

# Critique the "top-down and bottom-up" models of reading essay



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## Critique the " Top-Down and Bottom-Up" Models of Reading and Outline

Their Relevance To Reading Instructions Sherry Ann Osborne The ability to read is thought to be fundamentally important for functionality in our modern world. Nations measure the success of educational institutions by the ability to produce highly literate citizens and funding for many educational institutions in the United States and elsewhere hinges on the literacy attainment of student populations.

The international demand for reading success has over the years resulted in periodic shifts in reading instruction with fervent emphasis at one point on the Top Down model of reading with an equally fervent shift to the Bottom Up model of reading instruction. Historically, these shifts are not new but an investigation into both models prove that they are both inefficient in laying sole claim to beginning reading success and that scientific based research provides more eclectic and conclusive evidence as to what is truly required for early reading success.

The Whole Word approach to the teaching of reading which emanates from the Top-Down reading model is philosophically Constructivist in nature. It therefore means that the methodologies and instructional activities are child-centred, reader-oriented and allows for a personal construction of meaning. In this logographic reading model, processing employs higher order skills in a whole to part deconstruction of the word. Chall (1967) proposes that words should be introduced through their meaning and requires sight recognition of words using Gestalt principles of shape and length.

Meaning is viewed as the goal of reading and the reader uses his prior knowledge and experiences with language through semantic and syntactic cuing in order to make predictions to arrive at the meaning of words in particular contexts. The reader therefore does not use all the elements in a word for decoding but rather uses the 'most productive cues necessary' or only the visual cues necessary to test the hypothesis (Goodman 1967, Smith 1971). An illustration of this can be appreciated in reading the sentence, "This morning at seven thirty I had toast and eggs for..... . An accurate hypothesis according to the top-down view, would be that the next sentence in the word will be " breakfast. " The reader checks that the " b" fits into the context, which supports the hypothesis and so, does not take in the remaining letters of the word. If meaning is not derived then the reader creates a new hypothesis based on prior knowledge and continues on a trial and error basis until meaning is achieved. Goodman (1967) aptly describes the meaning-making process in this model as a ' psycholinguistic guessing game. Proponents of this model view reading as a naturally occurring process similar to that of the human capability for language. Therefore the classroom that employs this reading model provides opportunities for risk-taking, authenticity and empowerment (Hempenstall 2009) with silent reading activities, guided reading sessions and read alouds in a print-rich environment. Reading and writing tasks are also integrated for authenticity and invented spelling is encouraged.

Criticisms for the Top Down approach to reading has mounted over the years especially as past national results have indicated an increase in the number of struggling readers at the higher grade levels. One major criticism of this

approach is that it erroneously assumes that reading is an automatic transaction similar to that of innate human speech. Neuroscientist Steven Pinker (cited in *The Reading Wars* by Anderson 2000) states that spoken language is a human instinct while written language is not, thus indicating that children do not have the same innate predisposition for reading and writing as they do for speaking.

Therefore the provision of a rich literacy environment for print immersion will not trigger an automatic reading response. Another criticism of this model is that it relies too heavily on one's memory and on the use of context for making meaning out of print. In the actual reading of a paragraph the majority of words are unpredictable and those that are predictable are few in comparison to the unpredictable words.

Trieman (2001) suggests that "beginning readers who rely too heavily on contextual clues, such as pictures or the connection of other words in the passage, are distracted from looking at the letters in a word and connecting those letter patterns to words in their minds," hence their ability to decode larger words is diminished. The Top-Down model or Whole Word approach has also been scientifically proven to be inefficient. Studies conducted on the eye during the reading process suggest that the eye fixates for around a quarter of a second, before jumping rapidly to another fixation point (a saccade).

It is during the fixation that visual stimulation is taken in. This counteracts the Top-Down perspective that during reading large numbers of words are skipped, as letters and words have to be processed thoroughly in order for

meaning to occur. (Treiman 2001). The Top-Down model cannot be totally negated because research indicates that the reading process involves an amalgamation of both reading approaches. Rayner and Pollatsek (1989) have shown that the fixation time for words that are predictable from context is shorter and that these words are skipped more often than words that are less predictable.

Another criticism of the Top-Down model is its linearity, when indeed scientific research indicates through the word superiority effect that lexical and orthographic knowledge at the higher processing levels reciprocally influence lower level processes such as letter recognition (Module 4 2011). It is my opinion that the Top-Down model of reading is applicable to the teaching of words that cannot be phonetically decoded because of the deep orthography of English .

These will include commonly used sight words and words with pronunciations that do not follow a one-to-one correspondence with orthography. Using these words regularly in reading and writing activities will aid in automaticity in word recognition which is necessary for fluency in reading. Another observation is that since this approach encourages invented spelling, too little direct instruction may be given in spelling which will inevitably leave children with erroneous conceptions of how words are spelt or pronounced.

