase letters (e.g., *b/d*) make it more difficult.

In a follow-up study, Huang et al. (2014) used a similar methodology to explore children's knowledge of letter sounds. Six hypotheses were tested simultaneously, many of which were derived from the original work of Treiman and Broderick (1998) and Treiman et al. (1998) (1) the own-name advantage, (2) letter–name knowledge, (3) letter–name structure effects, (4) letter–sound ambiguities, (5) the facilitative effects of children's phonological awareness, and (6) interactions between phonological awareness and letter–name structure. Their results, using three-level multilevel modeling, indicated that like letter names, letter sounds have varying levels of difficulty, and several child- and letter-related factors were associated with children's knowledge of letter sounds. Child-level factors included Treiman and Broderick's (1998) and Treiman et al.'s (1998) own-name advantage, letter–name knowledge, and phonological awareness. Children were more likely to know a letter sound if it was the first letter of their own name and if they also knew the letter name. Medium effects were noted for children's degree of phonological awareness. Letter-related factors included letter–name structures (e.g., CV or VC letter–name structures versus nonacrophonic letter names) and letter–sound ambiguity (e.g., letters that are associated with more than one sound or that share a sound with another letter). There was a significant association between children's phonological awareness and letter–name structures. The probability of knowing a letter sound increased with greater levels of phonological awareness, when the letter name was known, and when a letter name was acrophonic. Thus, coming full circle back to the 1998 pioneering studies of Treiman and colleagues, Huang and colleagues (2014) extended findings that were previously demonstrated only for letter names to letter sounds as well.

Several of the researchers discussed in this chapter have concluded that "all letters are not equal" and have questioned the wisdom of teaching a letter a week, a long-standing instructional method for teaching the alphabet in American kindergarten classrooms. Constructing a curriculum around letter order (e.g., starting at the beginning of the alphabet and continuing from there, one letter at a time), does not acknowledge the differential difficulty of certain letter names and sounds or the variety in children's personal experiences with letters and print in their home, daycare, or preschool environments. Rather than teaching one letter a day or one letter a week, Ms. Taylor should consider how she might organize multifaceted teaching approaches that take into account the child, letter, and environmental characteristics that the research of Mason (1980), the 1998 studies of Treiman and colleagues, and others have shown to be important.

WHAT SHOULD INSTRUCTION LOOK LIKE?

Henry sprawls out on the carpet to practice his writing. After a couple minutes, he proudly shows his teacher his whiteboard. He's filled up the entire board with five neat rows of random letters. "What does this say?" he asks. Clearly Henry understands that print conveys meaning, but has yet to recognize the connection between letters and sounds. The teacher pauses. There's no way to make sense of his random string of letters. "What were you trying to say?" she asks. "Katie came to play," he replies. "Hmm. Henry, what letters would you need to spell Ka-tie? she says, emphasizing each syllable. He looks at her and hesitates. Then suddenly, like a light switch has been flipped, he says, "Oh. *K T*!" He furiously erases his whiteboard and then deliberately writes *K T* as he pronounces each syllable.

Henry illustrates an *ah ha* moment in early literacy development—a tentative first step toward the alphabetic principle, the understanding that speech can be divided into smaller bits of sound and matched to alphabetic letters that represent them. Becoming aware of the alphabetic principle marks a developmental shift from context-dependent pretend reading and writing to print-reliant real reading and writing.

While Henry's decision to use letter names to represent the sound of each syllable in *Katie* may seem sudden, his insight is probably the culmination of intentional instruction over time. Research that explores how to teach alphabet knowledge suggests there are two key aspects of intentional alphabet instruction: (1) direct instruction of letter names and sounds and (2) contextualized instruction for *applying* such knowledge to read words in connected text and to write them on paper or whiteboards.

Experimental research exploring the effects of alphabet instruction suggest that explicit instruction in letter names and sounds is necessary but insufficient for transferring this knowledge to other areas of literacy. Piasta, Purpura, and Wagner (2010), for example, demonstrated that children who received both letter–name and letter–sound instruction group learned significantly more letter names and sounds than children in the letter–sounds-only group, but they found little evidence that alphabet instruction transferred to other early literacy skills. Piasta et al. (2010) conjectured that this lack of transfer may have occurred because the sole focus of the experimental instruction was on letter names and letter sounds and excluded the application of that knowledge to contextual reading and writing.

