

Scientifically recognized skills needed for proficient literacy and academic success

(Birsh & Carreker 2018; Kilpatrick, et al, 2019)

Based on the indisputable information learned through more than 50 years of scientifically-based literacy research, development of reading and literacy skills requires a firm foundation. Acquisition of these language and literacy skills begins in infancy and early childhood and is later supported through effective instruction. Science supports these skills as essential for proficient literacy and academic success.

A. Oral language

Acquisition of strong oral language is dependent upon children being exposed to environments that foster relationships that promote the development of healthy brain architecture through growth promoting interactions based on serve and return, give and take, interactions between young children and human caretakers. This interaction occurs in the very earliest stages of life as infants absorb the oral language patterns provided by parents. These strong relationships create the foundation for later academic performance, mental health, and interpersonal skills. Parents and other caregivers talk to children, engage them in vocal play, describe what children are seeing and what they are doing, and impart essential oral language structures. Spoken words are added to the child's vocabulary and systems of language rules and structures including grammar, syntax, and pragmatics that become necessary learning tools for literacy development.

[Click this link for more information from Dr. Todd Risley.](#)

<https://www.youtube.com/watch?v=m9lmsYpNgbw#action=share>

[Click this link for more information about serve and return from the Developing Child Center at Harvard.](#)

<https://developingchild.harvard.edu/science/key-concepts/serve-and-return/>

[Click this link for more information about how to practice serve and return](#)

<https://developingchild.harvard.edu/resources/how-to-5-steps-for-brain-building-serve-and-return/>

B. Emergent literacy

Acquisition of emergent literacy skills begins in early childhood as children are provided with early literacy experiences involving books and other print materials in their environments. Parents, caregivers, and early childhood educators who engage children in developmentally appropriate literacy-rich environments are building essential foundation skills as they read to children, engage in book play, bring attention to the sounds of language including rhythm and inflection, patterns, model literacy joy, and bring print awareness into early focus. Children are encouraged to

make natural choices from culturally relevant materials available in literacy-rich environments.

C. Alphabet knowledge

Acquisition of alphabet knowledge emerges as children learn the letters of the alphabet; can recognize upper and lower case letters; and can sing, recite, and finally write all the letters in the expected order without difficulty. Early alphabet knowledge is a key predictor of later literacy success.

D. Phonemic awareness leading to phonemic proficiency

Acquisition of phonemic awareness leading to phonemic proficiency is the quintessential element of successful reading. Phonemic awareness begins with the child's ability to hear and manipulate individual sounds (phonemes) with no initial concern for letter recognition. Phoneme manipulation is changing the sounds in words to create other words. Phoneme manipulation that leads to phonemic proficiency begins with the acquired ability to exchange sounds in words to create new words as represented by rapidly changing "tap" to "map" to "cap" to "cat."

As children participate in systematic phonemic awareness instruction, they begin to recognize patterns among words that leads to fluent and automatic decoding.

Phonemic awareness develops alongside a student's growing awareness of print concepts. First, students are aware that spoken sentences contain words and that these spoken words contain sounds. This connects with their awareness that printed sentences contain words and that these words are made up of letters. Once this knowledge is obtained, students are ready for explicit phonics.

<https://www.corelearn.com/phonemic-awareness/>

E. Phonics

This is the instruction of how letters and sounds relate to each other. The most essential component of phonics is the ability to decode, represented by being able to look at letters and determine the sounds and the resulting pronunciation. Without phonemic awareness, phonics skills may not develop even with explicit instruction. Decoding practice is an essential part of phonics instruction. It can include both real and nonsense words to provide more opportunities to practice sound/letter relationships. Invented spelling and dictation practice are helpful for students to learn phonics, again providing opportunities to practice by incorporating writing.

F. Orthographic mapping

This is the process we use to permanently store words for immediate and effortless retrieval. These permanently stored words are often referred to as sight words. As orthographic mapping skills are developed, students form letter-sound connections in

order to recall the spelling, pronunciation and meaning of words. It also involves the process in which students learn to read words by sight, spell by memory and spell aloud, and to also develop vocabulary. In order for a child to read fluently, they must quickly recognize letter patterns in familiar words, or familiar letter strings such as the suffix 'ing' or the prefix 're'.

[Click here for an explanation of orthographic mapping](https://fivefromfive.com.au/mapping?fbclid=IwAR12KGII0vdi_ZylmsdIIIW2tloTOepKLuRWpPW4mPQdzVIkGN7qYp8h6Fc)

https://fivefromfive.com.au/mapping?fbclid=IwAR12KGII0vdi_ZylmsdIIIW2tloTOepKLuRWpPW4mPQdzVIkGN7qYp8h6Fc

[Dr. Maria Murray explains orthographic mapping](https://youtu.be/XfRHcUeGohc)

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G. Fluency

This is the manner in which a student reads with accuracy, automaticity, adequate rate, and proper expression. There are many ways to teach fluency including: (1) Repeated readings, (2) Paired readings and (3) Echo reading. According to the National Reading Panel (2000), fluency instruction (1) should be built upon oral reading rather than silent reading, (2) should include repeated readings, and (3) should provide opportunities for feedback from a listener.