These can be corrected with elements from the Phonic Approach to reading. The Traditional model of reading also known as the Bottom-Up model or the Phonic approach to reading is rooted in Behaviourist or Structuralist Theory and offers a segmental or part-to-whole approach to word recognition.

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According to Adams (cited by Hempenstall 2009) this skills-based approach follows the sequential teaching of upper-case and lower-case letter names, two-letter and three-letter combinations, mono-syllabic words, multi-syllabic words, phrases, sentences, and finally, stories.

According to this reading model, language is organised into an hierarchy of levels (phonology, morphology, syntax and semantics) that builds towards comprehension or meaning (Dole et al. 1991). At the lowest level is the phoneme from which reading instruction begins. It incorporates the alphabetic principle which involves teaching children the phoneme-grapheme relationship and requires children to apply phonic rules and patterns through drill and practise in blending, segmenting and substitution exercises in order to arrive at the correct pronunciation.

This method is teacher-centred and requires direct instruction and the decoding strategies learnt enable independent decoding for reading. In this approach the reader derives meaning from the text not in an interactive way as with the Top-Down model, but rather passively. The reader therefore tries to decode written symbols or graphemes in accordance with aural pronunciations (Nunan 1991). This often proves to be problematic because the English alphabet system as was previously mentioned is one of deep orthography. Some sounds have more than one possible spelling as the sound /k/ in and .

Other sounds are created using the diphonemic and polyphonemic principles. In the Bottom-Up approach the reader must be able to establish the connection between letter features (graphemes), recognise spelling

patterns in such a way to link patterns to recognise words and then proceed to higher level tasks as text level processing. Gough (1972) claims that the extraction of print from the page occurs in a systematic manner. When children therefore apply phonological knowledge to sound out words this leads to automaticity which aids reading fluency.

Scientific research supports the Bottom-Up approach to reading instruction through its examination of eye movements during the reading process. As was mentioned in discussion for the Top Down approach, when engaging with a line of text the eye jumps and fixates at quarter second intervals in saccades. During the fixation, letters and words are processed thoroughly because the reader's span of vision is small, for example a reader who fixates on the " a" of " daylight" will be able to see all of the letters in this word so emphasis or concentration is on the visual graphemic cues in the vision area (Module 4 2011).

Thus, the eye movement data portray reading as more of a bottom-up process than a top-down process. (Treiman 2001). Proponents of skills-based or phonics instruction maintain that children are better able to decode words on their own only after learning how to decode letters, sounds, and letter groupings (Arbruster, Lehr, and Osborn, 2001). The Bottom-Up approach to reading is not without deficiencies. Like the Top-Down model, The Bottom Up model is too linear as processing is seen as proceeding in one direction. Rumelhart, 1977) The implication of this is that higher level information does not affect analysis at the lower level. It also disregards a reader's ability to determine a word from its context. The model is also said to be too

structured as it undermines a natural approach to understanding language  
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and so makes reading more difficult. According to Eskey (1973), the decoding model is inadequate because it underestimates the contribution of the reader who makes predictions and processes information.

It fails to recognize that students utilize their expectations about the text, based on their knowledge of language and how it works (Abisamra 2000). Phonic instruction therefore is most successful in kindergarten before children have learnt to read. Children who are at risk at this stage benefits most from explicit instruction in phonemic awareness and learn how to apply the alphabetic principle (Bear et al. , 2004, p. 13). The Phonic approach however cannot stand on its own. It should be integrated with other reading instruction to create a balanced literacy program.

In most classrooms, instruction includes an integration of both the Top-Down and Bottom-Up models where in the early reading stages the phonic approach is used and in later stages whole language activities are incorporated. Rumelhart (1977) and Stanovich (1980) propose an Interactive reading model which incorporates the decoding of print information with the reader's knowledge and experiences that are brought to the text. Since the linearity of the previous models were mentioned, this model proposes that in the reading process both the higher and lower levels are constantly interacting with each other so that meaning is established.

One advantage to this model is that if the reader experiences decoding difficulties using the phonic approach, the option remains of looking at the word in context in order to derive meaning. The Interactive model of reading assumes that skills at all levels are interactively available to process and



interpret the text (Grabe 1988). This model combines reading instructional strategies from both the Top-Down and the Bottom-Up reading models. Explicit skill based instruction will be given in phonics and these will be reinforced through reading material and a rich literate environment. Authentic texts may also be supplemented with phonics worksheets or decodable texts. The whole word approach will be used to teach sight words and opportunities provided to link vocabulary to reading and writing activities. It must be remembered that effective reading instruction should be guided by science based research. The current data tends to support the bottom-up model with its emphasis on explicit instruction and phoneme-grapheme awareness.

This therefore means that the informed classroom teacher must be able to implement a balanced literacy programme of instruction that creates phonemic awareness, caters to the explicit teaching of decoding skills and provides opportunities for practice of these skills in a rich literate environment. If this is done then the high illiteracy statistics that currently plague our nation's educational institutions will substantially decrease.

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