Other studies have specifically explored the transfer of alphabet knowledge to other early literacy skills such as word reading. In a series of word learning experiments, for example, Ehri and Wilce (1985) organized kindergartners into three groups based on their initial ability to read words, roughly equivalent to Mason's (1980) previous three levels. *Prereaders* recognized no words, *novices* recognized some words, and *veterans* recognized several words. All children were taught to recognize simplified phonetic spellings (e.g., *JRF* for *giraffe*) and visually distinct nonphonetic spellings (e.g., *uHe* for *mask*). Prereaders had more success reading the visually distinct spellings, while novice and veteran readers learned the phonetic spellings. Ehri and Wilce concluded that alphabet knowledge enables children to use phonetic cues instead of visual cues, which in turn allows them to retain words in memory (1985, p. 74). Roberts (2003) applied these findings to an instructional setting by examining the effects of alphabet–letter instruction on young children's word recognition. Thirty-three preschoolers received instruction in either alphabet letter names or comprehension. After the lessons, Roberts compared their recognition of phonetically spelled words that included letters they had been taught (e.g., *BL* for *ball*), with phonetically spelled words that included letters they had *not* been taught (e.g., *ZR* for *zipper*), and with visually distinct spellings that were *not* phonetic (e.g., *cN* for *ball*). The preschoolers who received alphabet instruction in letter names were able to recognize and remember simplified phonetic spellings better than the nonphonetic spellings; the opposite was true for the preschoolers who received the comprehension-only instruction. Moreover, the preschoolers receiving the alphabet letter–name instruction recognized more phonetically spelled words when they contained the letters that had been previously taught. Roberts concluded that these results showed that "phonetic spellings were only advantageous when the prereaders had received extensive prior instruction on the letter names included in the spellings" (2003, p. 49). Taken together, these researchers demonstrated that alphabet instruction can be applied to early word learning with instructional support that intentionally links letter names to phonemes in print. Henry's teacher was right on target to encourage his phonetic spelling of Katie using the names K and T.

Treiman and colleagues' 1998 work implied that letter–sound knowledge and phonological awareness, rather than being two distinct underpinnings of emergent literacy, were closely intertwined. Boyer and Ehri (2011) leveraged that idea to explore whether deliberate efforts to link phonological aspects of letter sounds to letter forms would further support children's word learning. This intentional linking involved pairing the letter with a picture of how to form the letter's associated speech sound in the mouth—the articulatory gesture of the letter sound. Sixty nonreading preschoolers were taught to divide words into individual phonemes using either letters only or the letters paired with a picture of its corresponding articulatory gesture. The preschoolers who were instructed to divide words with both letters and pictures of their corresponding articulatory gestures learned to read more words than the children in the letter only group. In this study, Boyer and Ehri (2011) showed that deliberately supporting the linkages between letters and the phonemes of their associated letter sounds facilitates the application of the alphabetic principle to word learning.

How can we contextualize all that we've learned about alphabet instruction and its connection to other important early literacy skills to the classroom? One approach to alphabet instruction is known as enhanced alphabet knowledge (EAK; Jones & Reutzel, 2012; Jones, Clark, & Reutzel, 2013). Drawing on key studies related to alphabet knowledge (e.g., Mason, 1980; Piasta & Wagner, 2010a; Treiman et al., 1998), EAK represents a shift from the traditional letter-of-the week, one-size-fits-all approach to a more comprehensive, inclusive approach that incorporates opportunities for application and transfer to reading and writing. All EAK lessons include teacher modeling and student-guided practice. Three components of EAK lessons incorporate the existing evidence base related to (1) naming the letter and producing the corresponding speech sound, (2) identifying the letter in text, and (3) writing the letter. During lessons, students work with both the uppercase and lowercase letter forms, and teachers provide explicit directions for how to produce the speech sound (e.g., "When I say the sound /__/, I place my tongue and mouth like this __"; Jones, Clark, & Reutzel, 2013, p. 83) and how to form the letter (e.g., "Here's where I begin on the paper lines to write the letter __; Jones, Clark, & Reutzel, 2013, p. 83). These daily lessons are brief—lasting 10–12 minutes—and build on each other through distributed cycles of review.

