

Reading Efficiency: The Hidden Hurdle

What is it?

Reading efficiency is a critical component of reading proficiency. An efficient reading process is fluent and feels easy and comfortable. Efficient readers can read for extended periods of time with good comprehension because they expend little energy on the mechanics of reading. Mental resources are focused on making meaning from text.

Why is it important?

Students who experience reading as inefficient, laborious, and unproductive typically avoid reading whenever possible and may lack the motivation to engage with text and ideas that would help them develop as readers and learners.¹

Reading involves physical and cognitive processes. First, the reader's eyes must navigate across lines of text in a coordinated and sequential fashion to recognize words and phrases. Next, the reader's vocabulary and comprehension skills work in tandem to connect ideas and create meaning.

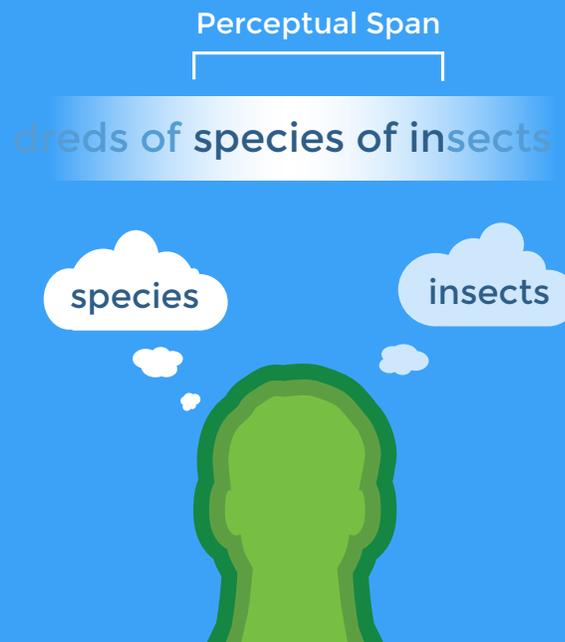
A fluent reader's visual and perceptual skills are efficient, enabling the reader to focus attention on constructing meaning.² In contrast, an inefficient, or disfluent, reader's visual navigation of text is awkward and labored, and attention is diverted from the critical step of information processing and understanding.



Reading Science

Most students develop the ability to decode individual words. However, many students struggle to make the transition from decoding individual words to successfully reading connected text.³ A student experiences this difficulty if he or she has not yet developed the necessary visual, perceptual, and cognitive skills.

Summarized below are some key visual and perceptual competencies that facilitate this transition and lead to efficient independent silent reading.



Perceptual Span & Word Recognition

A perceptual span is the number of letters a student can perceive and process during a single eye stop (fixation). The perceptual span of beginning readers and of most people who struggle with reading is smaller than the span of efficient readers.⁴ Efficient readers are able to perceive larger word impressions without making multiple eye stops, which contributes to automaticity in word recognition and paves the way for more efficient text navigation.

Text Navigation

Efficient readers are able to keep their place within a line of text, move their eyes sequentially from one word to the next, and return from the end of one line of text to the beginning of the next without making excessive eye movements.⁵ Reading instruction typically emphasizes decoding and comprehension strategies, but does not take into account efficient text navigation skills. Consequently, many students struggle to navigate text in a manner that supports good comprehension.

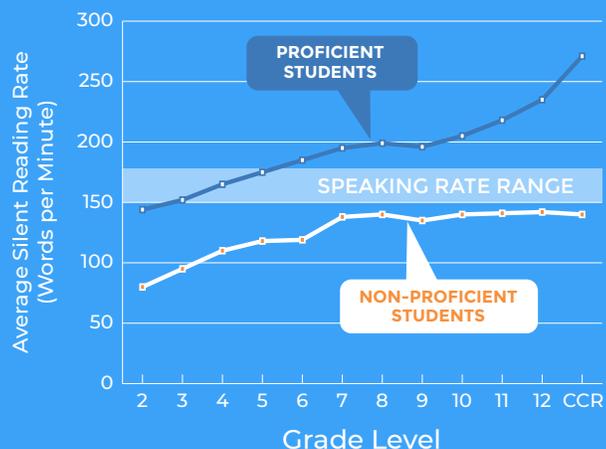
Not a Disability

Inefficient reading is not a learning disability. While some inefficient readers may have dyslexia or other learning challenges, most students who are inefficient readers simply have not yet mastered the mechanics of reading.⁶

