

Development of a Workshop for Pre-Service Elementary Teachers: Cognitive Processes
in Early Reading Development

by

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DEDICATION PAGE

This four year labour of love (well...maybe just labour) is finally complete. It seems hardly possible to thank everyone who has supported me along this journey in only one page, but I shall persevere. To my family: Mum, Dad, Lauren, Becca, Nana H, Grampy H, Katrina, Anja, Mike, Joe, Ali, and Logan; your love, support, and patience has meant more to me than I can possibly put into words. A part of this thesis belongs to all of you. To my girls: Meghan, Meg, Joanna, Ashley, Lianna, Allison, Dara Burke, and Jessica; that we've been able to go months without seeing each other because I've been holed up in my office working on this beast, but still pick up right where we left off...how can a girl get any luckier?

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ABSTRACT

Phonological, morphological, and orthographic awareness are cognitive processes that have been identified as strong predictors of successful reading development. Research has shown that instruction that explicitly teaches phonological, morphological, and orthographic awareness is most effective. Research has suggested that in order to provide effective reading instruction, teachers must not only be able to read well, but they must also have an explicit understanding of the cognitive processes that play a role in reading acquisition. Research has also indicated that pre-service teachers' lack explicit knowledge of phonological, morphological, and orthographic awareness and how to provide the instruction to facilitate their development. The focus of this thesis was the development of a workshop to provide pre-service elementary teachers with information about reading instruction that is grounded in research. The workshop highlights the implicit knowledge that pre-service teachers likely have about phonological, morphological, and orthographic awareness and expands their explicit knowledge in those areas.

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Chapter 1: Literature Review

The Nova Scotia Department of Education and Early Childhood Development mandates that students' reading achievement is measured in Grades 3, 6 and 8 through the completion of the *Nova Scotia Assessment: Reading and Writing* for each corresponding grade. These tests provide "valid and reliable information about student performance relative to selected curriculum outcomes." (Nova Scotia Department of Education and Early Childhood Development, 2015, p. 1). Results of the reading portion of these tests for the 2012-2013, 2013-2014, and 2014-2015 academic years indicated that 25-30 percent of Nova Scotia students in Grade 3 are not meeting assessment outcomes, and therefore do not possess adequate literacy skills (Nova Scotia Department of Education and Early Childhood Development, 2014). These findings suggest that reading instruction for students in elementary schools in Nova Scotia needs to be improved. To understand how to improve early reading instruction, it is important to understand what we know about how children learn to read.

Cognitive processes involved in reading development

Several different cognitive processes have been identified as strong predictors of successful reading development. These include phonological awareness, (Bentin & Leshem, 1993; Defior & Tudela, 1994; Høien-Tengesdal & Tønnessen, 2011; National Reading Panel, 2000; Wagner & Torgesen, 1987), morphological awareness (Deacon & Kirby, 2004; McCutchen, Green, & Abbott, 2008; Tong, Deacon, Kirby, Cain, & Parrila, 2011), and orthographic awareness (Badian, 2001; Barker, Torgesen, & Wagner, 1992; Zeigler, Bertrand, Lété, & Grainger, 2014). Phonological awareness is the ability to access and be aware of the structure of sounds in oral language (Wagner, Torgesen,

Rashotte, & Pearson, 2013). Morphological awareness is the recognition that words can be separated into morphemes, the smallest units of meaning in a word, and that new words can be built by combining those morphemes (Carlisle, 1995). Orthographic awareness is the understanding of the spelling conventions of a written language (Conrad, Harris & Williams, 2013). More detailed information about these processes is provided below.

Phonological awareness. Phonological awareness is one component of phonological processing. Phonological processing is “the use of phonological information (i.e. the sounds of one’s language) in processing written and oral language.” (Wagner & Torgesen, 1987, p.192). According to Wagner, Torgesen, Rashotte, and Pearson (2013), there are three main phonological processing skills that have been shown to contribute to reading development: phonological memory, rapid automatized naming (RAN), and phonological awareness. Phonological memory is the temporary retention of verbally presented information in short-term memory (e.g. remembering a phone number you just heard long enough to walk to the phone to dial). Rapid automatized naming (RAN) refers to the quick retrieval of phonological information from long term memory. Phonological awareness, the ability to access and be aware of the structure of sounds (phonological units) in oral language, is the most significant predictor of reading development (Wagner, Torgesen, Rashott, & Pearson, 2013). Phonological units of speech include phonemes, syllables, onsets, and rimes. Phonemes are the smallest units of sound in spoken language (National Reading Panel, 2000) and phonemic awareness, a component of phonological awareness, is the ability to perceive and differentiate individual phonemes. For example, the word *bat* contains three phonemes: /b/, /a/, /t/. The ability to hear phonemes as

individual sounds within a word and the ability to separate those sounds have been shown to be significantly correlated with reading ability. Syllables refer to a pronounceable part of a word that contains one vowel sound which may or may not be accompanied by consonants. For example, the word *paper* contains two syllables: *pa* and *per*. An onset is the initial phoneme of a syllable that precedes the vowel (e.g., /*ch*/ in *chair*) and the rime is all the letters that follow (e.g., *air* in *chair*).

Phonological awareness abilities have been shown to improve significantly when children are explicitly taught to isolate and manipulate individual phonemes in words they say and hear (National Reading Panel, 2000). Improvements in phonological awareness also lead to overall improved reading skills (Bentin & Leshem, 1993; Høien-Tengesdal & Tønnessen, 2011; Nithart, Demont, Metz-Lutz, Majerus, Poncelet, & Leybaert, 2011; Wagner, Torgesen, Rashotte, & Pearson, 2013). Specific instruction in phonological awareness and phonics (i.e., instruction that consists of explicitly teaching about how to use letter-sound correspondences to read and spell; National Reading Panel, 2000) has been shown to improve the reading skills of both skilled and struggling readers (McGeown, Johnston, & Medford, 2012; Roman, Kirby, Parrila, Wade-Woolley, & Deacon, 2009; Torgesen, Wagner, Rashotte, Rose, Lindamood, Conway, & Garvan, 1999; Wagner, Torgesen, Laughon, Simmons, & Rashotte, 1993).

Juel (1988) investigated the development of reading abilities of early elementary school aged children to determine if identified struggling readers continued to struggle year after year, and to identify what specific skills they lacked. Reading and writing development was monitored in children from Grade 1 to Grade 4, inclusive. Participants, who were identified as poor readers (demonstrated weak phonemic awareness abilities) at

the beginning of Grade 1, continued to be poor readers at the end of Grade 4. Participants who were still identified as poor readers at the end of Grade 4 had not yet achieved the same level of phonemic awareness that their peers, who had been identified as good readers, had achieved at the beginning of Grade 2. Ultimately, participants identified as poor readers in Grade 1 almost always continued to be poor readers into Grade 4. These results indicate the need for students to develop adequate decoding skills in Grade 1 to ensure they do not continue to struggle throughout their academic careers.

Castle, Riach, and Nicholson (1994) explored the effect of early phonemic awareness instruction on children's reading development, within the context of whole language classroom instruction; a method of reading instruction that does not put emphasis on phonics instruction. Students identified as beginning readers with weak phonemic awareness abilities were placed into one of three groups: an experimental group that received explicit phonemic awareness training, an alternate experimental group that received instruction in categorizing words based on their meaning, and a control group that continued to receive regular whole language instruction, and did not receive any training from the researchers. Participants' verbal and general cognitive abilities were assessed prior to testing, and measures of phonemic awareness, non-word reading, word reading, and letter recognition were administered before participants began training in their respective experimental groups. The two experimental groups (phonemic awareness training and alternative training) received 20 minutes of training per week over a 15 week period. The phonemic awareness training group focused on being able to isolate sounds within words and to blend sounds together to create words. The alternative training group were also taught to read new words, but focused on word meanings and

categorizing words based on their meaning (e.g., words that are animals). With the exception of the verbal and general cognitive abilities tests, all measures were administered again after participants completed the training programs. Additional post-test measures included a test about the concepts of written language and two writing tasks (a word writing task and a sentence dictation task). Post-test results revealed that participants who were in the phonemic awareness training group scored significantly better than the alternative training and control groups on measures of phonemic awareness, non-word reading, word reading, and the dictation writing task. These results suggest that the phonemic awareness training program had a significant positive effect on participants' reading abilities.

Kirby, Parrila and Pfeiffer (2003) examined how well the phonological awareness of children, who had not yet received any formal reading instruction, predicted reading development from Grade Primary to Grade 5. Participants in this longitudinal study were children entering Senior Kindergarten (equivalent to Grade Primary), who remained in the study until Grade 5. Participants did not receive formal reading instruction until Grade 1, and reading instruction consisted of some phonics instruction within a whole language curriculum. In Senior Kindergarten, participants completed measures of verbal and non-verbal intelligence, phonological awareness, RAN, and reading development (e.g. non-word reading, sight word recognition, and reading comprehension). Participants completed the reading development measures during each year of the study (Grade 1 to Grade 5, inclusive). Results indicated that, in each grade, phonological awareness contributed significant variance to participant's scores on the reading measures. That is to say, the differences in participants' scores on the reading measures they completed each

year, was due to their phonological awareness abilities, above and beyond the contribution of any other variables (verbal intelligence, non-verbal intelligence, and RAN). Additionally, phonological awareness showed the most significant effect on participants' reading development in kindergarten and Grade 1, but declined in subsequent grades. The authors suggested that the reduced role of phonological awareness in later reading development (e.g., after Grade 1) may be explained by the changes in how children read as they get older. That is, as their reading abilities develop, children may rely less on decoding words phonologically and begin to include other skills to support their reading, such as morphological and orthographic awareness.

In a two year, longitudinal study, Bentin and Leshem (1993) examined the effects of phonological awareness training on reading acquisition in a sample of Hebrew-speaking Kindergarten (Grade Primary) aged children who were identified as at-risk for developing reading difficulties. In the first year of the study, participants completed a measure of phonological awareness, and those with the lowest scores were randomly selected for placement in one of three experimental groups. One experimental group received explicit training in phonemic segmentation (e.g., the ability to recognize and differentiate individual phonemes in target words). The second experimental group also received explicit phonemic segmentation training in addition to instruction in letter shape recognition. The third experimental group received instruction in oral sentence comprehension and vocabulary. The control group did not receive any explicit instruction. Participants also completed measures of real word and non-word reading before and after completing the training sessions. Participants completed two thirty-minute lessons each week over a period of ten weeks. Results indicated that participants'

phonological awareness improved significantly in the two experimental groups that received explicit phonemic segmentation training but not in the groups where the participants did not receive any explicit phonemic instruction. Participants' reading abilities were retested four and nine months after completion of the experimental groups. Results showed that improving the phonological awareness abilities of children who initially demonstrated difficulties in that area lead to improved reading skills, and the improvements continued to be evident four and nine months later. Furthermore, while phonological awareness skills were found to facilitate reading development, the reverse was also shown to be true; that is to say that reading development and reading instruction had a significant positive effect on ameliorating phonological awareness skills. This suggests that phonological awareness skills, adequate reading instruction, and reading practice interact positively with each other to enhance the development of each.

Sprugevica and Høien (2003) studied whether Latvian children's scores on early measures of phonological skills (phonemic awareness, RAN, and phonological memory) predicted later reading success. Latvian is a more phonetically transparent language than English as its letter (grapheme) to sound (phoneme) correspondences are more consistent. Participants' phonemic awareness, RAN, phonological memory, word reading and reading comprehension abilities were assessed four times from Kindergarten to Grade 2. Results indicated that phonemic awareness was the most significant predictor of word reading until the end of Grade 1; however, the predictive power of phonemic awareness was shown to decrease after Grade 1. The authors suggested that since Latvian children receive explicit reading instruction, beginning in Kindergarten, their phonemic awareness is likely to improve as a result, thus diminishing the predictive power of phonemic

awareness for word reading in later grades. As such, they argue that this does not diminish the relationship between phonemic awareness and reading ability. Phonemic awareness also accounted for significant variance in participant's reading comprehension abilities in the middle of Grades 1 and 2. Overall, results indicated that phonemic awareness played an important role in both single word reading and reading comprehension.

Høien-Tengesdal and Tønnessen (2011) examined the relationship between various phonological skills (phonemic awareness, phonological memory, and RAN) and word reading ability in a group of Norwegian and Swedish students in Grades 3 and 5. Participants' word recognition, non-word reading, sight word reading, phonemic awareness, RAN, and phonological memory were assessed. The reading tasks (word recognition, non-word reading, and sight word reading) were combined to form one composite variable, which the researchers referred to as *decoding efficiency*. Results of this study revealed that, phonological skills (phonemic awareness, phonological memory, and rapid automatized naming) accounted for a significant amount of variance in word decoding skills among the participants. Additionally, phonemic awareness accounted for the most significant amount of variance in the decoding efficiency abilities of participants in Grades 3 and 5.

In summary, research spanning several decades and in many languages (e.g. Wagner & Torgesen, 1987; Bentin & Leshem, 1993; Defior & Tudela, 1994; National Reading Panel, 2000; Høien-Tengesdal & Tønnessen, 2011) has indicated that it is essential for early elementary school children to receive instruction that facilitates the development of phonological awareness abilities, and teaches them how to apply those

skills to reading. It is important to highlight that without intensive and appropriate remedial instruction, children identified as poor readers, as early as Grade 1, tend to remain poor readers (Juel, 1988).

Morphological awareness. A morpheme is the smallest unit of meaning in a word (Kirby, Desroches, Roth, & Lai, 2008). For example, the word *revisited* contains three morphemes: *re*, *visit*, and *ed*. Morphemes are either free or bound. Free morphemes (e.g., *visit*) are single words that can stand on their own. Bound morphemes (e.g., *re* and *ed*) are not words on their own and are commonly referred to as prefixes or suffixes or collectively as affixes (Carlisle, 2003). Morphological awareness is the recognition that words can be separated into morphemes when reading and that words can be built by combining morphemes (Carlisle, 1995).

