

Introductory Notes on Modern Presentations

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After peaking in the turn of the century, the Science of Reading's story is top news again. This time, it's a movement. How is it different this time around? As an indication of this, a lists of sources on the story have been posted. ([see the posting.](#)) Some journalists and large organizations have even taken on the cause. How effective they will be, this time around, in promoting the understandings and practical applications of the science in improving the national achievement in reading, is yet to be determined. But, this time around does seem to be different.

The list of current presentations tell the same essential story, which is consistent with the speeches and writings of G. R. Lyon and the Learning First Alliance action paper and professional guide, (posted above) of the turn of the century.

Leading in this effort has consistently been the work of the International Dyslexia Association (IDA). [Its on-line posting, Lexia, is on the list.](#) It's a good place to start. Its definition of The Science of Reading can be added to the two that were used in the [Introduction](#) to this page set of postings. According to Lexia,

"The "science of reading" is far more than just phonics. The term refers to a large body of gold-standard research collected by cognitive scientists and other reading experts throughout more than five decades. It tells us how we learn to read and the most effective way for reading to be taught. The research spans hundreds of papers, multiple languages, and expert contributions from the fields of education, linguistics, psychology, neurology, and more."

"This research has conclusively provided us with a deeper understanding of what skills are involved in learning to read, and how different parts of the brain work together to process written language. This in turn has helped us develop better practices for teaching these skills so every student can learn to read proficiently."

To assist understanding of what the Science of Reading has learned, Lexia has provided a five structured framework. Part 1 illustrates what reading is in a simple equation. Part 2 is an infograph that provides a little more detail and illustrates the complexity of each factor of that equation. Part 3 shows what the brain does as a result of learning to read. Part 4, is a framework for teaching reading provided by the National Reading Panel, 2000. And finally Part 5, a graphic that estimates what can be achieved if this knowledge is put into practice.

Part 1. After research had accumulated details on reading, Phillip Gough summed it all up with The Simple View of Reading (1986, 1990). Gough, lumped together three large cognitive activities into one simple formula that outlines the kind of action a skilled reader takes in order to understand what is read. Given a printed text, a reader must first read words and then relate them to knowledge s/he possess, from a variety of sources, at that instance, to produce reading comprehension.

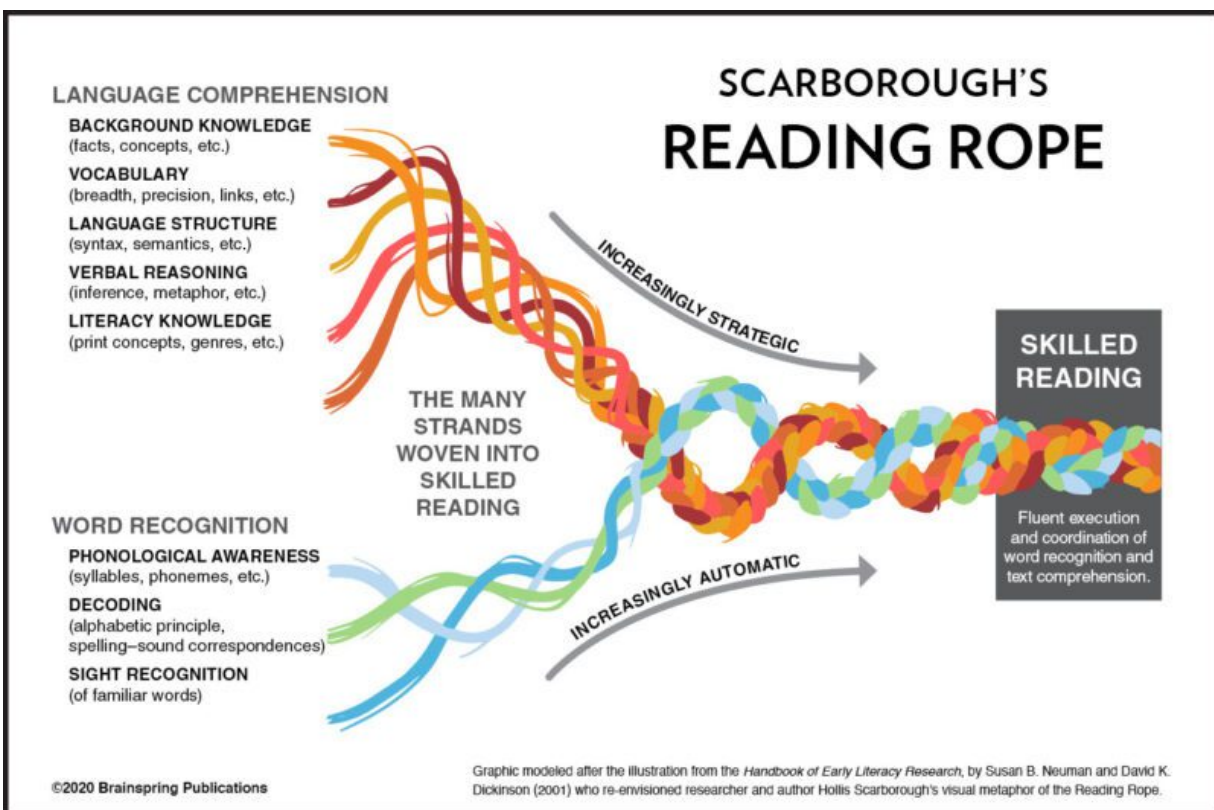
Word Reading x Language Comprehension = Reading Comprehension