[Dr. Maria Murray explains oral reading fluency](https://youtu.be/-v6sql-sAhM)

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H. Morphology

The study of words, or morphology, improves decoding skills, encoding skills, and comprehension. An example of morphology might be studying prefixes and suffixes, learning their roots and their meanings. Prefixes and suffixes adhere to patterns of the language. By explicitly teaching students these patterns and meanings, we give them the tools to attack and understand longer words.

[Dr. Louisa Moats describes importance of morphology in reading instruction](https://fivefromfive.com.au/mapping?fbclid=IwAR12KGII0vdi_ZylmsdIIIW2tloTOepKLuRWpPW4mPQdzVIkGN7qYp8h6Fc)

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I. Vocabulary development

Acquisition of vocabulary is essential to reading comprehension. Young children begin developing vocabulary skills first by listening to others or when people read to them. Then they begin to acquire more words when they start reading and using those words in their speaking and writing.

J. Comprehension

Comprehension is interactive and strategic resulting in knowing and understanding what was read. Acquisition of comprehension skill emerges as students have opportunities to read a wide variety of texts at desirable difficulty and interest levels. When reading, readers must learn to analyze the material. First, students must be proficient in reading to gain comprehension of the text. Strategies used to gain proficiency in comprehension include using prior knowledge, making predictions, summarizing, asking and creating questions, making inferences, and visualizing the text.

K. Spelling

Acquisition of spelling skills strengthens reading comprehension and automaticity as students are taught to recognize and use the reliable spelling patterns and rules typical of our language. Desired reading outcomes result when children are explicitly taught to apply spelling patterns and rules corresponding to the phonics patterns that are being systematically and simultaneously taught within the reading program.

[Click this link for more information from Dr. Virginia Berninger.](https://www.hw21summit.com/research-berninger)

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L. Handwriting

The handwriting modality is rich with kinesthetic (movement), tactile (touch), and proprioceptive (position in space) information improving both decoding (reading) and encoding (spelling) skills. Acquisition of handwriting skills provides students with an opportunity to further anchor sounds, symbols, and spelling patterns as they use the handwriting modality. Students may benefit from manuscript and cursive handwriting instruction enhanced with verbal prompts describing the needed movement patterns.

[Click this link for an example of a multisensory handwriting curriculum.](https://drive.google.com/open?id=1zCOa0pa7cZN_kRTWn1Lu7KfZmMDQh_-U) (Strong, 2018)

https://drive.google.com/open?id=1zCOa0pa7cZN_kRTWn1Lu7KfZmMDQh_-U

[Click this link for more information from Dr. Karin James.](https://www.hw21summit.com/research-harman-james)

<https://www.hw21summit.com/research-harman-james>

M. Written Expression

Written Expression is the ability to cohesively transcribe a meaningful thought to paper. Placing a heavy focus on syntax and semantics, it also involves executive functioning skills such as planning and organizing content. To achieve impactful written expression, a student will need to have acquired needed vocabulary and an understanding of the mechanics of a sentence. Moreover, the writer will rely heavily on more basic skills like sound-symbol association and spelling patterns in order to encode the individual words. The efficacy of written expression is directly impacted by the automaticity of the writer's spelling or encoding. Without automaticity, the writer is focused on spelling words rather than communicating an idea.

N. Executive function in literacy instruction

Executive functioning is critical in literacy because it's the child's ability to retain, focus, and apply information. Beyond learning letters, sounds, and decoding, executive functioning is an important component of comprehension. Readers can often approach tasks, instruction, and literature differently. All three components of executive functioning are critical to both learning to read and reading to learn.

Executive functioning refers to the culmination of three different components: working memory, inhibitory control, and cognitive flexibility. Working memory, more commonly known as "short term memory," is a person's ability to retain instruction or information long enough to achieve a specific task. Inhibitory control refers to a student's ability to control their impulses. More specifically, students are able to stop or ignore distractions. Finally, cognitive flexibility is the ability to problem solve. Cognitive flexibility allows people to think about a concept from several different approaches. It also is a person's ability to switch topics and think about something new.

O. Well-prepared and supported teachers able to implement research-based instruction

Teachers must be provided with opportunities to participate in literacy-based professional learning that supports a deeper understanding and perspective of the science of reading. Further, teachers must be provided job embedded support in implementing evidence based practices in classroom instruction. (Landry, et al, 2009) LETRS for Early Childhood Educators 2nd Edition) Reading success is made possible when teachers are well-prepared to implement all aspects of instruction and intervention detailed in the Multi-Tiered System of Supports (MTSS) framework. Teachers need to be skilled in: (1) identifying student skills through screening, (2) adjusting instruction as needed, (3) ensuring that interventions are made available, (3) setting reading goals, (4) monitoring the progress of the student, (5) making intervention adjustments as needed, and (6) encouraging students throughout the process.

<https://journals.sagepub.com/doi/full/10.1177/2332858417733686>