Deacon and Kirby (2004) investigated how morphological awareness contributes to reading development. Participants' morphological awareness, phonological awareness, verbal intelligence and non-verbal intelligence were assessed in Grade 2, while their real-word reading, non-word reading, and reading comprehension abilities were measured every year from Grade 2 to Grade 5. After controlling for overall intelligence and phonological awareness, morphological awareness still contributed significantly to variability in scores on measures of non-word reading, reading comprehension, and real-word reading every year. Deacon and Kirby concluded that morphological awareness significantly influenced early reading development and that it continued to do so as reading skills developed (i.e., three years after the initial measures were taken).

Tong, Deacon, Kirby, Cain and Parrila (2011) investigated how children with differing levels of reading comprehension performed on other reading tasks. Participants

in this longitudinal study were followed from Grade 3 to Grade 5, and were identified as having unexpected poor comprehension, expected average comprehension or unexpected good comprehension. A regression analysis was used to sort the participants into the three comprehension groups based on their Grade 5 word reading skills. Participants' nonverbal abilities and vocabulary knowledge were measured in Grade 3, while their reading comprehension, word identification, word reading efficiency, RAN, orthographic processing, phonological awareness, and morphological awareness skills were measured in both Grades 3 and 5. The authors examined whether participants with unexpected poor comprehension evidenced unique deficits in morphological awareness. Results of multivariate analyses of variance (MANOVA) revealed that there were no significant differences between groups in terms of phonological awareness, orthographic awareness and RAN skills. The only factor on which participants' differed significantly was morphological awareness, with the unexpected poor comprehension group demonstrating the weakest morphological awareness abilities. It is worth noting that participants in the unexpected poor comprehension group demonstrated adequate phonological awareness, orthographic awareness, and RAN abilities, suggesting that their weak comprehension abilities are due to a unique deficit in morphological awareness.

Tyler and Nagy (1989) suggested that morphological awareness is a multifaceted construct that develops in stages across time. These stages were identified as relational, syntactic, and distributional morphological knowledge. Relational morphological knowledge is the recognition that words have an internal structure and that multiple words can share the same morpheme. For example, being able to recognize that the word, *create*, shares a morpheme with *creator*, and that the meanings of these two words are,

therefore, related. Syntactic morphological knowledge is the understanding that derivational suffixes (e.g. *-ly* and *-ize*) specify the syntactic category of a word (e.g. adverb or verb). Distributional morphological knowledge is the recognition that there are conventions that govern how root words and affixes can be used together. For example, the suffix *ness* can be added to adjectives but cannot be added to a verb.

McCutchen, Green, and Abbott (2008) investigated the extent to which morphological knowledge contributed to participants' performances on a series of reading related measures. Participants were typically-developing students in Grades 4 and 6, and all completed measures of real and nonsense word reading, reading comprehension, phonological awareness, oral vocabulary, and morphological skills. The morphological measures measured relational, syntactic and distributional morphological skills. Correlation and regression analyses revealed that morphological skills contributed significant and unique variance to real and nonsense word reading, oral vocabulary, and reading comprehension, even when phonological awareness had been accounted for. Additionally, the development of participants' morphological skills from Grade 4 to Grade 6 was considered, revealing significant differences in their more sophisticated (syntactic and distributional) morphological knowledge, but not in their more basic (relational) morphological knowledge, over time. The authors concluded that these results supported the idea that basic morphological skills are developed by the time that good readers enter Grade 4, and that good readers continue to develop higher order morphological skills through later elementary school years. The authors further noted that these skills would likely be beneficial as multi-morphemic words become more frequent in the texts students read.

Some theories of reading development suggest that morphological awareness does not become an important factor until late elementary school or middle school (Nagy, Berninger, & Abbott, 2006). However, Wolter, Wood, and D’Zatko (2009) found that some children demonstrated morphological awareness abilities as early as Grade 1. At the beginning of Grade 1, participants completed a series of measures to assess their word reading abilities, spelling skills, phonological awareness, and morphological awareness. Two measures of morphological awareness were administered: one oral test and one spelling test. For the oral morphological test, participants were provided with a base word (free morpheme) and asked to generate a derivative of that word by adding the appropriate affix (bound morpheme) to make it fit into a target sentence. For example, participants were provided the word *farm* and then asked to manipulate that word to complete the sentence “My dad is a _____.” Results indicated that participants could generate those morphological derivatives even though they had not received any explicit morphological awareness instruction. Additionally, participants’ scores on the oral morphological task accounted for significant variance on their reading and spelling abilities beyond that accounted for by their phonological awareness abilities demonstrating the importance of morphological awareness to reading as early as Grade 1.

The morphological spelling task, for the same study (Wolter, Wood, & D’Zatko, 2009), focused on one and two-morpheme words with final consonant cluster phonemes and flaps (words in which the pronunciation of the last sound of the root word changes when a suffix is added. An example of a final consonant cluster phoneme would be the final blend /nd/. This pronounced sound can appear in words with one morpheme (e.g., band) or two morphemes (e.g., trained). An example of a flap would be found in the word

dirty where the grapheme *t* is pronounced /t/ in the root word *dirt* but is typically pronounced as /d/ when the suffix *y* is added. (We typically say /dirty/ rather than /dirty/.) The authors posited that if participants only used their phonological abilities to spell words that end with the same final consonant cluster phoneme, they would spell both one and two-morpheme words with the same letter patterns at end (e.g., *blind* and *raind*). However, results indicated that participants correctly spelled two-morpheme words significantly more often than they misspelled them. Participants also spelled a significant portion of flap words correctly, particularly when the base word contained the correct spelling for the flap (e.g. *dirt* and *dirty*). If participants had been using primarily phonological awareness abilities, the authors hypothesized that the participants would have spelled the words phonetically (e.g. *dirdy* rather than *dirty*). These results indicate that participants used their morphological awareness more than their phonological awareness when spelling both final consonant cluster phonemes and flaps. Overall, results of this study reveal evidence that children, in early grades, draw upon morphological awareness skills for reading and spelling.

Apel and Lawrence (2011) investigated whether children with speech sound disorder (atypical speech patterns could be caused by phonological or articulation difficulties) and their typically-developing peers differed in their morphological awareness and whether both groups' morphological awareness abilities contributed to reading development. Grade 1 children, with no history of language impairments and who spoke English as a primary language, completed a series of tests that measured their receptive vocabulary, single word reading, speech sound production ability, nonverbal intelligence, letter knowledge, spelling, phonemic awareness, and morphological

awareness. Results revealed that typically-developing children scored higher than children with speech sound disorder on all measures of morphological awareness. Furthermore, for typically-developing participants, morphological awareness was predictive of single word reading and spelling skills above and beyond phonemic awareness, receptive vocabulary, and nonverbal intelligence. However, for participants with speech sound disorder, morphological awareness was only predictive of spelling abilities and did not account for any additional variance in word-level reading ability.

Overall, research has indicated that morphological awareness contributes significantly to children's reading development and continued reading success (Deacon & Kirby, 2004; McCutchen, Green, & Abbott, 2008; Tong, Deacon, Kirby, Cain, & Parrila, 2011). Furthermore, morphological awareness has been shown to play a role in early reading abilities (Wolter, Wood, & D'Zatko, 2009), whereas it was once thought that morphological awareness did not become a significant factor in reading ability until later grades (Nagy, Berninger, & Abbott, 2006).

Orthographic awareness. Orthographic awareness is another cognitive process associated with reading development. Drawing definite conclusions about the role of orthographic awareness in reading is complicated by inconsistencies in the literature regarding how best to define and measure this construct (Conrad, Harris & Williams, 2013). The word *orthography* comes from two Greek root words: *orthos* and *graphein*. *Orthos* means 'correct' and *graphein* means to 'write'. Therefore, the term orthography could literally be translated to "correct writing" (Apel, 2011, p. 592). Orthographic knowledge is acquired by recurring exposure to printed words until a consistent visual depiction of an entire word has been consolidated to memory (Barker, Torgesen, &

Wagner, 1992). A more recent definition of orthographic awareness is the acquisition and use of both the visual representations of word stored in long term memory and orthographic pattern knowledge (the conventions of written language; Apel, 2011). Strong orthographic awareness skills allow individuals to read quickly by being able to readily recognize larger units of print, particularly those that do not lend themselves to being sounded out based on their letter composition (e.g., the word *tough*; Kirby, Desrochers, Roth, & Lai, 2008).

Barker, Torgesen, and Wagner (1992) examined the independent role of orthographic awareness on five different reading tasks. Grade 3 students completed measures of untimed word reading, timed word reading, oral passage reading, silent passage reading, and non-word reading. The oral and silent passage reading tasks measured participants' ability to read words in context, rather than in isolation. The untimed, timed, and non-word reading tasks consisted of word lists that participants read aloud, rather than connected text. Results revealed that orthographic awareness accounted for significant, independent variance in participants' scores on all five reading measures. Orthographic awareness also contributed more to participants' ability to read in context, than their ability to read words in isolation. The authors suggested that the latter finding is perhaps the most significant, positing that the efficient retrieval of visual representations of words has a significant effect on the reading of connected text.

Cunningham, Perry and Stanovich (2001) examined the relationship between orthographic awareness and word reading abilities. Typically-developing students were administered various reading related and orthographic tasks in Grades 1, 2, and 3. In Grade 1 participants completed a battery of phonological awareness tasks. In Grade 2,

participants completed six tasks that assessed their orthographic awareness and one task that measured phonological awareness. Finally, in Grade 3, participants completed tests of non-word reading, word recognition, and print exposure. Scores from the phonological awareness and orthographic awareness tasks were constructed into composite scores for analyses. The orthographic processing composite accounted for significant and unique variance in word reading ability, even after variance was accounted for by the phonological awareness composite. The authors concluded that the relationship between orthographic awareness and word reading ability was not the product of an interaction between orthographic and phonological awareness. Rather, orthographic awareness played an independent role in participants' word reading abilities.

Levy, Gong, Hessels, Evans and Jared (2006) investigated the development of children's orthographic awareness, and the relationship between orthographic awareness and reading development. Participants ranged in age from four to seven years and were typically developing students enrolled in public school. Participants initially completed measures of orthographic awareness, and one year later completed standardized measures of phonological awareness (e.g., saying a word without a specific syllable or phoneme) and reading achievement, as well as measures of orthographic awareness. The orthographic awareness task was a discrimination task that required participants to choose between two alternatives: a correct representation of a word or sentence, and a word or sentence representation that violated one convention of print. The print convention violations ranged in difficulty from being able to differentiate between scribbles and real words, to recognizing that multi-letter words must contain both vowels and consonants. Results revealed a positive relationship between participants' age and the difficulty of the

print violations they were able to identify. That is to say, older participants were able to recognize more difficult violations than the younger participants. Additionally, regression analyses indicated that children's early orthographic awareness was significantly related to their early reading abilities even after controlling for variance associated with age and phonological awareness.

Deacon, Benere, and Castles (2012) examined the directionality of the relationship between orthographic awareness and word reading. Measures of orthographic awareness, phonological awareness, reading and vocabulary were administered to participants in each of their Grade 1, 2, and 3 years, and nonverbal reasoning was measured in Grade 3. Results indicated that reading ability in any one grade was a significant predictor of orthographic awareness in later grades after controlling for all other measured skills (i.e., phonological awareness, vocabulary, and nonverbal reasoning abilities). These findings were consistent across grades when examining orthographic awareness from Grade 1 to Grades 2 and 3 and Grade 2 to Grade 3. However, orthographic awareness did not significantly predict participants' reading abilities. These results suggest that children's orthographic awareness abilities develop as a result of their reading experiences. The authors suggested that aspects of their experimental design (e.g. very stringent statistical analyses) may have accounted for these surprising results and that this unique finding should encourage further investigation of the relationship between orthographic awareness and reading. They noted that while their study revealed a correlation between orthographic awareness and reading, the longitudinal results suggested a one way relationship between reading and orthographic awareness (i.e., that reading improves orthographic awareness) that has not been identified in other studies.

While an unexpected relationship was found between orthographic awareness and reading ability in this study, the majority of studies highlight the importance of orthographic awareness in relation to children's reading abilities (Badian, 2001; Barker, Torgesen, & Wagner, 1992; Zeigler, Bertrand, Lété, & Grainger, 2014).

Stages of reading development

In addition to understanding the cognitive processes that are involved in the acquisition of reading, consideration of the stages of reading development may offer a practical framework for teachers to interpret the reading performances of students. Knowledge of the stages of reading development may also help both classroom teachers and resource (remedial) teachers to determine the most appropriate instructional practice for students struggling with reading (Hempenstall, 2004).

Ehri (2005) presents a four phase model of reading acquisition: pre-alphabetic, partial alphabetic, full alphabetic, and consolidated alphabetic. Individuals who are in the pre-alphabetic phase are considered non-readers, as they have very little, if any, knowledge of the alphabetic system that comprises the English language. During this phase, reading occurs as product of remembering the physical attributes of words. For example, a child in the pre-alphabetic phase may be able to recognize the word *look* by recalling that the two Os in the middle look like eyes. In this phase, children can also 'read' words by attending to contextual clues, not by associating the letters with their phonemes (e.g., the golden arches of the McDonald's M or the red octagon of a stop sign).

Once a child has learned the names and/or sounds (phonemes) of the letters (graphemes) in the alphabet, they have transitioned to the partial alphabetic stage of

reading development. In this phase, children have begun to make connections between letters and their sounds in isolation. However, typically only the initial and final letter sounds are consistently identified by children in this phase. Therefore children in this phase will often spell a word such as *top* as *tp* since /t/ and /p/ are the initial and final sounds in the word. At this point in reading development, children have not yet learned to segment the individual phonemes within words; that is, they do not have well-developed phonemic awareness abilities.