Unlike traditional lessons, which devote equal amounts of time to each letter and slowly move through the alphabet at a letter-a-week pace, EAK lessons move at a quicker pace and allow students to spend additional time with more difficult letters (e.g., visually similar letters, letters with multiple sounds, nonacrophonic letters, and letters in the middle of the alphabet). EAK lessons are organized into six instructional cycles that capitalize on the research about which letters children tend to learn more easily and which letters they tend to find more challenging. These six cycles employ the results from studies engendered by Mason (1980) and Treiman and colleagues (1998): (1) own-name advantage—select letters based on frequency of initial letter in children's

names; (2) alphabetical-order advantage—teach all 26 letters in 26 days, starting with *a* and ending with *z*; (3) letter–name and letter–sound relationship advantage—begin with acrophonic consonants with the associated letter sound embedded at the beginning of the name (CV), then at end of the name (VC), and finally letters with more than one sound and nonacrophonic letters; (4) letter-frequency advantage—focus on letters occurring less frequently in text; (5) consonant–phoneme acquisition-order advantage—focus on letters with sounds that are potentially more difficult to produce (e.g., *l, r, v, z, sh, ch, j, zh, th*); (6) distinctive-visual-features-letter-writing advantage—emphasize critical differences between similar letters (e.g., "first we have an *O*, add a tail, and it becomes a *Q*"; Jones, Clark, & Reutzel, 2013, p. 87). Jones et al. (2013) point out that multiple instructional cycles provide formative information about children's differential alphabet knowledge, which makes it possible for teachers to differentiate instruction through subsequent adjustments to pacing and exposure (p. 84).

A multitude of studies (e.g., Jones & Reutzel, 2012; Roberts, 2003; Piasta et al., 2010b; Piasta & Wagner, 2010a; Piasta & Wagner, 2010c) have demonstrated the importance of direct instruction for alphabet learning. They underscore the value of learning letter names and sounds but also the value of leveraging that learning through the recognition of the letters in text, forming letters in writing, and applying alphabetic knowledge to reading simplified, phonetically spelled words (e.g., *GRF* for *giraffe*) and other printed words in books and in the environment. But how else can teachers support the transfer of alphabet knowledge to other important early literacy behaviors, such as attending to and analyzing print? After all, a major difference between Mason's level-one and level-two students pertained to their treatment of printed words as different from pictures. Horner (2001) and Wasik (2001) both explored this issue by developing the insights provided by Mason (1980).

Mason (1980) offered a picture of what our earliest instruction might look like by describing what and how children learned prior to formal schooling. As she explained, "with substantial help from parents and teachers who answer their questions about Sesame Street and point out and quiz them about signs, who reread alphabet books and stories until children have them memorized, who help them spell and print words, and who coach them to try to identify letters and words, children begin to extrapolate some of the critical relationships between sounds of words and sounds of letters" (p. 221). In Mason's study, children developed a solid foundation for alphabet knowledge and early reading through everyday interactions that capitalized on their natural curiosity about *the print* they encountered in their environments.

To learn to read, children must first become "conscious of print"—both of its function and its form (Clay, 1991), and this consciousness can be facilitated though intentionally prompted interactions with print. Horner (2001) explored such interactions in an experimental study in which preschool children were randomly assigned to one of three video conditions that prompted

their attention to either the pictures in the book, the print in the book, or neither. In the first condition, children observed other children on videotape asking questions about the *pictures*. In the second condition, children observed other children on videotape asking questions about the *print*. In the third condition children observed other children who were not asking any questions about either the pictures or the print. Horner (2001) found that children who watched others ask questions about the print subsequently made more print-related comments than the children who observed others asking picture-related questions or no questions at all. Although no differences in children's alphabet knowledge were revealed after the children observed any of the videotaped models, Horner (2001) demonstrated that children can be taught to attend to print by observing models of other children focusing on and asking questions about the printed word.