If the two factors match, the resulting reading comprehension is produced. Gough remained vague about how word read skills are learned and performed, but he did give it a realm of its own. It was not dependent on outside contexts. This gives word reading an importance of its own.

The prior knowledge, **which comes from a wide variety of sources, literary and otherwise**, is not just added on to words read. It multiplies the affect of word recognition and produces a larger understanding of the text. Language Comprehension is the large term used. It's required for reading comprehension. Simple.

This assumes that there is a match between the word reading skill demands of a text that a reader can meet, and the language knowledge demands of the text that also must be met by the reader. A mismatch produces poor reading comprehension. Simple but deep. Gough was a leading thinker and pioneer in the early days of the scientific study of reading. His work will be discussed in more detail in later posts.

Part 2. Each of the learning factors in the Simple View must be broken down into component parts, shown in the infograph, Scarborough's Reading Rope. "Hollis Scarborough—creator of the famous Reading Rope and senior scientist at Haskins Laboratories—is a leading researcher of early language development and its connection to later literacy. In 2001, the model was published in the *Handbook of Early Literacy Research* (Neuman/Dickinson). The genesis of the 'Reading Rope' dates back to Scarborough's lectures for parents on the complexities involved in learning to read. Originally, she spoke of **skilled reading** as resembling the 'strands' of a rope, using pipe cleaners to illustrate the interconnectedness and interdependence of all the components." It illustrates what needs to be learned in instruction in order to be a skilled reader who can meet the word reading and comprehension demands of a given text. The learning process is all about progressively matching these demands with the learning child.

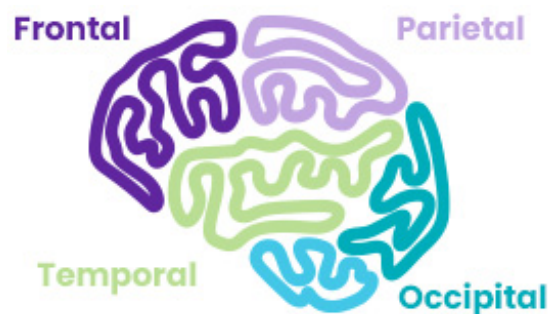


“The Reading Rope has lower and upper strands, (representing the two factors in The Simple View). Each of these factors comprises several smaller strands. Woven together, they become the rope that represents complete skilled reading comprehension. All the components are interconnected and interdependent. If just one strand is weak, it affects the rope (the reader) as a whole. The word-recognition strands (phonological awareness, decoding and fluent sight word recognition that provides needed clarity to Gough’s Simple View) work together as the reader becomes accurate, fluent, and increasingly automatic with repetition and practice. Concurrently, the language-comprehension strands reinforce one another and then weave together with the word-recognition strands to produce a skilled reading product. This does not happen overnight; it requires instruction and practice over time.”