A child is considered to be in the full alphabetic phase when they have learned to read sight words by linking the graphemes in words to their corresponding phonemes. Essentially, they understand phoneme-grapheme correspondences and are able to associate grapheme printed on the page with the appropriate phoneme and commit those connections to memory. In this phase, sight word reading becomes more accurate and words that resemble one another are less frequently confused. Additionally, full alphabetic readers are able to decode unfamiliar words and are also able to spell unfamiliar words more conventionally and their invented spelling becomes more easily readable as a result. In this phase, a child might misspell the word *tough* as *tuf* or as *tuff* if their orthographic awareness was well-developed.

The final phase is the consolidated alphabetic phase in which individuals are able to hold larger amounts of sight words in their long term memory. In the consolidated alphabetic phase, readers are exposed to similar letter patterns in different words (e.g., *beat* and *meat*) and the grapheme-phoneme correspondences within the words are consolidated into larger chunks such as syllables, rimes, onsets and morphemes. By recognizing words based on these larger units of print it becomes easier for individuals to

read multisyllabic words more fluently. For example, consider the word *dignitary*. An individual who is still in the partial or even full alphabetic phase may need to decode the word based on the nine grapheme-phoneme connections. However, that number would be reduced to 4 syllables for an individual in the consolidated alphabetic phase.

Research has shown that children's reading abilities follow a developmental trajectory, where one phase must be well-developed before the next phase begins (Ehri, 2005). Additionally, research demonstrates that phonological, morphological and orthographic awareness each have a role in reading development. The National Reading Panel (2000) suggested that effective reading instruction in the classroom should include the development of phonological awareness and phonemic awareness skills, as well as morphological awareness (through reading comprehension instruction), and orthographic awareness (by teaching spelling, fluent word recognition, and vocabulary). Classroom instruction that includes phonological, morphological, and orthographic awareness, and teaches about them in an explicit way is most effective (Torgesen, 2002). In a four-year longitudinal study, Berninger, Abbott, Nagy, and Carlisle (2010) found that the most significant development of phonological, orthographic, and morphological awareness took place during the first three grades of formal education. Therefore, it is essential that early elementary school teachers have knowledge about phonological, morphological, and orthographic awareness so they can provide effective instruction during these critical grades. It would also seem logical to expect that reading curricula would also include mention of these processes.

Cognitive processes included in the Nova Scotia English Language Arts curriculum

The Nova Scotia English Language Arts curriculum does not use the specific terms phonological, morphological, and orthographic awareness in its discussion of the development of reading skills; however, it does make reference to these cognitive processes.

Phonological awareness. The Nova Scotia Department of Education and Early Childhood Development modified the Grades Primary to Grade 3 English Language Arts curriculum for classroom use beginning in September 2015. As of the writing of this thesis, the modified curriculum, currently called *English Language Arts – Curriculum Outcomes*, has been provided to teachers but is not yet available online. The *English Language Arts-Curriculum Outcomes* (Nova Scotia Department of Education and Early Childhood Development, 2015) implies that students in Grades Primary, 1, and 2 will be expected to use phonological awareness skills as it states that students will use “beginning consonants, ending consonants, or known word parts” (i.e., phonological knowledge; p. 2) to decode words. Furthermore, in Grades Primary, 1, and 2 students are expected to use the following word study strategies to support their reading and writing: rhyming, segmenting (isolating the individual phonemes within word of varying length), deleting (deleting initial and/or final phonemes from words), and blending (blending phonemes to make words). Each of those strategies relies on well-developed phonological awareness abilities. Additionally, in Grade 2, students are also expected to read words by breaking them into syllables.

Morphological awareness. The term morphological awareness does not appear in the Nova Scotia curriculum document, but some of the outcomes in the Grade 2

English Language Arts curriculum require this cognitive process. In Grade 2, students are expected to begin using and recognizing plurals and past tense when spelling and reading. As previously noted, morphological awareness refers to an individual's awareness of morphemes (the smallest units of meaning in words). Recognition of the morphemes that denote plurals (e.g., *s*) and past tense (e.g., *ed*) could help a child read the word *camps* or *camped* by recognizing the two morphemes in each word: the root word *camp* and the suffix *s*, or *ed*, respectively.

Orthographic awareness. Two of the outcomes in the curriculum for Grades Primary, 1, and 2 are the development of sight word recognition and predicting what a word is by whether or not it looks right. In other words, students are expected to use their orthographic knowledge (recognition of visual patterns of words and the conventions of written language) to be able to immediately identify predetermined words without having to use phonological or morphological awareness strategies. Additionally, in Grade 2 students are expected to “demonstrate increasing knowledge of spelling patterns including long vowel patters” (p. 7). Orthographic awareness contributes strongly to this pattern knowledge.

Educators' knowledge of cognitive processes

Research has demonstrated the importance of phonological, morphological, and orthographic awareness in reading development (Berninger, Abbott, Nagy, & Carlisle, 2010). Curriculum documents produced by the Nova Scotia Department of Education and Early Childhood Development also acknowledge the need for children to use these processes. Therefore, it can be concluded that early elementary teachers should have explicit knowledge of these cognitive processes in order to provide effective reading instruction (Torgesen, 2002). Moats (1994) suggested that in order to provide effective

literacy instruction, teachers must not only be able to read well, but they must also have an explicit understanding of the cognitive processes involved in reading development. However, research examining pre-service teachers' knowledge of the cognitive processes involved in reading development has shown that pre-service teachers are often unfamiliar with or misled regarding these processes and about how to provide the best instruction to facilitate their development.

Washburn, Joshi, and Binks-Cantrell (2011) examined pre-service elementary teachers' implicit (skill) and explicit (understanding of principles and concepts) knowledge of cognitive processes involved in early literacy development (e.g., phonological awareness, phonics, orthographic awareness, and morphological awareness). Participants had relatively good implicit phonological skills (e.g., counting syllables) but had more difficulty with tasks requiring explicit knowledge (e.g., identifying the correct definition of phonological awareness) and experienced the most difficulty identifying rules that govern the English language (e.g., when *c* is pronounced as /s/ or /k/). Finally, participants' scores on all morphologically based items (e.g., identifying definitions, counting morphemes, and identifying affixes) were at or below 51%.

Bos, Mather, Dickson, Podhajski, and Chard (2001) administered a survey about cognitive processes involved with reading development (e.g. phonological awareness) to pre-service (teacher trainees) and in-service (practicing teachers) teachers. Results indicated that more than 50% of participants correctly answered fewer than half of the items on a survey targeting knowledge of language structure. Additionally, while more than 50% of both pre-service and in-service teachers correctly identified the phonemes in

two-phoneme words, they were not able to do so with four-phoneme words (e.g., box). Both pre-service and in-service teachers in this study strongly agreed that early elementary teachers should be able to teach about phonemic awareness; however, their task performance demonstrated that they lack sufficient knowledge to do so. Similarly, Mather, Bos, and Babur (2001) found that 97% of pre-service teachers believed that teachers of Kindergarten through Grade 2 should be competent in phonological awareness and phonics instruction. However, the pre-service teachers in their study did not demonstrate sufficient knowledge of phonological awareness or phonics instruction or how to integrate those elements into the curriculum.

Cunningham, Perry, Stanovich, and Stanovich (2004) examined early elementary school (Kindergarten to Grade 3) teachers' knowledge of the cognitive processes recognized as contributing to literacy development. Participants completed a survey that focused on their knowledge of phonological awareness, phonics, and children's literature. The authors concluded that the participating teachers demonstrated insufficient knowledge of cognitive processes (e.g., phonological awareness) and appropriate instructional techniques (e.g., phonics instruction). For example, fewer than 30% of teachers were able to correctly answer half of the questions related to explicit phonics knowledge (e.g., knowledge of syllable rules, diphthongs, and the schwa sound). In addition to struggling with demonstrating explicit knowledge of phonics rules, participating teachers also experienced difficulty demonstrating implicit knowledge of phonics (i.e., less than one percent of teachers were able to accurately count the number of phonemes in monosyllabic and polysyllabic words).

The same study also examined teacher knowledge calibration (i.e., whether or not teachers were aware of what knowledge they had and whether they could correctly identify the areas in which they required further education) and how it matched with their actual skills. Interestingly, teachers who self-reported as being experts in phonological awareness instruction actually had more difficulty correctly identifying the number of phonemes in words than those who identified themselves as having limited skills in that area. Furthermore, accurate knowledge calibration did not differ based on teachers' years of teaching experience and level of expertise (e.g., having specialist credentials). This suggests that teachers may not be aware of the components that are missing from their disciplinary knowledge base of phonics and phonological awareness (Cunningham et al., 2004).

While research highlights the lack of explicit knowledge that teachers have regarding reading related cognitive processes, it is important to consider whether teachers having this knowledge contributes to students' reading outcomes. Piasta, McDonald Conner, Fishman and Morrison (2009) investigated the relationship between first grade teachers' knowledge of concepts related to early literacy development (e.g., phonological awareness and the alphabetic principal), the delivery of explicit decoding instruction and the growth of students' literacy skills. Results demonstrated that student reading growth was predicted by the interaction of teacher knowledge and quantity of explicit decoding instruction that was received by the students. It was also found that teachers who possessed a higher level of knowledge pertaining to early literacy and language provided instruction that was significantly more effective in ameliorating students' word reading abilities than was the instruction provided by teachers with less knowledge in this area.

Overall, results of this study point to the notion that effective teachers are those who are highly knowledgeable in the area of early literacy acquisition and language and who implement this knowledge in their classroom practices.

Pre-service Teacher Instruction

The Peter Effect is a theoretical effect that is centred on the story of the Apostle Peter (Applegate & Applegate, 2004). When a beggar asks Peter for money, Peter responds that he cannot give the man that which he himself does not possess (Acts 3:5). This theory could be generalized to both pre-service and in-service teachers in that, they cannot be expected to teach reading effectively, if they do not have the appropriate explicit knowledge of phonological, morphological, and orthographic awareness to do so. Binks-Cantrell, Washburn, Joshi and Hougen (2012) applied the concept of the Peter Effect theory to how teacher instructors prepare to instruct pre-service teachers on how to teach reading. They hypothesized that if teacher educators did not have an explicit understanding of the basic language constructs related to literacy acquisition then they could not adequately prepare pre-service teachers to teach reading to early elementary school children (in this case Kindergarten to Grade 4). A survey was developed to evaluate understanding of the cognitive processes related to reading development, and was administered to a group of teacher educators and pre-service elementary teachers. The teacher educator group was further partitioned into those who had recently participated in a three year professional development program that focused on evidence based literacy instruction and those who had not yet completed the same program. The pre-service teachers were undergraduate students who were taught by teacher educators in the previously mentioned groups. Results of the study suggested that teacher educators who participated in the professional development program, and the pre-service students

they were teaching, performed significantly better than teacher educators who had not yet participated in the professional development program and their pre-service students.

It is evident from the research described above that phonological, morphological, and orthographic processing are essential cognitive processes for reading development. Furthermore, research also indicates that, not only do many pre-service teachers lack explicit knowledge of these cognitive processes; they also lack the ability to appropriately calibrate their knowledge in those areas. This suggests that a discrepancy exists between what research has shown to be the cognitive processes involved in children's reading development and pre-service teacher's perceived and actual knowledge of those processes. The Canadian Education Statistics Council (2009) compiled a comprehensive literature review to examine important elements that support reading success in school-aged children. They noted that the International Reading Association suggests that education programs for pre-service elementary school teachers contain 180 hours of reading instruction but that a review of 45 Canadian teacher training programs found that most students leave their programs having received as little as 24 to 36 hours of instruction in how to teach reading. This indicates that many pre-service teachers are not receiving adequate hours of instruction in effective literacy instruction in the classroom and that their instruction might be particularly lacking in the areas of phonological, morphological, and orthographic awareness.

These facts point to the need for a program to address gaps in the current curriculum of some teacher training programs. The focus of this thesis is the development of a workshop that focuses on providing pre-service elementary teachers with information about reading instruction that is grounded in research. This workshop will develop an

awareness of the implicit knowledge that pre-service teachers likely have about phonological, morphological, and orthographic concepts and improve explicit knowledge of phonological, morphological, and orthographic concepts.

Chapter 2: Reading Workshop Leader Manual

Day 1: Phonological, Morphological and Orthographic Awareness

Phonological Awareness

Notes:

- The Workshop Leader will read all italicized text.
- Instructions will be in regular or bolded text.
- Text will only be bolded to highlight important sections, terms, or instructions within the workshop manuals.
- Throughout the day, participants will likely identify several words that are exceptions to the rules you will be discussing. These will be called “What About” words. If participants begin to identify “What About” words, explain that there are many exceptions to the rules in English and that, while they are important, there is not enough time in the day to discuss all of them. Let participants know that there will be time at the end of the day to discuss some of the “What About” words, if necessary.
- Write any “What About” words on a piece of chart paper and find a place in the room to post it that is visible to the participants.

Activity 1: Leader Introduction

Introduce yourself to the participants. You should include your name, what experience qualifies you to lead the workshop (e.g. academic achievements, work experience, volunteer experience, etc.) and perhaps an interesting fact about yourself.

Activity 2: Participant Introductions

Give each participant one minute to share with the whole group the following information: their name, what their undergraduate degree was in, where they hope to teach following completion of their education degree and perhaps one interesting fact about themselves.

During the workshop there will be several small-group activities. After the introductions divide the participants into groups of 3 (depending on numbers there may be a group of 4).

Once the groups have been organized and participants are sitting with their groups, give each participant a participant binder, a pad of paper and a pen and/or pencil. Ask participants not to look through the binder, or skip ahead to any activities.