Motivating children to shift their attention from pictures to the printed word is an essential early literacy behavior if we want them to make connections between alphabet instruction and reading and writing. When teachers draw children's attention to print in explicit ways and "think aloud" about the many ways they use print, they are practicing what Justice and Ezell (2004) call *print referencing*. When teachers use print referencing during read-alouds by naming or pointing out letters, by asking questions about print, and by pointing to words as they read, children show growth on measures of print concepts, letter recognition, and name writing (Justice, Kaderavek, Fan, Sofka, & Hunt, 2009), with lasting effects on reading, spelling, and comprehension 2 years beyond preschool (Piasta, Justice, McGinty, & Kaderavek, 2012). Print referencing is another way to foster connections between alphabet instruction and reading.

Wasik (2001) argued that while young children may be able to memorize the letters of the alphabet through rote drill and practice, such practices "may not have meaning to the children and may not facilitate the longer-term goal of reading" (p. 35). Wasik (2001) and Bredekamp and Copple (1997) advocated contextualizing alphabet instruction in meaningful and "developmentally appropriate" ways that connect to reading and writing. For Wasik, "developmentally appropriate practices" meant beginning with the familiar (e.g., children's own names) and creating instructional contexts, such as print referencing, that make it possible to link alphabet knowledge to books and print. Like Chomsky (1971) and Clay (1975) before her, Wasik recommended that in addition to using direct instruction for letter names and sounds, early childhood teachers should provide opportunities for writing as frequently as possible. To successfully engage children in writing, Gerde, Bingham, and Wasik (2012) offered a set of recommendations for weaving writing into the daily schedule of early childhood classrooms. Early childhood teachers can even encourage independent writing, which will vary depending on an individual child's literacy development. Some children will scribble; others will use

letterlike shapes and then random letters. With practice, they will use increasingly phonetic invented spelling in which they represent the sounds they hear in words (Johnston, Invernizzi, Helman, Bear, & Templeton, 2014).

Wasik's focus on the application of alphabet knowledge to reading and writing highlights earlier conclusions drawn by Mason (1980), Treiman and Broderick (1998), Treiman et al. (1998), and later researchers on instruction. Teachers can follow an intentional sequence (e.g., Jones & Reutzel, 2012). Also, teachers can make letter–name knowledge meaningful and exciting by capitalizing on children's interest in and motivation to learn the letters in their own names (e.g., Mason, 1980; Treiman & Broderick, 1998; Treiman et al., 1998). Finally, letter–name knowledge and letter–sound learning can be connected to print and writing (Justice & Ezell, 2004; Justice et al., 2009; Wasik, 2001). Alternatives to the pervasive letter-of-the-week approach capitalize on these basic tenets and include differentiated alphabet instruction; letter and picture sorting; and lessons integrating alphabet knowledge with phonological awareness, print awareness, and writing. As shown in Table 4.1, there are many resources available for teachers who are interested in making alphabetic

TABLE 4.1. Instructional Approaches and Resources for Alphabetic Instruction

Differentiated Alphabet Instruction (Piasta, 2014)
A framework for assessment-guided alphabet instruction to meet a range of student needs in a classroom. Features a set of guidelines for teachers to consider when choosing which letters to teach.
No More Teaching a Letter a Week (McKay & Teale, 2015)
A description of intentional and systematic alphabet instruction situated within meaningful practice. Features a set of recommended practices.
Emergent Literacy: Lessons for Success (Cabell, Justice, Kaderavek, Pence, & Breit-Smith, 2009)
Features a set of code-related lesson plans designed for early readers and writers. Integrates early literacy skills including alphabet knowledge, print awareness, phonological awareness, and writing.
Words Their Way Letter and Picture Sorts for Emergent Spellers (Bear, Invernizzi, Johnston, & Templeton, 2018)
Provides materials to plan for letter–sound contrasts. Compares and contrasts features of letters and connects alphabet learning with print concepts, phonological awareness, and writing.
Writing in Early Childhood Classrooms: Guidance for Best Practices (Gerde, Bingham, & Wasik, 2012)
Features a set of recommendations for incorporating writing into the daily classroom schedule. Encourages children to apply their growing alphabet knowledge.