“The Reading Rope is brilliant in its simplicity, but profound in its instructional implications.” It give the Simple View substance. It should be stressed that this is what skilled reading looks like. It becomes the goal of instruction. It gives a little more information about what needs to be learned, but nothing is given about how to teach it.

Part 3. a graphic that shows, in broad terms, how the brain works in reading.

From the beginning of learning, reading begins to change the workings of the brain. “Our brains don’t start out wired for reading. We’re not born with the ability to read. To learn to read, we have to use parts of the brain that evolved to do other things. Reading **repurposes multiple parts of the brain**, including visual processing and language comprehension. Researchers have studied this, using MRI scans, and have shown that the same areas of the brain activate **no matter what language** people read in.” It has been found that explicit teaching, i.e., how all the parts are learned, improves this activity. One of the essential parts is phonics, see Part 4.



“These areas of the brain are connected by 'white matter pathways.' The stronger the reader, the stronger the signals across the pathways. **According to Dr. Nadine Gaab**, timely intervention and instruction can improve these pathways that improve a reader’s reading comprehension.

The Science of Reading identifies the kind of instruction, but not in detail.

“In 2012 in the Proceedings of the National Academy of Sciences, neuroscientists at Stanford University reported that reading ability in young children is related to the growth of the brain’s white matter tracts—specifically, the arcuate nucleus, which connects the brain’s language centers, and the interior longitudinal fasciculus, which links these language centers with parts of the brain that process visual information. Strong readers, they discovered, start out with strong signals in both tracts that get stronger over a period of years. The opposite pattern occurs in weaker readers.”

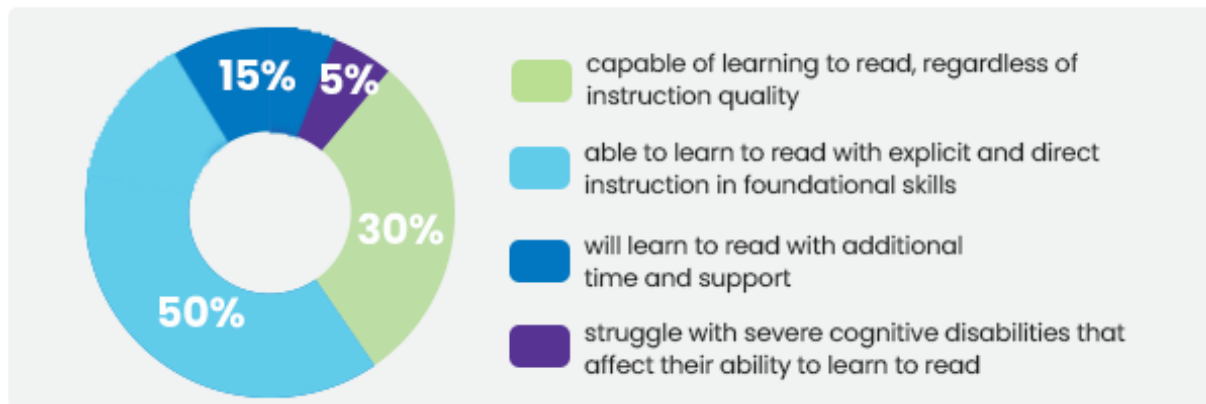
Part 4. A framework for teaching reading, especially at the beginning. This consists of five essential components: phonemic awareness, phonics, fluency, vocabulary, and comprehension.