Activity 3: Some Things I Know About Reading

Goal: For participants to think about their current beliefs about reading and reading instruction.

Materials: Paper, pens/pencils, envelopes.

Workshop Leader: *I want you to take a piece of paper and write down 3 to 5 things that you know or believe to be true about reading and/or reading instruction. When you have finished making your list, please seal it in the envelope provided to you and write your name on the front. At the end of the workshop, I will give the envelope back to you and ask you read over what you have written. No one except you will be able to read what you have written, unless you choose to share with someone.*

Pass out envelopes to participants while they are writing down the 3 to 5 things that they know about reading.

Workshop Leader: *When you have finished, I want you to seal your papers in the envelope I just gave you, and write your name on the front. Then raise your hand and I will come and collect your envelopes.*

Ensure participants' names are on the front of their envelopes when you collect them. Once the envelopes are collected, keep them secure until the last day of the workshop.

Activity 4: The Code

Goal: For participants to recognize that they have quite a bit of knowledge about the alphabet code, but that they might not be explicitly aware of it.

Materials: Chart paper (or whiteboard, or blackboard, or computer screen)

Workshop Leader: *Many people think that learning to read is a natural process, much like learning to speak. For some people, this can be the case, but for some individuals, learning to read can be a difficult process. The purpose of this workshop is to talk a bit about the structure of spoken and written English to help deepen our understanding of how learning to read happens and of some things that can get in the way of learning to read.*

Workshop Leader: *Please turn to page 1 in your binders.*

Wait for participants to find their page.

Workshop Leader: *I would like someone to volunteer to read these words for me.*

When you have a volunteer, write the following words one at a time on the chart paper/board and ask the volunteer to read them.

cat

the

tok

Workshop Leader: *How did you know how to read the first word /cat/?*

Lead the volunteer and any other workshop participants in a discussion of the fact that the volunteer likely just knew what the word was. Also talk about what anyone might remember about what likely happened the first time they saw this word. There might have been a picture of a cat on the page to help them figure the word out. They might have recognized the “**at**” part of the word and then used their rhyming skills. They might have had to sound out all three sounds in the word. If the participants do not talk about all three possibilities, bring them up. If participants bring up other possibilities, acknowledge their

individual creativity. Emphasize that all these methods would work and would help a child learn about reading the word **cat**.

Lead a similar discussion about the word /the/. This time, the discussion will likely be more about “just knowing” or remembering that this was a word they had to “memorize” or “recognize” in some way. Make sure that you note that this is because the word /the/ is not really like any other words in English. There are no other words that rhyme with it. It is not part of any other word family and so it must be learned and remembered in isolation. Emphasize that this is true of many English words and is also a reasonable methods of learning to read.

Then, discuss what might make it difficult to learn all words this way (memorizing or recognizing each new word in some way).

Workshop Leader: *Let’s talk about what might make it difficult to use memorizing as your only strategy when you are first learning to read words. Does anyone have any thoughts?*

You want the participants to talk about the fact that memorizing every word individually would require a lot of memory resources from those learning to read. This should lead to a discussion of the fact that most workshop participants (and other adults who are good readers) “just know” most of the words that they read because these words are stored in their memories. It is important to emphasize how great and efficient this is. This is the ultimate goal; to have as many words as possible stored in your long term memory so that reading becomes quite effortless and requires very little cognitive/brain energy to do. BUT that this sort of memory bank is developed over time and from repeated exposure to words. Learning to read by trying to immediately memorize each new word you see is not efficient and, it is not necessary. Demonstrate this by talking about the final word.

Lead a discussion about the word /tok/. Participants will likely note that it is “spelled wrong”. This is true. And yet, participants can “read” it. How? The goal is to have participants realize that they know “the code”. They know what sounds letters make. They can make each sound individually. They can put the sounds together to read a word. Be sure to discuss that:

- 1) There was no picture to help them (and there are no pictures to help them read most of the books they read now).
- 2) They could not recognize the end of the word, ok, as something they had seen in other words to help them use rhyming. (Ask sceptical participants to generate an English word that ends in “ok” if they persist with this argument.)
- 3) Other methods they might have used with /cat/ and /the/ would not have been effective or efficient with /tok/.

Be sure to end with the fact that they could read /tok/ because they know the code.

Workshop Leader: *So, to summarize, to learn to read efficiently, we need to know the code. By this I mean the **generally** predictable relationship between sounds and the letters that represent them in the English language. Those sounds and letters of a language are called phonemes and graphemes. **Phonemes** are the smallest units of speech in spoken language. The letters we use to represent these phonemes are called **graphemes**.*

As you say the definitions of phonemes and graphemes, display the definitions in some way and so they will be visible while you talk about phonological awareness. You may want to use PowerPoint or have them written in advance on chart paper. A glossary of important terms will be provided to the participants at the end of the day.

Write examples on board/paper as you talk

Workshop Leader: *To distinguish graphemes from phonemes on paper, we use two forwards slashes to represent the phoneme – the sound. I will show you what I mean. One phoneme – for example /t/, can sometimes be represented by one grapheme*

/t/ and t

Workshop Leader: *One phoneme sometimes needs a specific combination of letters to make one grapheme that represents what we hear as a single speech sound. For example, we need to write sh to represent the phoneme /sh/*

/sh/ and sh

Workshop Leader: *Sometimes one phoneme can be represented by more than one grapheme.*

Workshop Leader: *For example, /f/ can be represented by f (in if) or ph (in phone or graph) or gh (in rough)*

Workshop Leader: *And sometimes the same grapheme can be used to represent more than one phoneme*

Workshop Leader: *For example, s is sometimes used to represent the sound (or phoneme) /s/ (sit or bus or class) and sometimes to represent /z/ (is or was or use)*

Workshop Leader: *For example, c is sometime used to represent the sound (or phoneme) /s/ (ice or city) and sometimes to represent /k/ (cat or hectic)*

Workshop Leader: *Knowledge of phonemes and their corresponding graphemes is the key to understanding the code of the English language. All written language involves using a code and if we do not understand how that code works, it complicates reading and writing.*

Workshop Leader: *Whether you know it or not, you have a lot of existing knowledge about this code. Some of you might have been taught this information specifically. Others of you might have picked it up as you read. To illustrate this, I am going to say seven words and I just want you to write them down.*

Watch the participants as you read the list below so that you can read the words slowly enough that everyone can manage to get them written down and so that you do not pause excessively between words.

Fish
Phone
Moan
Clone
One
Pinch
Pitch

Ask the follow questions to help guide a discussion about the knowledge participants have knowledge about phoneme-grapheme correspondences.

What do the words fish and phone have in common?

The discussion should make clear that fish and phone begin with the same phoneme but that phoneme is represented by two different graphemes: **f** and **ph**

What do the words MOAN and CLONE have in common?

The discussion should make clear that moan and clone rhyme and, more importantly for this discussion, both have the long o vowel sound, but that phoneme is represented by two different graphemes: **oa** and **o**

What do the words CLONE and ONE have in common?

The discussion should make clear that clone and one both have the same letter combination ‘**one**’, but that letter group is pronounced different in each word.

What do the words pinch and pitch have in common?

The discussion should make clear that both words begin with the same two phonemes that are represented by the same two graphemes: p and i.

AND

The discussion should make clear that both words also end with the same phoneme, but the phoneme is represented by two different graphemes: **ch** and **tch**.

Workshop Leader: *These questions highlight how complex grapheme-phoneme correspondences can be. Consider how this might make learning to read or spell difficult for children, given that the same phonemes can be represented by different graphemes and that the same graphemes can end up being pronounced differently.*

Activity 5: Reading and the Code

Goal: To highlight the importance of knowing the code in order to read words accurately.

Materials: Chart paper with target sentence already prepared, International Phonetic Alphabet sentence in participant binder, International Phonetic Alphabet handout, and pen/pencils.

Workshop leader says: Please turn to page 2 in your binders. I would like to ask a volunteer to read a short sentence.

Put the following line up on the chart paper/board.

Do not present the English code translation of the sentence; only the phonetic code.

aɪ wɪl ti:tʃ ju

*Note: this sentence says ‘I will teach you’

Participants may be reluctant to volunteer to read this line aloud because it written in a code that they are likely not familiar with: the International Phonetic Alphabet. If no one volunteers to read the sentence, ask if anyone has seen words written this way before. If so, where have they seen it? Then provide participants with some information about this code to help them decipher it.

Workshop Leader: *This sentence is written in the International Phonetic Alphabet, which is what most dictionaries use to show us how to pronounce words.*

Hand out the phonetic code sheet to the participants. Ask them to insert it into their binder.

Workshop Leader: *Here is the International Phonetic Alphabet. Now let’s read the phrase.*

Phoneme	Grapheme
/ī/ (long i)	aɪ
/î/ (short i)	ɪ
/ē/ (long e)	i:
/ch/	tʃ
/ū/ (2 sounds: /y/ & /ü/)	ju

Give participants some time to use the phonetic code information to try and apply the code so they can read the sentence. Ask for a volunteer to share what the sentence says. Lead a discussion about why it was initially difficult (or maybe impossible) for the participants to read the sentence. It was likely difficult for them to read the sentence in the phonetic code because few, if any, of them will have been taught how that code works. How might this relate to children learning how to read? For many children learning to read, the English language may look just as confusing in print. Participants should also keep in mind that every student they teach will be coming to them with different levels of preparedness in terms of letter-sound knowledge; especially those entering Grade Primary.

Workshop Leader: *The International Phonetic Alphabet used to represent the pronunciation of words in a dictionary is one of many examples of a language code. To someone who is unfamiliar with the rules of this code, it would likely be difficult, if not impossible, to read. However, once you knew the code, you were able to read this sentence, but it was hard work. This is what it is like for children learning to read English; so, just like you, they need to be explicitly taught how the code works. They need to know that words can be broken down into phonemes and that those phonemes are represented by graphemes.*

Activity 6: Phoneme Identification

Goal: To make participants aware of the 44 English phonemes, and how we represent these phonemes with graphemes.

Materials: Blank phoneme chart in participant binder, paper, and pens/pencils.

Workshop Leader: *When we first learn to read, it is important that we learn that there is **generally** a predictable pattern of connections between graphemes and phonemes, and that blending those sounds together makes words.*

For example, the word CAT has 3 phonemes in it.

Write the word cat on chart paper/board. Underline each grapheme as you say the phonemes:

/k/ - /a/ - /t/

There are approximately 44 phonemes in the English language. There is some disagreement over the exact number because of differences in regional pronunciation. These phonemes are combined to make up our entire word system, which contains approximately one million words. Some phonemes are consonant sounds, like /t/ or /m/ and some are vowel sounds like /ee/ or /oo/.

I want you to take some time in your groups, about 3 or 4 minutes, and write down as many phonemes as you can think of on your pad of paper. Remember that phonemes are the sounds of language but you will have to represent the sounds using letters. You might want to use the two forward slashes so it will be clear that you are representing a sound.

If participants ask how to write the phonemes out, encourage them to do the best they can, as long as it makes sense to them. There is no right or wrong way to represent a phoneme in this activity.

Once participants have made their phoneme list, lead them in a discussion about what strategies they used to generate their list. Be sure to discuss the following.

How did they start or organize this activity? Perhaps they were not organized and this made it difficult. Perhaps they used the alphabet. Perhaps they had some other strategy. Were they able to identify 44 phonemes? Who identified the most? How did they represent their phonemes on paper? Why was this difficult?

Did they find consonant phonemes easier or more difficult than vowel phonemes? Discuss why it might have been easier to represent consonant sounds than vowel sounds?

Next, have participants turn to the Blank Phoneme Chart on page 4 in the participant manual.

Workshop Leader: *Now, I would like you to name some of the phonemes that you came up with and we will fill in the blank phoneme chart together. To help with organizing the phonemes, I will tell you which numbered row to use to record each phoneme, and then together we will generate some of the most common graphemes that are used to represent that phoneme. There is also a column for you to include an example of how each grapheme might be used in a word. Please keep in mind that this is not meant to be an exhaustive list of all possible graphemes to represent all possible phonemes. Rather, it is intended to provide an organized reference for information about the various ways we represent sounds in the English language.*

Use the Completed Phoneme Chart (below) for reference. As participants name the phonemes they came up with, tell them which row this information will be going in on the chart. For example, if a participant names the phoneme /t/, tell participants to write the phoneme down in row 14. Then ask the groups how they represented the sound on paper. Discuss what is the best or most simple way to represent each sound (see Completed Phoneme Chart below for recommendations) and write it down on chart paper/board so all participants represent the phonemes in the same way. For each phoneme, ask the participants to think of the grapheme or graphemes that are commonly used to represent those phonemes. Have them write the grapheme down in the GRAPHEME column. Also have participants include an example for each grapheme in the EXAMPLE column.

Be ready to fill in the gaps if the participants miss some of the phonemes. If participants offer a “What About” word, it should be added to the “What About” word wall, which will be discussed at the end of the day.

At the end of this activity, hand out the Supplemental Completed Phoneme Chart to each participant.

Workshop Leader: *This chart contains some additional examples of the graphemes used to represent the various phonemes we have identified this morning, and is simply meant to be an added resource for you*

BLANK PHONEME CHART

PHONEME	GRAPHEME	EXAMPLE
CONSONANTS		
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
VOWELS		
19.		
20.		