Average Reading Rate

The typical speaking range is about 150-175 words per minute.⁷ Many non-proficient readers never develop the efficiency necessary to read at least as quickly and easily as they can speak. For these students, reading is laborious, unenjoyable, and unproductive. Conversely, many proficient readers are already able to read silently at the upper end of the speaking range by 5th grade. These students become even more efficient through the secondary grades.

Average Reading Rates for Proficient & Non-Proficient Readers*



* Reading Plus InSight Assessment silent reading rates for students in various grades.

Evaluating Efficiency

Research evaluating the comprehension-based reading efficiency of students in grades 2-12 reveals a significant difference between the visual perceptual activity of students reading at various reading rates.⁶ Regardless of age, students who make more eye stops and take in smaller portions of words while reading read at slower rates. Similarly, students of any age who are capable of taking in entire words per eye stop while efficiently navigating text read at faster rates. These efficient readers have more mental energy available to comprehend complex texts.

Visual/Perceptual Measures of Students Reading at Various Rates (Grades 2-12).⁶

	RATE	FIXATIONS	REGRESSIONS	SPAN
INEFFICIENT	100	190	40	0.53
	125	170	30	0.59
	150	140	25	0.71
EFFICIENT	175	130	22	0.77
	200	120	17	0.83
	225	108	14	0.93
	250	101	12	0.99

RATE - Comprehension-based silent reading rate (words per minute).

FIXATIONS - Average number of eye stops per 100 words.

REGRESSIONS - Average number of times students' eyes moved backward per 100 words.

SPAN - Average portion of a word that is perceived during a fixation.

The Hidden Hurdle

70 percent of non-proficient readers read inefficiently. These students read more slowly than they speak, and they spend the bulk of their energies on the mechanics of reading rather than understanding the meaning of what they read. The eye-movement behavior of these students reveals that they have a smaller perceptual span, they are not instantly recognizing words, and their navigation of text is laborious. More than 30 percent of proficient readers exhibit the same characteristics, but these students have developed time-consuming personal strategies to compensate for the inefficiencies. While they can successfully comprehend text, it takes an inordinate amount of time to do so.

70% of Non-Proficient Students
Read Inefficiently



30% of Proficient Students
Read Inefficiently



References

1. Guthrie, J.T. (2015). Growth of Motivations for Cognitive Processes of Reading. In: P. D. Pearson & E. H. Hiebert (Eds.), *Research-Based Practices for Teaching Common Core Literacy*, pp. 107-122.
2. LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology*, 6(2), 293-323.
3. Chall, J.S. & Jacobs, V. A. (2003). Poor children's fourth grade slump. *American Educator*, 2(1), 14-15.
4. Rayner, K. (1986). Eye movements and the perceptual span in beginning and skilled readers. *Journal of Experimental Child Psychology*, 41(2), 211-236.
5. Radach, R. & Kennedy, A. (2013). Eye movements in reading: Some theoretical context. *Quarterly Journal of Experimental Psychology*, 66, 429-452.
6. Spichtig, A. N., Hiebert, E. H., Vorstius, C., Pascoe, J. P., Pearson, P. D., & Radach, R. (2016). The decline of comprehension-based silent reading efficiency in the United States: A comparison of current data with performance in 1960. *Reading Research Quarterly*, 51(2), 239-259.
7. Yuan, J., Liberman, M. & Cieri, C. (2006). Towards an integrated understanding of speaking rate in conversation (pp. 541-544). Pittsburgh, PA: *Proceedings of Interspeech 2006*. Retrieved from http://ldc.upenn.edu/myl/llog/icslp06_final.pdf