TABLE 4.2. Evidence-Based Principles and Practices for Alphabet Learning and Instruction

- Children are more likely to learn the letters in their own name first (especially the first initial), so being systematic with activities such as "name of the day" is likely to be effective.
- Learning letter names helps children learn letter sounds because most letter names contain the sound in them (*B* [bee] has /b/ in the name). Letters that don't have the associated sound in their name (and letters than have more than one sound associated with their name) are harder to learn and will require more instructional time.
- Lowercase letters that resemble their uppercase partners are easier to learn than lowercase letters that don't resemble their uppercase partners.
- Certain letters occur in print, in names, and in the environment more frequently than others. Frequently occurring letters will be easier to learn than those that appear less frequently.
- Letter–shape confusability (*b–d; p–q; u–n*) makes those letters harder to learn and will require more instructional time. It might be best to avoid teaching these letters back to back at first.
- It may be helpful to compare and contrast the shapes, names, and sounds of letters at least two letters (if not three or four) at a time, so children can observe and discuss the differences among them.
- Alphabet instruction is enhanced when it is also linked to print—in the environment, in writing, and in the books children are read.

instruction meaningful, purposeful, and motivating, even as early as the preschool years.

CONCLUSION

There is no one "right" way to teach children about the alphabet. Rather, there are evidence-based principles and practices derived from pivotal research pertaining to factors about the child, the letters themselves, and the context that influence alphabet learning and instruction. These principles are summarized in Table 4.2.

Teachers who understand the many child, letter, and contextual factors reviewed here can ask themselves a series of questions that will help them make intentional decisions in addressing the differential needs of each student. First and foremost among those questions is asking what each child already knows about alphabet letters—what they look like, how they are formed, what they are used for, their equivalents in upper- and lowercases, and their associated letter sounds. Finding out what each child knows about the alphabet requires an assessment of a range of skills, in isolation, and in literate contexts, that will lead to the acquisition the alphabetic principle: phonological awareness,

letter names, letter sounds, and the application of these skills in writing and in puzzling out words in print (Invernizzi & Tortorelli, 2013). Alfred and Lee knew the letters in their own names. Henry had just taken his first tentative steps toward applying his letter–name knowledge in writing. Parmis was already using letter names and some letter sounds to represent phonemes in words and in constructing sentences. Armed with the evidence base discussed here, Ms. Meyer and Ms. Taylor can differentiate their alphabet instruction to move each of these children forward in Mason's (1980) "natural hierarchy" of alphabet knowledge toward literacy.

REFERENCES

Bear, D., Invernizzi, M., Johnston, F., & Templeton, S. (2018). *Words their way letter and picture sorts for emergent spellers* (3rd ed.). Boston: Pearson.

Bear, D., Invernizzi, M., Templeton, S., & Johnston, F. (2016). *Words their way: Word study for phonics spelling, and vocabulary instruction* (6th ed.). Boston: Pearson.

Boyer, N., & Ehri, L. C. (2011). Contribution of phonemic segmentation instruction with letters and articulation pictures to word reading and spelling in beginners. *Scientific Studies of Reading, 15,* 440–470.

Bredekamp, S., & Copple, C. (1997). *Developmentally appropriate practice in early childhood programs*. Washington, DC: National Association for the Education of Young Children.

Cabell, S. Q., Justice, L. M., Kaderavek, J., Pence, K. L., & Breit-Smith, A. (2008). *Emergent literacy: Lessons for success*. San Diego, CA: Plural Publishing.

Chomsky, C. (1971). Write first, read later. *Childhood Education, 47,* 296–299.

Clay, M. M. (1966). *Emergent reading behavior.* Unpublished doctoral dissertation. University of Auckland, New Zealand.

Clay, M. M. (1975). *What did I write?: Beginning writing behavior.* Portsmouth, NH: Heinemann Educational Books.