21.		
22.		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
R-CONTROLLED VOWELS		
33		
34		
35		
DIGRAPHS		
36		
37		
38		
39		
40		
41		

A FEW LESS COMMON ITEMS		
GRAPHEME	PRONUNCIATION	EXAMPLE
42		
43		
44		

COMPLETED PHONEME CHART

PHONEME	GRAPHEME	EXAMPLE
CONSONANTS		
1. /b/	B	Bat
2. /d/	D	Dog
3. /f/	F Ph	Fish Phone
4. /g/	G	Give
5. /h/	H Wh	Happy Who
6. /j/	J	Jump
7. /k/	K	Kick
8. /l/	L	Love
9. /m/	M	Mouse
10. /n/	N	Nice
11. /p/	P	Pile
12. /r/	R Wr	Race Wrong
13. /s/	S	Sit
14. /t/	T	Tin
15. /v/	V	Very
16. /w/	W	Water
17. /y/	Y	Yes
18. /z/	Z	Sipper
VOWELS		
19. /ā/ (long a)	A Ai Ay	Cake Braid Say

20.	/a/ (short a)	A	Cat
21.	/ē/ (long e)	E EE	Me Peel
22./	e/ (short e)	E	Egg
23.	/ī/ (long i)	I	Side
24.	/î/ (short i)	I	Pig
25.	/ō/ (long o)	O Ow	Close Snow
26.	/o/ (short o)	O Aw	Pot Saw
27.	/u/ (short u)	U	Hug
28.	/ü/	Oo	Moon
29.	/ū/ (2 sounds: /y/ & /ü/)	U	Unicorn
30.	/oo/	Oo	Look
31.	/oi/	Oi Oy	Coin Boy
32.	/ow/	Ow	Cow
R-CONTROLLED VOWELS			
33.	/ar/	Ar	Car
34.	/ār/	A-E	Care
35.	/er/	Er Ir Ur Or	Butter Bird Turn Word
DIGRAPHS			
36.	/ch/	Ch Tch	Chip Watch
37.	/sh/	Sh	Ship
38.	/zh/	S	Treasure

39.	/th (unvoiced)	Th	Thing
40.	/th/ (voiced)	Th	That
41.	/ng/	Ng	Ring
A FEW LESS COMMON ITEMS			
	GRAPHEME	PRONUNCIATION	EXAMPLE
42.	c	/k/ /s/	Cat Cycle
43.	x	/k+/s/ /g+/z/ /z/	Box Exam Xylophone
44.	qu	/k+/w/ /k/	Queen Unique

SUPPLEMENTAL COMPLETED PHONEME CHART

Phoneme	Pronunciation Example	Common Spelling (Grapheme)	Less Common Spellings	Examples of Less Common Spellings
CONSONANTS				
/b/	Bat	B		
/d/	Dog	D		
/f/	Fish	F	ph ough augh	Phone Cough Laugh
/g/	Give			
/h/	Happy	H	Wh	Who
/j/	Jump	J	G	Giraffe
/k/	Kick	K	C Ch Qu	Cake Christmas Queen
/l/	Like	L		
/m/	Miss	M		
/n/	Nice	N	Kn	Knot
/p/	Pile	P		
/r/	Race	R	Wr	Wrong
/s/	Sit	S	C Ce Sc	Circus Ice Science
/t/	Tin	T	Ed	Trapped
/v/	Very	V	F	Of
/w/	Water	W	Wh	When
/y/	Yes	Y	I	Onion
/z/	Zipper	Z	X	Xylophone

Phoneme	Pronunciation Example	Common Spelling (Grapheme)	Less Common Spellings	Examples of Less Common Spelling
VOWELS				
/ā/ (long a)	Cake	A Ai Ay	Eigh Aigh Ea	Eight Straight Steak
/a/ (short a)	Cat	A		
/ē/ (long e)	Peel Me	EE E	Y Ey Ei Ea	Penny Donkey Receive Bead
/e/ (short e)	Egg	E	Ai Ea	Said Bread
/ī/ (long i)	Side	I	Y Igh Uy Ie	Sky Sigh Buy Pie
/î/ (short i)	Pig	I	U	Busy
/ō/ (long o)	Close Throw	O Ow		
/o/ (short o)	Pot	O	A Aw Ho	Spa Claw Honest
/u/ (short u)	Hug	U	O Oo	Money Flood
/ū/ (2 sounds: /y/ & /ü/)	Unicorn	U	Eau Ew	Beautiful Few
/ü/	Moon	Oo	Ew Ue	Flew Blue
/oo/	Look	Oo	Ou	Would
/oi/	Coin Boy	Oi Oy		
/ow/	Cow	Ow	Ou	South

Phoneme	Pronunciation Example	Common Spelling (Grapheme)	Silly Spellings	Silly Spelling Samples
R-CONTROLLED VOWELS				
/ar/	Car	Ar		
/ār/	Care	a-e		
/er/	Butter Bird Turn	Er Ir Ur		

	Word	Or		
Phoneme	Pronunciation Example	Common Spelling (Grapheme)	Less Common Spellings	Examples of Less Common Spelling
DIGRAPHS				
/ch/	Chip	Ch	Tch	Watch
/sh/	Ship	Sh		
/zh/	Treasure	S	Si Z	Division Seizure
/th/ (unvoiced)	Thing	Th		
/th/ (voiced)	That	Th		
/ng/	Ring	Ng		

A FEW LESS COMMON ITEMS		
Grapheme	Phoneme(s)	Pronunciation
c	/k/ /s/	Cat Cycle
x	/k+/s/ /g+/z/ /z/	Box Exam Xylophone
qu	/k+/w/ /k/	Queen Unique

Activity 7: Sound Separation

Goal: For participants to practice counting phonemes and recognize that the number of phonemes and graphemes in a word does not always match.

Materials: Participant binder and pens/pencils.

Workshop Leader: *Being able to hear and say the sounds in our language – phonemes – is important for learning to read and spell. When we ask people to try sounding it out, we are asking them to look at graphemes and associate them with the correct phonemes. This is something that good readers learn to do automatically, without even thinking. To illustrate, I would like you to turn to page 10 in your binder. I would like you to read each word in the table and write down how many phonemes you hear or say.*

Give participants 3-5 minutes to complete the table on page 10.

The numbers in parentheses are the number of phonemes for each word. Once participants have completed the table, say each word out loud and ask for a volunteer share their response.

Cat (3)

Cats (4)

No (2)

Note (3)

Dish (3)

Dishes (4)

Box (4)

Kneel (3)

Thought (4)

Through (3)

If participants disagree with any of the correct answers, demonstrate the number of phonemes in each word by saying each sound in the word clearly in isolation. For example, if someone does not agree that the word **box** has 4 phonemes, clearly say each sound in the word, pausing between them.

/b/ pause /o /pause /k/ pause /s/

Lead a discussion with the group about any challenges they had with determining the number of phonemes. In general, participants will likely note that they were confused by

the fact that there is not always a one to one correspondence between phonemes and graphemes.

Workshop Leader: *To illustrate that the phoneme-grapheme correspondence in English is not always straightforward, I am going to read a poem called “The Chaos” by Gerard Nolst Trenité. The poem is found on page 11 in your binders.*

Stop after each verse to discuss the differences in the phoneme-grapheme correspondences.

Note: if time is running short for this morning session, you can stop after any verse.

“Dearest *creature* in *creation*
 Studying English *pronunciation*,
 I will teach you in my *verse*
 Sounds like *corpse*, *corps*, *horse* and *worse*.”

In this verse:

1. Creature and creation both contain the grapheme “ea” but the pronunciation is different in both words.
2. Verse rhymes with worse but the spelling for both words is different.
3. Horse and worse both contain the letter combination “orse” but the pronunciation is different for both words.
4. Corpse and corps both contain “orps” but the pronunciation is different in both words.

Pray, console your loving *poet*,
 Make my coat look *new*, dear, *sew it!*
 Just compare *heart*, *hear* and *heard*,
Dies and *diet*, *lord* and *word*.”

In this verse:

1. New and sew both end with “ew” but the pronunciation is different in both words.
2. Heart, hear, and heard all contain the letter combination “ear” but the pronunciation is different in all 3 words.
3. Dies and diet both contain “die” but the pronunciation is different in both words.
4. Lord and word both contain “ord” but the pronunciation is different in both words.

Billet does not end like *ballet*;
Bouquet, *wallet*, *mallet*, *chalet*.
Blood and *flood* are not like *food*,
 Nor is *mould* like *should* and *would*.”

In this verse:

1. Billet, ballet, bouquet, wallet, mallet, and chalet all end with “et”. However, billet, wallet, and mallet end with a different sound than ballet, bouquet, and chalet.
2. Blood, flood, and food all contain “oo” but blood and flood are pronounced differently than food.
3. Mould, should, and would all contain “ould” but it is pronounced differently in mould than in would and should.

Don't you think so, reader, *rather*,
 Saying *lather, bather, father*?
 Finally, which rhymes with *enough*,
Though, through, bough, cough, hough, sough, tough??

In this verse:

1. Rather, lather, bather, and father are all spelled with “ather” but the pronunciations are different. Rather and lather rhyme, while bather and father both have different pronunciations.
2. Enough, though, through, bough, cough, hough, sough, and tough all end with the letter combination “ough” but it is pronounced in 7 different ways.

Hiccough has the sound of *sup*...
 My advice is: GIVE IT UP!

In this verse:

1. Hiccough and sup rhyme but are spelled differently.

This morning we have talked a lot about phonemes and graphemes and explored why knowledge of the two are so important to reading development. This afternoon we will move on to discussing morphemes. Enjoy your lunch!

<p>This is the end of the morning portion of the workshop.</p>

Morphological Awareness

Activity 8: Introducing morphemes

Goal: To introduce the concept of morphemes and morphological awareness.

Workshop Leader: *This morning we focused on the importance of understanding phonemes and graphemes. While understanding that words can be read by sounding them out is important, the ultimate goal of reading, is for children to understand what they read and not to have to piece words together sound by sound. This is why it is important to for children to be able to identify meaningful parts of words as they learn to read. This ability is called **morphological awareness** and a **morpheme** is the smallest unit of meaning in a word.*

Once you have finished explaining the definitions of morphemes and morphological awareness display their definitions in some way and leave them there for the remainder of the morphological awareness section of the day. You may want to display the terms using PowerPoint or have them written in advance on chart paper.

Write the word **unhelpful** on chart paper/board.

Workshop Leader: *For example the word **unhelpful** contains three morphemes. Underline each morpheme as you say them: **un**, **help**, and **ful**.*

Workshop Leader: *There are two types of morphemes: **free morphemes** and **bound morphemes**. Free morphemes are single morphemes that can stand on their own, like the word **help** in **unhelpful**.*

Underline again, the morpheme **help** on the white board.

Workshop Leader: *Root words, like **help**, would be considered free morphemes because they are real words on their own.*

*Bound morphemes must be bound to a free morpheme (or root word) because they cannot stand on their own as a word. **Un-** and **-ful**, in **unhelpful** are bound morphemes.*

Underline the morphemes **un** and **ful** on the whiteboard.

Workshop Leader: *Often we refer to bound morphemes as prefixes or suffixes. Collectively, prefixes and suffixes are called affixes. Children can learn to build words by adding affixes to root words. In this way they will learn that compound words are the*

sum of their parts which, in turn, may help them understand meaning and pronunciations of new, more complicated words.

Activity 9: Morpheme Generation

Goal: To gain a solid understanding of free and bound morphemes.

Materials: Paper and pen/pencil

Workshop Leader: *Lots of morphemes are words on their own. As mentioned, these are called free morphemes. I want you to each take a piece of paper and write a list of four or five free morphemes.*

Have participants share some of their single morpheme words. Write each word the participants share on chart paper/board as they are called out. Be prepared to provide more examples of free morphemes if participants experience difficulty generating them.

Examples: Help, Sad, Kind, Tree.

Workshop Leader: *Now I'd like you all to think of some of the most common bound morphemes that early elementary school children might encounter while reading, and write them down.*

Have participants share some of their bound morphemes. Write each morpheme the participants share on chart paper/board as they are called out. Be prepared to provide some of the simpler bound morphemes if the participants do not generate them.

Examples: UN, RE, PRE, S, ED, ER, EST, ING

Workshop Leader: *By developing their morphological awareness, children will also learn that affixes, or bound morphemes, change the meaning of words when they are added to a root word. By teaching children commonly found prefixes and suffixes, their overall vocabulary will increase.*

Workshop Leader: *If a child understands that **usually** a single **s** at the end of a word means that there is more than one of what the root word is, such as: cat + s = more than one cat...*

Write **cat + s = cats** on chart paper/board.

Workshop Leader: *...then they should also be able to recognize that dog + s = more than one dog.*

Write **dog + s = dogs** on chart paper/board.

Workshop Leader: *You can see this learning taking place in children who learn that the affix **ed** means that something happened in the past. The first thing children do when they*

*learn it is over apply it. This means that they will apply **ed** to every verb – even to irregular verbs that they might have been using correctly before.*

Workshop Leader: *For example, a child might have learned to say “I held the baby” by rote – by listening and repeating what others say.*

Workshop Leader: *Then they learn what adding **ed** to a root word means that something happened in the past, like in the word **played**...*

Write the word **played** on chart paper/board.

Workshop Leader: *...and suddenly they start saying things like “I holded the baby”*

Write the word **holded** on chart paper/board.

Workshop Leader: *...which can make people think that their language is regressing. It is not. They have learned that **ed** is used to show that things happened in the past and they start adding **ed** to all verbs to indicate past tense. They are learning about how to apply morphemes to language.*

Workshop Leader: *It is important to know that while some morphemes like **un** and **ed** are obvious and familiar to us, other word parts that are technically morphemes might be less obvious. For example:*

Write the word **piglet** on chart paper/board.

Workshop Leader: *The word piglet contains two morphemes, **pig** and **let**. The fact that **pig** is a morpheme is likely obvious to you. **Let**, however, is also a morpheme here. In the word piglet, **let** is an affix – a bound morpheme. The word “let” is also a free morpheme. The word let on its own and the affix let which is part of piglet have nothing to do with each other. This might be confusing for you and it can certainly be confusing for children. In piglet, the morpheme **-let** means little or smaller or lesser. When it is added to the root word **pig**, we get **piglet** which is a small pig.*

Write the word **owlet** on chart paper/board.

