

3 Cuing system

You can find considerable support in the eye movement studies see reviews in Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001, 2002; Rayner & Pollatsek, 1989

Rayner, K., Foorman, B.R., Perfetti, C.A., Pesetsky, D., & Seidenberg, M.S. (2001). How psychological science informs the teaching of reading. *Psychological Science in the Public Interest*, 2, 31-74. Retrieved August 11, 2001 from www.psychologicalscience.org/newsresearch/publications/journals/pspi2_2.html

Rayner, K., Foorman, B.R., Perfetti, C.A., Pesetsky, D., & Seidenberg, M.S. (2002, March). How should reading be taught? *Scientific American*, 286, 84-91.

Results of our MRI study suggest that active processing of word meaning engages neural systems associated with phonological processes. The results are consistent with the mediation hypothesis and suggest functional coupling of phonological processing during the perception of word meaning.

Xu, B., et al., (1999). Functional coupling of phonological processes during the activation of word meaning: an fMRI study of visual word perception. Fifth International Conference on Functional Mapping of the Human Brain. Retrieved 11/10/2003 from <http://www.apnet.com/hbm99/2548.html>

Some eye-movement studies have used homophones to demonstrate that the process of sounding out words mentally begins very rapidly after a reader's gaze first fixes on a particular word. And recent brain studies show that the primary motor cortex is active during reading, presumably because it is involved with mouth movements used in reading aloud. The process of mentally sounding out words is an integral part of silent reading, even for the highly skilled.

Rayner, K., Foorman, B.R., Perfetti, C.A., Pesetsky, D., & Seidenberg, M.S. (2002, March). How should reading be taught? *Scientific American*, 286, 84-91.

During reading, the decoding of words always takes place before the understanding of words, sentences or whole texts. Sophisticated eye movement and brain research [event related potential (ERP) studies] have convincingly demonstrated this. The eyes fixate on a word for about 250 milliseconds. During this time, a number of processes occur close together in time, but nevertheless, in a set sequence. The visual shape of each letter is recognised, each letter is translated into its sound equivalent, the sounds are assembled together to arrive at a mental sound equivalent for the whole word, and finally, the meaning of the word is accessed.

Semantic processing occurs last (e.g. Lee, Rayner & Pollatsek, 1999; Sereno, Rayner, & Posner, 1998; Perry & Ziegler, 2002). As readers become more adept, instead of letter-by-letter symbol-to-sound translation occurring in a series, it has been shown that this process speeds up, and gradually groups of letters, common spelling patterns, and high frequency words begin to be recognised all at once, in parallel (Aghababian & Nazir, 2000; Jared, Levy & Rayner, 1999).

Pictures and guessing play no part in any of the word reading processes that occur. Nor is the use of context among the processes that occurs during an initial eye fixation. Only after an initial eye fixation occurs, and only on the occasions where word meaning is in doubt, do the eyes regress back over the preceding text to use context as an aid to meaning. These particular regressions constitute a post reading strategy that may occur afterwards: in effect, a non-reading strategy used to confirm meaning, not to extract it in the first place.

Macmillan, B. (2002). An evaluation of the Government's Early Intervention Initiative: The Early Literacy Support programme. *Reading Reform Foundation Newsletter*, 49. [On-Line]. Available: <http://www.rrf.org.uk/49%20Bonnie%20MacMillan%20Article.htm>

You can find some studies discussed in *A theoretical overview of the reading process: Factors which influence performance and implications for instruction*. Beverley L. Zakaluk
<http://www.umanitoba.ca/education/edlab/Archive/81529/theopape.html>

You can find considerable support in the eye movement studies

Evidence for research-based model Evidence for this alternative model is quite compelling. For example, there is a phenomenon called the Stroop Effect that demonstrates that, even when we consciously try to ignore words, we can not help but decode them (see sidebar). In this demonstration, words are presented in isolation without any semantic or syntactic cues, and yet readers find they cannot help but decode the words.

Stroop Effect Ignore what each word says just name the color each word is written in as quickly as you can.

RED BLUE YELLOW ORANGE GREEN

Proficient readers find it difficult to ignore the word and just name the color. Word decoding is so rapid and automatic that it can not be “turned off.” For the skilled reader, word decoding is extremely rapid and automatic, and the decoding mechanism can not be deactivated. “Guessing” and “predicting” words, on the other hand, is deliberate, slow, clumsy, and usually inaccurate. Research has repeatedly shown that skilled readers, given unlimited time to ponder, can only accurately predict one in ten content words in running text. However, as stated earlier, most skilled readers read a passage of text with 100 percent accuracy making absolutely no mistakes. Furthermore, skilled readers decode words in an average of 180 milliseconds that’s less than one-fifth of a second. There is no way that skilled readers could read by “guessing” or “predicting” the words in the passage; that would be too slow and inaccurate. For skilled readers, decoding is so fast and automatic, it happens pre-consciously before a skilled reader can consciously think about each word, the reader’s grapho-phonemic decoding mechanism has already translated it.