It's the creation of the 2000 National Reading Panel (NRP). "Since the panel's report was released, these concepts have become known as the "five Pillars" of early literacy and reading instruction." However, as a recent NYT reporter noted, <https://www.nytimes.com/2023/04/16/us/science-of-reading-literacy-parents.html>, that although there are successful applications of the findings, "There is no established curriculum for the science of reading — it refers to a large body of research that must be woven into the craft of teaching." This craft of teaching has yet to be sufficiently researched to gain a universal consensus. It's the incomplete aspects of the Science of Reading.

These five parts of the framework solve many, historical questions on how to teach but leaves lots of room for debate and trial and error with some supporting evidence. The Simple View sets boundaries. It says that if a pre-reader is to learn to read, s/he must be able to read words well. That's it. Then the Rope gives a little more clue about what must be learned in learning to read words. The learner must learn phonemic awareness and how to decode print through the alphabetic principle with spelling-sound correspondences. This breaks it down a lot, but still leaves very important questions unanswered. The Five Essential Components add more detail. It gives some information about how to teach phonemic awareness and decoding, but still critical details are left unsettled for publishers, program designers and educators to implement.

So, as was stated in the Introduction. The Science of Reading is long on theory, (important as it is) and short on practice, even though this has been narrowed down significantly to produce promising practice.

Part 5. A graphic that gives an educated estimate of what can be achieved if this knowledge is put into practice. According to [a research brief from EAB](#) "This body of evidence proves again and again that nearly every child can learn to read with confidence, given explicit instruction in the components of reading. Ninety-five percent of students have the cognitive ability to learn to read". (Irrespective of living circumstances?) This assumes that practitioners have crafted together detailed daily lessons based on these general principles and qualifications. (This brief is the best that I've seen. It's posted on this page of my website.)



How is this recent awakening going?

Journalist are attempting to keep this story of the Science of Reading alive. For example, writers for the Edweek have repeatedly featured this subject, and the award winning investigations of Emily Hanford of the American Public Media and Natalie Wexler of Forbes magazine are producing popular podcasts. The use of social media, podcast and various on-line events are in

constant use. Also, see [The Science of Reading, the Podcast and webinar](#) offerings of Susan Lampert of Amplify.

At least five major organizations have made presentations and ebooks available on-line, Amplify, EAB, The Reading League and Lexia (International Dyslexia Association). These are well made, professionally produced presentations. EAB has a particularly good presentation. They are somewhat of an outsider to reading. They are a large organization that consults with school districts on a variety of matters.

Major news organizations are frequently reporting on various aspects of the Science. They seem to have gotten the message that The Science of Reading is for real. The TIME magazine article is a particularly well written report. There are many others. As long as educators continue to resist or ignore the Science, the story remains alive. Their resistance keeps it in the news.

They are all working to get the story out ~~about the Science of Reading~~.

Three examples: Emily Hansford's first published report.

<https://www.apmreports.org/episode/2018/09/10/hard-words-why-american-kids-arent-being-taught-to-read>

An OPB interview.

https://www.opb.org/article/2023/02/21/why-some-oregon-teachers-are-bringing-the-science-of-reading-to-the-classroom/?mc_cid=d34c51e180&mc_eid=2c53a2cf78

And a very recent NYT Sunday April 16, 2023 piece by Sara Mervosh

'Kids Can't Read': The Revolt That Is Taking On the Education Establishment Fed up parents, civil rights activists, newly awakened educators and lawmakers are crusading for "the science of reading." Can they get results?

<https://www.nytimes.com/2023/04/16/us/science-of-reading-literacy-parents.html>
[5555](#)

Mervosh' article seems to get it right. She points out the problem. "The Science of Reading is a body of knowledge about what reading is and how it is performed. In the process, the scientists all agree. Learning how the alphabet works, i. e., phonics, is necessary - no brainer. The rest is application, which is a whole new ball game. The writer gets that right. It isn't a curriculum."

"There is no established curriculum for the science of reading — it refers to a large body of research that must be woven into the craft of teaching."

The Science of Reading, currently, is a force, a force that should be producing changes and improvements. However, it's a force with limitations, critical limitations, yet to be researched thoroughly.