Workshop Leader: *Using information about the morpheme let, someone who has never seen the word owlet before, could determine that it means little owl.*

Activity 10: Using morphemes to read and understand unfamiliar words

Goal: To demonstrate that we can figure out what some difficult words mean by identifying their roots and affixes.

Materials: Chart paper or whiteboard, participant binder, paper, and pen/pencil.

Write the word “Antidisestablishmentarianism” on chart paper/board. This word will also be on page 12 in the participants’ binders.

Workshop Leader: *Please turn to page 12 in your binders. By show of hands, how many of you have seen this word before? By show of hands, how many of you know the definition of this word? I know that some of you may already know the definition, but let’s just pretend none of us have ever come across the definition and figure out what this word could mean by looking at the parts we know. Let’s start with the root word. Who can identify the root word in Antidisestablishmentarianism, and the meaning of the root word?*

If no one volunteers to name the root word, be ready to identify it for them.

Root word: Establish (verb, to set up something on a permanent basis)

Workshop Leader: *The root word is ‘establish’, which means to set up something on a permanent basis. Now let’s look at some of the other parts of the word to see if we can figure out what the whole thing might mean.*

Facilitate a discussion about the various morphemes that are included in the target word. Encourage participants to not only identify the affixes in this word, but also to generate the meanings of each affix. Discuss strategies they used for identifying the affixes in this word. A list is provided below to help guide the discussion, or to provide assistance if the participants experience difficulty identifying the morphemes.

Underline each morpheme that participants identify and determine what the root word plus the currently identified morphemes mean when put together.

For example:

Establish (to set something up on a permanent basis) + **ment** (state of being)
= **Institution: a state of being set up on a permanent basis**

Establish (to set something up on a permanent basis) + **ment** (state of being) + **ian** (member of a group) = **a person advocating the establishment**

Establish (to set something up on a permanent basis) + **ment** (state of being) + **arian** (member of a group) + **ism** (an act of doing something) = **Relating to support for the political or social establishment**

Dis (not; opposite of) + **establish** (to set something up on a permanent basis) + **ment** (state of being) + **arian** (member of a group) + **ism** (an act of doing something) = **Opponent of an established order, especially an established church**

Anti (against) + **dis** (not; opposite of) + **establish** (to set something up on a permanent basis) + **ment** (state of being) + **arian** (member of a group) + **ism** (an act of doing something) = **Not an opponent of an established order, especially an established church.**

Workshop Leader: *So, to summarize, antisestablishmentarianism had six morphemes. How many syllables did it have?*

Pause to let participants count. Confirm that...

Workshop Leader: *It had eleven or twelve, depending whether you count the ism as one syllable or two. Both could be considered correct.*

Write the syllable or a line on the chart paper/board as you say the word syllable by syllable.

An – ti – dis – es – tab – lish – ment – ar – i – an – is – um.

What is important to note here is that morphemes and syllables are not the same thing

Activity 11: Counting Morphemes

Goal: To demonstrate that just because a word can be broken down into multiple syllables, does not necessarily mean it contains multiple morphemes.

Materials: Counting Morphemes chart in participant binder and pencils/pens.

Workshop Leader: *We can learn to use the skill of breaking down an unknown word into its individual morphemes to make word reading and word comprehension far more efficient than reading a word letter by letter. However, as we just discussed with antidisestablishmentarianism, this can be complicated by the fact that the number of syllables and morphemes in a word do not always correspond. While some morphemes are single syllable words, others are multisyllabic.*

Write the word **rabbit** on chart paper/board. Underline the syllables as you say them.

Workshop Leader: *For example, the word rabbit has two syllables: rabb-it [or rab-bit if you prefer] but only one morpheme.*

Workshop Leader: *Sometimes the addition of a morpheme to a word adds a syllable and sometimes it does not.*

Write the words **dog** and **miss** on the chart paper/board. Add the appropriate morpheme as you read the explanation below.

A good example of this comes when we add a morpheme to these words to make them plural. To make dog plural, we add the morpheme s. This does not add a syllable. To make miss plural, we have to add the morpheme es and this also adds a syllable.

Workshop Leader: *To practice distinguishing syllables from morphemes, please turn to page 13 in your binders and complete the chart in your groups. For each of the words presented in the chart, identify the number of syllables and morphemes and also write down what each morpheme is in the **Morphemes** column.*

When the participants have completed the Morpheme Counting chart, ask for volunteers to share some of their answers. See the Completed Morpheme Counting Chart below to reference if participants experience difficulty identifying the number of syllables and morphemes and identifying each morpheme.

Once the Morpheme Counting chart has been completed, lead a discussion about how identifying morphemes could be tricky for some children, highlighting the fact that each

syllable may not necessarily present a clue as to the meaning of a word. For example, the word ***Mother*** contains two syllables: moth + er. However, in this case, knowledge of the morpheme ***er*** (one who does or is connected with) would not help a child understand this word since a mother is not a person who “moths”.

At this time, pass out the Tables of Common Prefixes and Suffixes to each participant for them to have as a resource.

Workshop Leader: *You are being handed tables of common prefixes and suffixes. Please put these in your binder for future reference. They can come in handy when teaching students how to identify morphemes and their meaning when they encounter an unfamiliar word.*

BLANK MORPHEME COUNTING CHART

	# of Syllables	# of Morphemes	Morphemes
Workable			
Heavenly			
Observer			
Counter			
Mother			
Carrot			
Bother			
Disassemble			
Singing			

COMPLETED MORPHEME COUNTING CHART

	# of Syllables	# of Morphemes	Morphemes
Workable	3	2	Work able
Heavenly	3	2	Heaven ly
Observer	3	2	Observe er
Counter	2	1 (object) 2 (one who counts)	Counter Count er
Mother	2	1	Mother
Carrot	2	1	Carrot
Brother	2	1	Brother
Disassemble	4	2	Dis assemble
Singing	2	2	Sing ing

COMMON PREFIXES (McEwan, 2008; readingrockets.org.)

Prefix	Definition	Example
anti-	against	anticlimax
de-	opposite	devalue
dis-	not; opposite of	discover
en-, em-	cause to	enact, empower
fore-	before; front of	foreshadow, forearm
In-, im-	in	income, impulse
in-, im-, il-, ir-	not	indirect, immoral, illiterate, irreverent
inter-	between; among	interrupt
mid-	middle	midfield
mis-	wrongly	misspell
non-	not	nonviolent
over-	over; too much	overeat
pre-	before	preview
re-	again	rewrite
semi-	half; partly; not fully	semifinal
sub-	Under	subway
super-	above; beyond	superhuman
trans-	across	transmit
un-	not; opposite of	unusual
under-	under; too little	underestimate

COMMON SUFFIXES (McEwan, 2008; readingrockets.org).

Suffix	Definition	Example
-able, -ible	is; can be	affordable, sensible
-al, -ial	having characteristics of	universal, facial
-ed	past tense verbs; adjectives	the dog walked, the walked dog
-en	made of	golden
-er, -or	one who; person connected with	teacher, professor
-er	more	taller
-est	the most	tallest
-ful	full of	helpful
-ic	having characteristics of	poetic
-ing	verb forms; present participles	sleeping
-ion, -tion, -ation, -ition	act; process	submission, motion, Relation, edition
-ity, -ty	state of	activity, society
-ive, -ative, -itive	adjective form of noun	active, comparative, sensitive
-less	without	hopeless
-ly	how something is	lovely
-ment	state of being; act of	contentment
-ness	state of; condition of	openness
-ous, -eous, -ious	having qualities of	riotous, courageous, gracious
-s, -es	more than one	trains, trenches
-y	characterized by	gloomy

Orthographic awareness

Activity 12: Everyday Orthographic Awareness

Goal: To highlight that people use orthographic awareness every time they read.

Workshop Leader: *Our last topic for the day is orthographic awareness, which is the understanding of the conventions of how we spell written language. Another way to put this with our new vocabulary is that orthographic awareness is the understanding of the conventions of how we use graphemes to represent phonemes in words we write. It is generally acquired by repeated exposure to printed words until a consistent visual representation of an entire word has been consolidated to memory.*

At some time, almost everyone has been unsure of a spelling of a word and has written a word down using several different spellings to see which one “looks right”. If you have done this, you were using your orthographic awareness. Well-developed orthographic awareness is important for both reading and spelling

Activity 13: Orthographic Awareness and Spelling

Goal: To demonstrate that participants do have knowledge of the spelling conventions of English language, even if they may not be able to explain all of them.

Materials: Participant binder

Workshop Leader: *There are many rules in English that govern how we spell words – or about how we are allowed to represent certain sounds in writing. Turn to page 14 in your binder. Would anyone like to read the first word?*

Have someone read each of the words in turn. The words are pronounced as: **Cat, Chip, Have, Dodge, Seizure, and Mess.**

Ckat

Tchip

Hav

Doj

Seizhure

Mes

Discuss the fact that the participants were likely able to figure out what each of the words were because they have good phonological awareness, but that there is clearly something wrong with how each of the words is spelled. Review the convention/rule that is violated in each of the words on the list. The rules that were violated in each word are presented below to reference as you guide the discussion.

English Spelling Conventions:

CKAT – The phoneme /k/ is never represented by the grapheme CK at the beginning of a word. We use CK at the end of a word and only after a short vowel.

TCHIP – The phoneme /ch/ is never represented by the grapheme TCH at the beginning of a word. We use TCH at the end of a word and only immediately after a short vowel.

HAV- There are no words in the English language that end with a V. We use VE at the end of words even if the vowel is not long as is the case with have.

DOJ- There are no words in the English language that end with a J. We use GE or DGE to represent the phoneme /j/ at the end of a word.

SEIZHURE- The grapheme ZH does not exist in the English language. There are a number of ways that we represent the phoneme /zh/.

MES- We use the grapheme ss to represent a final /s/ phoneme in most one syllable words that contain a short vowel.

Activity 14: Some Orthographic Conventions to help with Reading and Spelling

Goal: For participants to gain an awareness of orthographic conventions in the English Language.

Materials: Paper and pencil/pen.

Workshop Leader: *Having knowledge of the orthographic conventions of English can help us with reading and spelling because it means that we can learn words in groups or in families rather than having to memorize each word separately. This takes some of the strain off our memories and makes learning easier.*

The general format of this activity will be as follows: You will dictate a series of words to the participants, which they will write down (like a spelling test). Each list of words will follow a general spelling rule. Once participants have completed a spelling list, lead a discussion to figure out which rule governs the spelling patterns in the word list they just wrote. Perhaps these are rules that they were taught in their elementary years. Perhaps they will not recall learning the rule but still have implicit knowledge that lets them apply it and can therefore deduce how the rule works. Once participants have figured out what rule is at play for this list, facilitate a discussion with the whole group about how best to explain the rule. If participants have difficulty determining the rule or if time is short, it is fine to simply supply it after a short discussion. At the end of this activity, a list of the rules will be provided to the participants.

Participants will likely identify exceptions to some of the rules. In that case, acknowledge that exceptions to exist and add the exception words to the “What About” word wall.

Workshop Leader: *Now we are going to focus on furthering our understanding of some of the orthographic conventions that govern the English language. I am going to read a number of words, one at a time, and you are going to write each word down. Then we will discuss the orthographic convention that helps you know how to spell the words in each group. At the end of this discussion, I will give you a handout that explains these rules for your future reference.*

For each group of words, watch the participants as you read the list so that you can read the words slowly enough that everyone can manage to get them written down and so that you do not pause excessively between words. Read the following words, one at a time, as participants write each word down:

The Silent e Rule**Hate****Robe****Cute****Kite**

Rule: When a word contains a consonant-vowel-consonant followed by an e, the e will be silent and the vowel will be long.

Some Exceptions: Have, Give, Come, None

The F-L-S Rule**Pass****Mess****Buff****Sniff****Bell****Fill**

Rule: When the final phoneme of a one syllable word is /f/, /l/, or /s/, and the word has one short vowel, the final letter is usually doubled.

Exceptions for F: IF and OF

Exceptions for L: No exceptions

Exceptions for S: As, Us, Is, Was, Bus, Pus.

The Doubling Rule

Saddest
Sadness
Shipping
Shipment
Fittest
Fitness
Reddish
Redness
Gladden
Gladness
Biggest
Bigger

Rule: When a root word has one syllable and ends in one consonant after one short vowel and you are adding an ending that starts with a vowel, you double the last letter in the root word.

CK vs K at the end of a one-syllable word

Truck
Duck
Hawk
Black
Blink
Dark
Tank
Buck
Stock
Milk

Rule: When a one-syllable word ends with the phoneme /k/, CK is used following a short vowel sound. K is used at the end of a word if the vowel is not short, or if the vowel is followed by consonant.

CH vs TCH at the end of words**Hatch****Pitch****Pinch****Bunch****Ranch****Sketch****Fetch****Drench****Etch****Each****Ouch**

Rule: TCH is used to represent the phoneme /ch/ immediately after a short vowel. After other vowel sounds or after consonants, use CH.

Some Exceptions: Rich, Which, Much, Such, Sandwich

Activity 15: Orthographic Awareness and Irregular Words

Goal: For participants to recognize that many common sight words that children are expected to know, require orthographic awareness.

Materials: Chart paper (or whiteboard, or blackboard, or computer screen)

Workshop Leader: *Turn to page 15 in your binders. I would like a volunteer to read some words.*

Once a volunteer has been selected present the following list of words on chart paper/board and have the volunteer read the words out loud.