Clay, M. M. (1977). *Reading: The patterning of complex behavior.* Portsmouth, NH: Heinemann Educational Books.

Clay, M. M. (1991). *Becoming literate: The construction of inner control*. Portsmouth, NH: Heinemann Educational Books.

Core Knowledge Foundation. (2013). *Core knowledge sequence: Content and skill guidelines for preschool.* Charlottesville, VA: Author.

Cunningham, P. (2016). *Phonics they use: Words for reading and writing* (7th ed.). Boston: Pearson.

Downing, J. (1970). Relevance versus ritual in reading. *Literacy, 4*(2), 4–12.

Ehri, L. C. (1975). Word consciousness in readers and prereaders. *Journal of Educational Psychology, 67*(2), 204–212.

Ehri, L. C., & Wilce, L. S. (1985). Movement into reading: Is the first stage of printed word learning visual or phonetic? *Reading Research Quarterly, 20,* 163–179.

Ellefson, M., Treiman, R., & Kessler, B. (2009). Learning to label letters by sounds or names: A comparison of England and the United States. *Journal of Experimental Child Psychology, 102,* 323–341.

Foulin, J. N. (2005). Why is letter–name knowledge such a good predictor of learning to read? *Reading and Writing, 18,* 129–155.

Gerde, H. K., Bingham, G. E., & Wasik, B. A. (2012). Writing in early childhood classrooms: Guidance for best practices. *Early Childhood Education Journal, 40,* 351–359.

Horner, S. L. (2001). The effects of observational learning on preschoolers' book-related behaviors and alphabet knowledge. *Child Study Journal, 31,* 1–11.

Huang, F., & Invernizzi, M. (2012). The case for confusability and other factors associated with lowercase alphabet naming in kindergartners. *Applied Psycholinguistics, 35,* 943–968.

Huang, F. L., Tortorelli, L. S., & Invernizzi, M. A. (2014). An investigation of factors associated with letter-sound knowledge at kindergarten entry. *Early Childhood Research Quarterly, 29,* 182–192.

Invernizzi, M., Juel, C., Swank, L., & Meier, J. (2015). *Phonological awareness literacy screening—kindergarten*. Charlottesville: University of Virginia Printing Services.

Invernizzi, M., & Tortorelli, L. (2013). Phonological awareness and alphabet knowledge: The foundations of early reading. In D. Barone & M. H. Mallette (Eds.), *Best practices in early literacy instruction* (pp. 155–174). New York: Guilford Press.

Johnston, F., Invernizzi, M., Helman, L., Bear, D., & Templeton, S. (2014). *Words their way for PreK–K.* Boston: Pearson.

Jones, C. D., Clark, S., & Reutzel, D. R. (2013). Enhancing alphabet knowledge instruction: Research implications and practical strategies for early childhood educators. *Early Childhood Education Journal, 41*(2), 81–89.

Jones, C. D., & Reutzel, D. R. (2012). Enhanced alphabet knowledge instruction: Exploring a change of frequency, focus, and distributed cycles of review. *Reading Psychology, 33,* 448–464.

Justice, L. M., & Ezell, H. K. (2004). Print referencing: An emergent literacy enhancement strategy and its clinical applications. *Language, Speech, and Hearing Services in Schools, 35*(2), 185–193.

Justice, L. M., Kaderavek, J. N., Fan, X., Sofka, A., & Hunt, A. (2009). Accelerating preschoolers' early literacy development through classroom-based teacher–child storybook reading and explicit print referencing. *Language, Speech, and Hearing Services in Schools, 40,* 67–85.

Justice, L. M., Pence, K., Bowles, R. B., & Wiggins, A. (2006). An investigation of four hypotheses concerning the order by which 4-year-old children learn the alphabet letters. *Early Childhood Research Quarterly, 21,* 374–389.

Liberman, I. Y., Shankweiler, D., & Liberman, A. M. (1989). *The alphabetic principle and learning to read*. Bethesda, MD: National Institute of Child Health and Human Development.

Mason, J. M. (1980). When do children begin to read: An exploration of four-year-old children's letter and word reading competencies. *Reading Research Quarterly, 15,* 203–227.