Wren, S. (2001) Reading and the three cueing systems. Southwest Educational Development Laboratory.
<http://www.sedl.org/reading/topics/cueing.html>.

Good readers attend to almost every word on the page, seeking the spelling patterns they’ve internalised. Only when the graphophonemic information is insufficient will they resort to contextual strategies for word identification. Wren, S. (2001). *Reading and the three cueing systems*. Southwest Educational Development Laboratory. [On-Line]. Available:
<http://www.sedl.org/reading/topics/cueing.html>.

“The scientific evidence is simply overwhelming that letter-sound cues are more important in recognizing words than either semantic or syntactic cues.” (p.16).

Pressley, M. (1998). *Reading instruction that works: The case for balanced teaching*. New York: Guilford.

The "top-down" model of the reading process in which higher level cognitive processing is believed to be primary in facilitating word recognition is also challenged. The opposing argument centres upon the assumption that good readers bypass the letter sound correspondence when they read because they read so quickly. That is, because good readers read at a faster pace, they do not depend upon the phonemic code. Recent evidence presented by Stanovich (1980) however, discredits this assumption. Mitchell and Green (1978) found that while reading speed was faster for text containing more frequently occurring words and words with fewer letters, readers showed no tendency to increase rate as they progressed through textual material and paused visibly on the final frame. This caused the investigators to contest the idea that speed in reading is a simple function of word predictability. Mitchell and Green argue instead that reading speed is determined largely by both word recognition rate and access to word meaning. Their research suggests that instead of depending on meaning only, good readers may well markedly attend to graphic information, especially when they are uncertain about a word.

Mitchell, D.C. & Green, D.W. (1978). The effects of context and content on immediate processing in reading. *Quarterly Journal of Experimental Psychology*, 30, 609-636.

Research has found that readers make extensive use of visual information. Skilled readers do this with great speed and efficiency, perhaps giving the impression that they are only sampling the text. In reality, however, they are processing nearly all of the available visual information (Adams, 1990). Beginning readers who pay attention to print detail are likely to show higher progress than children who depend on meaning and structure cues (Biemiller, 1979; Nicholson, 1993). Encouraging children to attend to visual information assists their reading because “the most effective way to become automatic with a particular word is to initially decode it – to consciously process both the letter patterns and the sounds the first few times it is read” (Honig, 2001, p. 63).

Biemiller, A. (1979). Changes in the use of graphic and contextual information as functions of difficulty and reading achievement level. *Journal of Reading Behavior*, 11, 307-318.

Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, M.A.: MIT Press.

Honig, B. (2001). *Teaching our children to read* (2nd ed.). Thousand Oaks, CA: Corwin Press.

Nicholson, T. (1993). The case against context. In G. B. Thompson, W. E. Tunmer, & T. Nicholson (Eds.), *Reading acquisition processes* (pp91-104). Clevedon, UK: Multilingual Matters.

Scaffolding errors" (errors which accurately represented the initial and final letters but not the vowels of words, e.g., 'bat' for 'boat') were positively correlated with accurate word reading ability, whereas other responses such as non-phonological errors (such as 'milk' for 'lorry') were not correlated with accurate word reading ability. These results have also been broadly replicated in subsequent correlational studies (Laxon, Masterson, & Moran, 1994; Savage, 1998; Savage & Stuart, 1998; Stuart, 1990).

Savage, R., Stuart, M., & Hill, V. (2001). The role of scaffolding errors in reading development: Evidence from a longitudinal and a correlational study. *The British Journal of Educational Psychology*, 71, 1-13.

“The searchlight model of reading has been superseded by the new conceptual framework – the simple view of reading . All references to the 'searchlights' model therefore should be interpreted in the light of the simple view of reading” (Primary National Strategy, 2011).

Primary National Strategy. (2011). *Literacy strategies*. Department for Education and Skills. Retrieved from http://teachfind.com/national-strategies/literacy-flyers-assist-literacy-teaching?current_search=searchlights%20model%20of%20reading

80% of the preservice teachers and 74% of the inservice teachers agreed that the most beneficial strategy for identifying an unknown word was to use the context to figure it out. Both groups agreed that a teacher should not be concerned when early readers' miscues do not alter meaning (76% preservice; 79% inservice). Only 22% of the preservice and 36% of the inservice teachers recognized that phonological awareness involves oral language and is not a method of reading instruction.

Mather, N., Bos, C., & Babur, N. (2001). Perceptions and knowledge of preservice and inservice teachers about early literacy instruction. *Journal of Learning Disabilities*, 34, 472-482.