**One
Was
Some
Yacht
Eye**

Workshop Leader: *How did you know how to pronounce these words?*

Lead the volunteer and other participants in a discussion about the fact that they likely “just knew” how to read these words. They are words that occur very frequently in the English language and the participants will likely have those words committed to memory. Discuss the fact that these words cannot be read using the common correspondences between graphemes and phonemes that we discussed. Therefore, they likely did not learn to read these words by sounding them out. Instead, they likely “just learned” or “just remembered” the words. Having good orthographic processing ability helps us remember how to pronounce and spell whole words.

Workshop Leader: *Before we start to wrap up the day, are there any “What About” words that you would like to talk about?*

Now have a discussion with the participants about the “What About” word wall. Most “What About” words likely won’t follow a “rule”; they are exceptions. Some questions may have been answered through the information presented throughout the day. Some words might just have to be memorized. Some may follow a rule that you do not know. In that case, tell participants that you will find the answer and have it ready for the next day.

Give the Glossary hand out to participants.

Workshop Leader: *This is a glossary containing the definitions of the terms we discussed today and some other terms you might find helpful. Please put the glossary in your binders.*

Workshop Leader: *For tomorrow (or whenever Day 2 of the workshop takes place) please come prepared to share one classroom activity that is used to teach reading and/or spelling. You can bring any activity you like. We will be using them to talk more about phonemes, graphemes, morphemes, and orthography, but don't worry about whether the activities mention these words or use these concepts. Any activity you bring will help us continue our learning tomorrow.*

Day 2: Classroom Activities for Phonological, Morphological, and Orthographic awareness.

Activity 1: Opening

***Workshop Leader:** Yesterday a lot of terminology and concepts were presented to you. Before we begin today's activities are there any questions, comments, or concerns about the material covered yesterday?*

Address any questions, comments or concerns participants may have.

Activity 2: Classroom Activity Presentations

Goal: To relate the concepts from day 1 of the workshop to familiar classroom activities

Materials: Participants' own materials, paper and pens/pencils

Divide the participants into groups of 3 (depending on numbers there may be a group of 4).

Workshop Leader: *Students don't need to know all of the names of the cognitive processes we covered yesterday, but they do need to be able to use them in order to develop accurate and fluent reading abilities. At the end of our last day, you were asked to bring in some reading and/or spelling activities that you might use in the classroom. In your groups, please take about 5 minutes each to demonstrate the activity you brought to the other members in your group. We will take 20 minutes to do this activity and I will let you know when 5 minute intervals have passed.*

Workshop Leader: *Now that you've had chance to present your activities, I want you to take some time to think about how the activity you brought incorporates phonological, morphological and orthographic awareness. This activity will be completed individually. I want you to take about 10 minutes to complete the "Questions to Consider" work sheet on page 16 in your binder. The purpose of this is just to look at whether or not the activity that you brought uses these concepts. Don't be concerned if you think that the activity does not incorporate one or more of the concepts. Lots of great activities don't use them. This does not mean that the activity won't help children learn about reading and spelling.*

Keep track of the time while participants are completing the work sheet. At the 10 minute mark, ask if anyone needs more time and allot it as necessary.

When participants have completed the work sheet, lead a discussion about what they discovered about their activities. Ask participants to answer the following questions by raising their hands:

- How many activities were intended for Grade Primary? One? Two? Three?
- How many activities were intended for any grade?
- How many activities focused on developing children's phonological awareness?
- How many activities included explicit instruction in phoneme-grapheme correspondences?
- How many activities focused on developing children's morphological awareness?
- How many activities focused on developing children's orthographic awareness?

If some of the activities that participants presented did not include phonological, morphological, and/or orthographic awareness, ask for volunteers to share how they changed their activity to incorporate those concepts.

Workshop Leader: *Enjoy your lunch!*

Classroom Activity: Questions to Consider

What is the purpose of the activity?

What age or grade is the activity intended for?

How does the activity help children develop phonological awareness?

How does the activity help children learn about phonemes and graphemes?

How does the activity help children morphological awareness?

How does the activity help children learn about morphemes and how to use them in reading?

How does the activity help children develop orthographic awareness?

If the activity does not help children develop phonological, morphological, or orthographic awareness, how could you change the activity to include one or more of those concepts in it?

Day 2 (Afternoon)

Activity 3: Classroom Activity Development

Goal: For participants to work collaboratively to develop a classroom activity that facilitates the development of phonological, morphological, and/or orthographic awareness.

Materials: Coloured construction paper, scissors, glue, stencils, coloured pencils, markers, stickers, glitter.

***Note:** Provide materials for participants to use when developing their activity. Possible materials could include: Coloured construction paper, scissors, glue, stencils, coloured pencils, markers, stickers, glitter.

***Workshop Leader:** This morning each of you presented a reading or spelling activity that you brought with you. This afternoon, I'd like you work in your groups to develop a classroom activity that focuses on phonological, morphological, and/or orthographic awareness. You'll have about an hour to develop your activity. Feel free to use the materials provided. If you complete your activity and still have time, try working on another activity that focuses on a different cognitive process. Once the activities have been completed, each group will present their activity to the large group. On page 18 of your binder are steps to help you organize and develop the content for your activities.*

Give participants approximately one hour to develop their activity. If they need longer to complete the task, use your judgement to allot more time, depending on how much time is left in the afternoon. Once the activities have been developed, invite each group to introduce their activity to the large group.

***Workshop Leader:** Tomorrow I am going to bring in some commercially available reading programs for us to examine, such as Road to the Code. Now, I'd like some volunteers to name some other reading programs they are familiar with.*

Write down the names of the programs that participants share on chart paper/board.

***Workshop Leader:** If any of you have access to some of the reading programs you just shared, feel free to bring them with you tomorrow.*

If participants bring in any interesting reading programs, they could be substituted for one or more of the programs you provide. Use your discretion.

End of Day 2

Steps for Activity Development

Step 1: Decide on the focus of your activity. Will you focus on phonemes, graphemes, morphemes, orthography, or a combination?

Step 2: Decide what age/grade your activity is targeting.

Step 3: Think about what you want the overall goal of your activity to be. For example: I want to improve my students' knowledge of vowel sounds.

Step 4: Think about what you specifically want students to be able to do by the end of the activity. For example: I want students to be able to generate a word that has the long and short vowel sounds for the letters a, e, and i.

Step 5: Think about the format of your activity. Does it include whole class instruction, group work, individual work, or a combination?

Step 6: Describe your activity. Make sure you explain your activity in enough detail that another person could present it. Be sure to include:

- How long the activity will take to complete.
- All necessary materials (e.g. handouts, pencils, crayons, paper, scissors, etc.)
- Step by step instructions
- Possible follow up questions for your students.

Day 3: Reading Programs

Activity 1: Exploring Reading Programs

Goal: To consider how some commercially available reading programs include phonological, morphological, and orthographic awareness.

Materials: Reading program(s), participant binders, and pens/pencils

Reading Programs

Open the day with any questions or comments regarding material previously covered in the workshop.

Bring 3 or 4 commercially available reading programs that you can easily access to Day 3 of the workshop. These programs will be the focus of the discussions throughout the day.

***Workshop Leader:** Last day we focused on sharing and developing some classroom based activities that could facilitate the development of phonological, morphological and orthographic awareness in children. There are many reading intervention programs available for purchase, but not all programs are necessarily created equal. Today we are going to have a look at some of those commercially available reading programs and consider how they incorporate phonological, morphological, and/or orthographic awareness.*

You will present a program to the participants in order to demonstrate how you want this activity to flow. See below for Sample Reading Program Synopsis chart. Below is an example of what to present.

Program presentation example

***Workshop Leader:** Before each group explores a program, I am going to present a program that I brought in. Please turn to the Blank Reading Program Synopsis sheet on page 19 in your binders. Please fill in the chart as we discuss this program. This reading program is called Road to the Code. By show of hand, who has heard of this program before?*

What do you know about the program?

Allow time for participants to share what they know about the program.

Workshop Leader: *So in summary, Road to the Code is a phonological awareness program for beginning readers. It was developed by Benita Blachman, Eileen Ball, Rochella Black, and Darlene Tangel. Road to the Code was created to help children in kindergarten and Grade 1 who are experiencing difficulty with early reading skills. So we can fill in the age/grade section of the chart because we know the program is intended for children in kindergarten and Grade 1.*

The focus of Road to the Code is helping children develop phonemic awareness abilities and understanding of letter-sound correspondences. This program takes place over 11 week and includes 44, 15-20 minute lessons that are developmentally sequenced and can be taught to individual students or in small groups. The introduction of phonemes and graphemes is pre-determined for each lesson. However, only short vowel sounds are included in this program. Each lesson includes 3 activities that allow students repeated practice of the content presented in each lesson. Each lesson includes a detailed script for the instructor to follow and lots of reproducible worksheets to accompany the activities. However, teachers are responsible for providing many materials as well. No specific training is required to use this program, and it can be purchased for \$54.95(US) directly from the publisher.

So, let's talk about what information you included in your chart about Road to the Code.

Lead a discussion about how the focus of this program is phonological awareness, through explicit instruction in phonemic awareness and phoneme-grapheme correspondences. Be sure to discuss that while there is no specific mention of morphological and orthographic awareness, there may be some activities that talk about letter patterns in words, which could be considered an orthographic awareness activity. Ask participants to share their thoughts about the program as well. What are some pros and cons they may have identified? Is this a program they would consider using in their classroom?

Pass out two more copies of the Blank Reading Program Synopsis Chart to each participant and ensure that each group has one reading program to look at.

Workshop Leader: *Now you're going to take some time in your groups to look at one or two of the reading programs we have here today. Use the Reading Program Synopsis chart that was just handed out to help organize your exploration of the programs. You'll have about 30 minutes to review your program and complete the Reading Program Synopsis chart. At the end of 30 minutes, you'll have a chance to review another reading program.*

Let participants know when they have 10 minutes left before they switch programs. At the end of 30 minutes, have each group pass the program they just reviewed to the group on their right.

Once the groups have had a chance to review at least two reading programs, lead a discussion with the participants about the programs they looked at. Ask for answers to the following questions by show of hands:

- *How many programs were intended for Grade Primary? One? Two? Three?*
- *How many programs were intended for any grade?*
- *How many activities programs on developing children's phonological awareness?*
- *How many programs focused on developing children's morphological awareness?*
- *How many programs focused on developing children's orthographic awareness?*

Workshop Leader: *Can I have some volunteers share their thoughts on, or a brief description of one of the programs you reviewed?*

As volunteers share their thoughts about the programs, lead a discussion about whether participants would consider using any of the programs in their teaching. Be sure to include the following questions in your discussion:

- *Were there any notable pros and/or cons about the program?*
- *Did any programs seem very user friendly?*
- *If a program only included one of phonological, morphological, or orthographic awareness, how could you incorporate one or more of the other cognitive processes to the activities?*

BLANK READING PROGRAM SYNOPSIS CHART

Program Name:		
Program Publisher/Author:		
Program cost		
What age/grade is the program intended for?		
How does it help children develop phonological awareness?		
How does it help children develop morphological awareness?		
How does it help children develop orthographic awareness?		
What kind of training does the program require?		
Is it user friendly?		
Pros and Cons	<u>Pros</u>	<u>Cons</u>

SAMPLE READING PROGRAM SYNOPSIS CHART

Program Name: Road to the Code					
Program Publisher/Author: Blachman, Ball, Black & Tangel					
Program cost	\$54.95 US				
What age/grade is the program intended for?	K-1				
How does it help children develop phonological awareness?	Teaches phonemic awareness. Systematic introduction of letters and their sounds, but only includes short vowel sounds				
How does it help children develop morphological awareness?	No specific mention of MA				
How does it help children develop orthographic awareness?	No specific mention of OA				
What kind of training does the program require?	No required training				
Is it user friendly?	Has scripted directions for instructors which are easy to follow.				
Pros and Cons	<table border="1"> <thead> <tr> <th><u>Pros</u></th> <th><u>Cons</u></th> </tr> </thead> <tbody> <tr> <td>Inexpensive Short lessons Detailed script for leaders Lots of time for repeated practice Small group or individual</td> <td>Leader has to provide some materials Only short vowel sounds included</td> </tr> </tbody> </table>	<u>Pros</u>	<u>Cons</u>	Inexpensive Short lessons Detailed script for leaders Lots of time for repeated practice Small group or individual	Leader has to provide some materials Only short vowel sounds included
<u>Pros</u>	<u>Cons</u>				
Inexpensive Short lessons Detailed script for leaders Lots of time for repeated practice Small group or individual	Leader has to provide some materials Only short vowel sounds included				

Activity 2: Some Things I Know about Reading, Revisited.

Goal: For participants to reflect on what they have learned during the workshop, and whether that changes the beliefs they had about reading when the workshop started

Materials: Participants' envelopes, paper, and pens/pencils

Hand back the envelopes that participants wrote their reading facts on.

Workshop Leader: *You've just been handed back the notes about reading and reading instruction that you wrote at the beginning of this workshop. I'd like you to open your envelopes and take some time consider and respond to the questions on page 20 in your binders. You will not have to share your answers with anyone.*

Do the things that you listed as knowing or believing to be true about reading or reading instruction still hold true for you?

Are there items that you no longer believe to be true? Why not?

What, if anything, would you add to or take off your list?

When participants have finished responding to the questions above, ask if anyone would like to share any thoughts they have.

Workshop Leader: *Thank you very much for your participation in this workshop. I hope it was informative and helped to untangle some of the complexities of the English language. Please feel free to contact me if you have any further questions or comments.*

Provide participants with your preferred method of contact.

Glossary

Bound morphemes are morphemes that cannot stand on their own as a single word (e.g. prefixes and suffixes).

Free morphemes are morphemes that can stand on their own as a single word.

Graphemes are the letters or letter that is used to ‘spell’ phonemes; they are the written representation of a single phoneme. For example, the phoneme /b/ is represented by the grapheme B. The phoneme /f/ can be represented by the graphemes F (frog), FF (fluff), PH (phone).