McBride-Chang, C. (1999). The ABCs of the ABCs: The development of letter-name and letter-sound knowledge. *Merrill–Palmer Quarterly, 45,* 285–308.

McGill-Franzen, A., Lanford, C., & Adams, E. (2002). Learning to be literate: A comparison of five urban preschools. *Journal of Educational Psychology, 94*(3), 443–464.

McKay, R., & Teale, W. H. (2015). *No more teaching a letter a week*. Portsmouth, NH: Heinemann.

Montessori, M., & Gutek, G. L. (2004). *The Montessori method: The origins of an educational innovation*. Lanham, MD: Rowman & Littlefield.

Morphett, M. V., & Washburn, C. (1931). When should children begin to read? *Elementary School Journal, 31,* 496–503.

Murray, B. A., Stahl, S. A., & Ivey, M. G. (1996). Developing phoneme awareness through alphabet books. *Reading and Writing, 8,* 307–322.

National Governors Association Center for Best Practices and Council of Chief State School Officers. (2010). *Common core standards for English language arts and literacy in history/social studies, science, and technical subjects*. Washington DC: Author.

Office of Head Start. (2015). *Head Start early learning outcomes framework: Ages birth to 5.* Washington, DC: Office of Head Start, Administration for Children and Families, U.S. Department of Health and Human Services.

Piasta, S. B. (2014). Moving to assessment-guided differentiated instruction to support young children's alphabet knowledge. *The Reading Teacher, 68,* 202–211.

Piasta, S. B., Justice, L. M., McGinty, A. S., & Kaderavek, J. N. (2012a). Increasing young children's contact with print during shared reading: Longitudinal effects on literacy achievement. *Child Development, 83*(3), 810–820.

Piasta, S. B., Petcher, Y., & Justice, L. M. (2012b). How many letters should preschoolers in public programs know?: The diagnostic efficiency of various preschool letter-naming benchmarks for predicting first-grade literacy achievement. *Journal of Educational Psychology, 104,* 945–958.

Piasta, S. B., Purpura, D. J., & Wagner, R. K. (2010b). Fostering alphabet knowledge development: A comparison of two instructional approaches. *Reading and Writing, 23,* 607–626.

Piasta, S. B., & Wagner, R. K. (2010a). Developing emergent literacy skills: A meta-analysis of alphabet learning and instruction. *Reading Research Quarterly, 45,* 8–38.

Piasta, S. B., & Wagner, R. K. (2010c). Learning letter names and sounds: Effects of instruction, letter type, and phonological processing skill. *Journal of Experimental Child Psychology, 105,* 324–344.

Read, C. (1971). Pre-school children's knowledge of English phonology. *Harvard Educational Review, 41,* 1–34.

Rieban, L., & Perfetti, C. A. (2013). *Learning to read: Basic research and its implications.* Mahwah, NJ: Erlbaum.

Roberts, T. A. (2003). Effects of alphabet-letter instruction on young children's word recognition. *Journal of Educational Psychology, 95,* 41–51.

Scarborough, H. S. (1998). Early identification of children at risk for reading disabilities: Phonological awareness and some other promising predictors. In B. K. Shapiro, P. J. Accardo, & A. J. Capute (Eds.), *Specific reading disability: A view of the spectrum* (pp. 75–119). Timonium, MD: York Press.

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

Treiman, R., & Broderick, V. (1998). What's in a name: Children's knowledge about the letters in their own names. *Journal of Experimental Child Psychology, 70,* 97–116.

Treiman, R., Tincoff, R., Rodriguez, K., Mouzaki, A., & Francis, D. J. (1998). The foundations of literacy: Learning the sounds of letters. *Child Development, 69,* 1524–1540.

Turnbull, K. L. P., Bowles, R. P., Skibbe, L. E., Justice, L. M., & Wiggins, A. K. (2010). Theoretical explanations for preschoolers' lowercase alphabet knowledge. *Journal of Speech, Language, and Hearing Research, 53,* 1757–1768.

Wasik, B. A. (2001). Teaching the alphabet to young children. *Young Children, 56,* 34–40.

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