Morphemes are the smallest unit of meaning in a word.

Morphological awareness is the understanding that words can be separated into individual morphemes and that words can be built by combining morphemes. Morphemes include root or base words, prefixes and suffixes.

Orthographic awareness is the understanding of the conventions of how we spell written language.

Phonemes are the smallest units of speech in spoken language. For example, the word dish is made up of 4 letters, but has three phonemes: /f/, /î/, /sh/. Similarly, the word box has only three letters in it, but four phonemes /b/ /o/ /k/ /s/.”

Phonemic awareness is the ability to perceive, differentiate and manipulate individual phonemes.

Phonics is a method of reading instruction that focuses on explicitly teaching children that there is generally a predictable relationship between phonemes and letters, and how to use those letter-sound correspondences to read and spell.

Phonological awareness is the ability to hear, understand and manipulate phonological units in oral language. This can include phonemes, but also larger phonological units such as syllables, onsets and rimes. Syllables are the pronounceable parts of words. Onsets are the initial phoneme of a syllable that precedes the vowel and rimes are all of the letters in a syllable that follow the rime.

Orthographic awareness is the understanding of the spelling conventions of a written language. It is generally acquired by repeated exposure to printed words until a consistent visual representation of an entire word has been consolidated to memory.

Chapter 3: Recommendations for Implementation of Reading Workshop

This thesis focused on the development of a workshop to help support the existing implicit knowledge that pre-service elementary teachers likely have about phonological, morphological, and orthographic awareness develop their explicit knowledge of these cognitive processes. This section focuses on recommendations to direct future implementation and evaluation of this workshop and concluding thoughts regarding the importance of this project.

Participants

Given that there are several small group activities included in the workshop, it is important that there be sufficient participants to allow for several smaller groups but not so many that it would make discussions and collaboration in the large group difficult. A group of 20-30 participants is recommended for implementing the workshop. This workshop was specifically developed for pre-service elementary teachers to reduce the variability in experience and knowledge of the cognitive processes involved in early reading development. This workshop could also be beneficial for in-service teachers. However, it would be important to ensure that the sample of participants is relatively homogeneous in terms of their years of experience and knowledge of phonological, morphological, and orthographic awareness.

Materials

This workshop provides a detailed and scripted manual for the workshop leader and also includes a participant manual that contains reproducible worksheets for participant use. Some worksheets will be distributed individually to participants throughout the workshop to ensure participants do not view materials that would provide

answers to activities prior to completing them. The need to distribute these worksheets separately is clearly outline in the manual for the workshop leader. In addition to the workshop leader manual, participant manual, and necessary handouts, the workshop leader will also be required to provide the following materials:

- Binders for the participant manuals
- One pen and/or pencil for each participant
- Permanent and/or dry erase markers and/or chalk
- Chart paper and/or a whiteboard/chalkboard and/or access to a computer, projector, and screen.
- One pad of paper for each participant
- One envelope for each participant
- Coloured construction paper
- Glue
- Scissors
- Coloured pencils and/or markers
- Stickers (that young children would find appealing)
- Glitter
- Three or four reading intervention programs

Evaluation measures

This workshop was designed to be evaluated to determine its efficacy in supporting and deepening both participants' implicit and explicit knowledge of phonological, morphological, and orthographic awareness. It is recommended that this workshop is evaluated with the Basic Language Constructs Survey developed by Binks-

Cantrell, Joshi and Washburn (2012). This survey was psychometrically validated and is used to assess teachers' knowledge of basic language constructs of literacy. The items are categorized into phonologically-based, phonemic specific, phonics-based, and morphemically-based. In addition, items are further categorized into ability-based (e.g. counting syllables) and knowledge-based (e.g. correctly identifying definitions). This survey was designed in a way that will enable comparisons among the different knowledge categories (e.g. phonological, phonemic, phonics and morphological) and also between different samples of participants (e.g. pre-service teachers, in-service teachers, teacher educators). This measure has demonstrated high reliability and validity for assessing knowledge of basic language constructs related to literacy (Binks-Cantrell, Joshi & Washburn, 2012).

The Basic Language Constructs Survey should be administered to participants prior to completing the workshop and again at the end of the workshop, as a means of collecting pre- and post-test data. Researchers would then be able to determine if there is any difference in participants' knowledge of reading related cognitive processes as a result of completing the workshop. Participants will also have an opportunity for self-evaluation. One of the first activities completed during the workshop is having participants write down some beliefs they have about reading and/or reading instruction. At the end of the workshop, participants will have the opportunity to review their initial beliefs and decide if they still hold true, or if there are items they would change based on what they learned during the workshop. Participants will not be required to share any of this information.

In addition to completing a pre- and post-test survey, it would be beneficial to administer follow-up questions to the participants after they have completed the workshop. A questionnaire or interview could be used at two different time points following the workshop (e.g., three and six months) to determine if participants have implemented any of the concepts discussed during the workshop, into their practice.

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Appendix

Activity: The Code**Cat****The****Tok**

Activity: Reading and the Code

aɪ wɪl ti:tʃ ju

HANDOUT: INTERNATIONAL PHONETIC ALPHABET

Phoneme	Grapheme
/ī/ (long i)	aɪ
/î/ (short i)	ɪ
/ē/ (long e)	i:
/ch/	tʃ
/ū/ (2 sounds: /y/ & /ü/)	ju

Activity: Phoneme Identification**BLANK PHONEME CHART**

PHONEME	GRAPHEME	EXAMPLE
CONSONANTS		
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		

VOWELS		
19.		
20.		
21.		
22.		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		

R-CONTROLLED VOWELS		
33		
34		
35		

DIGRAPHS		
36		
37		
38		
39		
40		

A FEW LESS COMMON ITEMS		
GRAPHEME	PRONUNCIATION	EXAMPLES
42		
43		
44		

HANDOUT: SUPPLEMENTAL COMPLETED PHONEME CHART

Phoneme	Pronunciation Example	Common Spelling (Grapheme)	Less Common Spellings	Examples of Less Common Spellings
CONSONANTS				
/b/	Bat	B		
/d/	Dog	D		
/f/	Fish	F	ph ough augh	Phone Cough Laugh
/g/	Give			
/h/	Happy	H	Wh	Who
/j/	Jump	J	G	Giraffe
/k/	Kick	K	C Ch Qu	Cake Christmas Queen
/l/	Like	L		
/m/	Miss	M		
/n/	Nice	N	Kn	Knot
/p/	Pile	P		
/r/	Race	R	Wr	Wrong
/s/	Sit	S	C Ce Sc	Circus Ice Science
/t/	Tin	T	Ed	Trapped
/v/	Very	V	F	Of
/w/	Water	W	Wh	When
/y/	Yes	Y	I	Onion
/z/	Zipper	Z	X	Xylophone

Phoneme	Pronunciation Example	Common Spelling (Grapheme)	Less Common Spellings	Examples of Less Common Spelling
VOWELS				
/ā/ (long a)	Cake	A Ai Ay	Eigh Aigh Ea	Eight Straight Steak
/a/ (short a)	Cat	A		
/ē/ (long e)	Peel Me	EE E	Y Ey Ei Ea	Penny Donkey Receive Bead
/e/ (short e)	Egg	E	Ai Ea	Said Bread
/ī/ (long i)	Side	I	Y Igh Uy Ie	Sky Sigh Buy Pie
/ĭ/ (short i)	Pig	I	U	Busy
/ō/ (long o)	Close Throw	O Ow		
/o/ (short o)	Pot	O	A Aw Ho	Spa Claw Honest
/u/ (short u)	Hug	U	O Oo	Money Flood
/ū/ (2 sounds: /y/ & /ü/)	Unicorn	U	Eau Ew	Beautiful Few
/ü/	Moon	Oo	Ew Ue	Flew Blue
/oo/	Look	Oo	Ou	Would
/oi/	Coin Boy	Oi Oy		
/ow/	Cow	Ow	Ou	South

Phoneme	Pronunciation Example	Common Spelling (Grapheme)	Silly Spellings	Silly Spelling Samples
R-CONTROLLED VOWELS				
/ar/	Car	Ar		
/āɹ/	Care	a-e		
/er/	Butter Bird Turn Word	Er Ir Ur Or		
Phoneme	Pronunciation Example	Common Spelling (Grapheme)	Less Common Spellings	Examples of Less Common Spelling
DIGRAPHS				
/ch/	Chip	Ch	Tch	Watch
/sh/	Ship	Sh		
/zh/	Treasure	S	Si Z	Division Seizure
/th/ (unvoiced)	Thing	Th		
/th/ (voiced)	That	Th		
/ng/	Ring	Ng		

A Few Less Common Items		
Grapheme	Phoneme(s)	Pronunciation
c	/k/ /s/	Cat Cycle
x	/k+/s/ /g+/z/ /z/	Box Exam Xylophone
qu	/k+/w/ /k/	Queen Unique

Activity: Sound Separation

Word	Number of Phonemes
Cat	
Cats	
No	
Note	
Dish	
Dishes	
Box	
Kneel	
Thought	
Through	

“The Chaos”
by: Gerard Nolst Trenité

“Dearest *creature* in *creation*
 Studying English *pronunciation*,
 I will teach you in my *verse*
 Sounds like *corpse*, *corps*, *horse* and *worse*.”

Pray, console your loving *poet*,
 Make my coat look *new*, dear, *sew it!*
 Just compare *heart*, *hear* and *heard*,
Dies and *diet*, *lord* and *word*.

Billet does not end like *ballet*;
Bouquet, *wallet*, *mallet*, *chalet*.
Blood and *flood* are not like *food*,
 Nor is *mould* like *should* and *would*.

Don't you think so, reader, *rather*,
 Saying *lather*, *bather*, *father*?
 Finally, which rhymes with *enough*,
Though, *through*, *bough*, *cough*, *hough*, *sough*, *tough*??

Hiccough has the sound of *sup*...
 My advice is: GIVE IT UP!

Activity: Using morphemes to read and understand unfamiliar words

Antidisestablishmentarianism

Activity: Counting Morphemes

	# of Syllables	# of Morphemes	Morphemes
Workable			
Heavenly			
Observer			
Counter			
Mother			
Carrot			
Bother			
Disassemble			
Singing			

Activity: Orthographic Awareness and Spelling**Ckat****Tchip****Hav****Doj****Seizhure****Mes**

Activity: Orthographic Awareness and Irregular Words

One

Was

Some

Yacht

Eye

Classroom Activity: Questions to Consider

What is the purpose of the activity?

What age or grade is the activity intended for?

How does the activity help children develop phonological awareness?

How does the activity help children learn about phonemes and graphemes?

How does the activity help children morphological awareness?

How does the activity help children learn about morphemes and how to use them in reading?

How does the activity help children develop orthographic awareness?

If the activity does not help children develop phonological, morphological, or orthographic awareness, can you think of a way to include one or more of those concepts in the activity?

Steps for Activity Development

Step 1: Decide on the focus of your activity. Will you focus on phonemes, graphemes, morphemes, orthography, or a combination?

Step 2: Decide what age/grade your activity is targeting.

Step 3: Think about what you want the overall goal of your activity to be. For example: I want to improve my students' knowledge of vowel sounds.

Step 4: Think about what you specifically want students to be able to do by the end of the activity. For example: I want students to be able to generate a word that has the long and short vowel sounds for the letters a, e, and i.

Step 5: Think about the format of your activity. Does it include whole class instruction, group work, individual work, or a combination?

Step 6: Describe your activity below. Make sure you explain your activity in enough detail that another person could present it. Be sure to include:

- How long the activity will take to complete.
- All necessary materials (e.g. handouts, pencils, crayons, paper, scissors, etc.).
- Step by step instructions
- Possible follow up questions for your students.

BLANK READING PROGRAM SYNOPSIS CHART

Program Name:		
Program Publisher/Author:		
Program cost		
What age is the program intended for?		
Does it include phonological awareness?		
Does it include morphological awareness?		
Does it include orthographic awareness?		
Is the program easy to learn?		
Is it user friendly?		
Pros and Cons	<u>Pros</u>	<u>Cons</u>

Activity: Some Things I Know about Reading, Revisited.

Do the things that you listed as knowing or believing to be true about reading or reading instruction still hold true for you?

Are there items that you no longer believe to be true? Why not?

What, if anything, would you add to or take off your list?

Glossary

Bound morphemes are morphemes that cannot stand on their own as a single word (e.g. prefixes and suffixes).

Free morphemes are morphemes that can stand on their own as a single word.

Graphemes are the letters or letter that is used to 'spell' phonemes; they are the written representation of a single phoneme. For example, the phoneme /b/ is represented by the grapheme B. The phoneme /f/ can be represented by the graphemes F (frog), FF (fluff), PH (phone).

Morphemes are the smallest unit of meaning in a word.

Morphological awareness is the understanding that words can be separated into individual morphemes and that words can be built by combining morphemes. Morphemes include root or base words, prefixes and suffixes.

Orthographic awareness is the understanding of the conventions of how we spell written language.

Phonemes are the smallest units of speech in spoken language. For example, the word dish is made up of 4 letters, but has three phonemes: /f/, /i/, /sh/. Similarly, the word box has only three letters in it, but four phonemes /b/ /o/ /k/ /s/."

Phonemic awareness is the ability to perceive, differentiate and manipulate individual phonemes.

Phonics is a method of reading instruction that focuses on explicitly teaching children that there is generally a predictable relationship between phonemes and letters, and how to use those letter-sound correspondences to read and spell.

Phonological awareness is the ability to hear, understand and manipulate phonological units in oral language. This can include phonemes, but also larger phonological units such as syllables, onsets and rimes. Syllables are the pronounceable parts of words. Onsets are the initial phoneme of a syllable that precedes the vowel and rimes are all of the letters in a syllable that follow the rime.