

Reconceptualization of the Three Main Models of Reading to Accommodate Cultural and Language Differences of the NESB Learner : Implications for ESL/EFL Reading Instruction.

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概要

英文読解の3つの主要なモデルには、'Bottom Up'、'Top Down'、'Interactive'があるが、これらはそれぞれ、読み手とテキストの間で意味を再構成する際に生じる、社会的、認知的及び感情的な相互行為に関して異なる見方を提供するものである。しかし、英語を話す環境にない学習者（NESB learners）に関し、例えば、学習者の間にある文化の相違・表記文字の相違・母語としている言語の相違と、英語のテキストを解釈する際に直面するそれらの相違に、学習者が順応していくよう指導するためには、これらのモデルを再概念化する必要が生じる。

本論の目的は、英文読解の3つの主要なモデルについて、それぞれの相違を概略的に述べ、NESB learnersがこういった相違に順応していくのに必要となるいくつかのタイプの指導法を提案することである。

Abstract

The purpose of this essay is to outline for the reader the cultural, graphophonic and language differences between the first language of NESB learners (Non English Speaking Background learners) and written English Text, and indicate how such differences force a reconceptualization of the 'Bottom Up', 'Top Down' and the 'Interactive' models of reading. Suggestions are also given as to the types of instruction required for NESB learners to accommodate these differences in relation to each of these three reading models.

Introduction

The three main models of reading, 'Bottom Up', 'Top Down' or 'Interactive', offer us different views as to the social, cognitive and affective transactions that occur between the reader and the text during the reconstruction of meaning process. However, in reference to NESB learners (Non English Speaking Background learners) these models require reconceptualization to provide instruction that will account for the cultural, graphophonic and language differences between these learners and those they will face in the interpretation of English text.

The purpose of this essay is to outline these differences in reference to each of the main models of reading, and suggest the types of instruction required for NESB learners to accommodate these differences in relation to each of these three reading models.

The 'Bottom Up' Model

The first of these approaches is a skills approach to reading referred to as the 'Bottom Up' model. This view of reading focuses on a hierarchy of skills employed sequentially by the reader in the attendance to, and decoding of linguistic forms at the level of print, letter, word, sentence and finally at

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the level of whole text. That is, reading is viewed in this model as primarily a decoding process where the reconstruction of the author's intended meaning occurs through recognition of letters and words, and through the reader's building of a semantic representation of the text's meaning from its smallest textual units at the bottom of the process to its largest at the top (Carrell P. 1987, p.149).

Difficulties NESB learner may have regarding visual processing of print

Alphabetic languages such as English involve a system of correspondences between letters and sounds (Beck, I. and Juel, C. 1992, p.3). Literate L2 learners whose native language is alphabetic, are advantaged in their understanding of the concept of a particular sound being represented by a particular symbol (Bell, J. and Burnaby, B. 1984, p.14-cited in McKay, S. L. 1993, p.6).

However, this writing system poses great difficulty for NESB learners from cultures that employ a logographic writing system used to represent units of meanings (morphemes), rather than the English symbols for representing single sounds (phonemes). Chinese students, for example, initially have great difficulty in the visual decoding of English as a result of the 'spread out' nature of alphabetic script in contrast to the compact Chinese logographs (Chang, J. 1987, p.227). Such learners also need to adjust to the visual processing required by the print conventions of written English. That is, differences which may exist regarding the direction in which English script is read (left to right, top to bottom), letter spacing, and punctuation (Robinson, G. 1993, p.227).

In addition, at the early stage in which these learners first tackle alphabetic print, they must cope with the ambiguous nature of critical features which make identification of letters of the alphabet difficult. Robinson (1993, pp.227-28) describes the following :

- i) The close similarity of many letters, which may appear to be essentially the same except for their orientation on the page {e.g. w-m, p-q, h-y} .
- ii) Letters which may have a different identity although they are visually similar {e.g. c-e} .
- iii) Capital and lower case forms, which are visually different although they share the same identity (e.g. p-Q).

Difficulties NESB learners may have regarding auditory processing of print

Letter-sound analysis involves auditory processing by the reader in relating these English phonemes (the smallest speech sounds) to their graphemic representations in the English alphabet. Convincing evidence (Beck and Carpenter, 1985 ; Lesgold, Resnick and Hammon, 1985 ; Perfetti, 1984) pointing to the rapid decoding ability of good readers in comparison to less skilled readers, suggests that learners should be taught the individual sounds of English and how to relate those sounds to letters or letter groupings so that many words are accessible to them through the decoding process. A knowledge of this 'alphabetic principle' (letter/sound correspondence) is thought to provide the reader with some independent skills in decoding unknown words, rather than reliance on a visual or logographic strategy in which each word is memorized individually.

However, auditory discrimination of letter sounds in words may be more difficult for NESB learners whose pronunciation habits may prevent them from effectively perceiving differences between certain sounds, causing them to misread and misinterpret words that contain these sounds (Robinson, G. 1993 p.228). Consonant clusters (e.g. strong) and short vowel sounds, common to English but rare in many languages, are thought to cause difficulties for NESB learners with no corresponding sounds in their native languages (Bell & Burnaby, 1986 ; Osbourne-Wilson, Sinatra & Baratta, 1989-cited in Robinson, G. 1993 p.228 ; May, T. 1987 p.25).

Furthermore, for these learners, establishing a link between sound and written symbol is further complicated by irregularities in English spelling patterns, in which different sounds are represented by a number of different letters or letter combinations, or in which several sounds are represented by one letter (e. g. the symbol 'e' has about 13 pronunciations in English. -May, T. 1987, p.26).

Debate currently exists regarding the extent to which explicit teaching that leads to greater

phonemic awareness should occur. The two approaches to phonics instruction, 'explicit phonics' and 'implicit phonics', reflect this debate. In explicit phonics, the sounds of individual letters are directly taught. In implicit phonics, the learner is expected to induce the sounds that correspond to letters from accumulated auditory and visual exposure to words containing those letters. For NESB learners, however, both approaches to phonic instruction pose problems : The degree of sophisticated phonemic awareness demanded of the NESB learner to segment a word into its distinctive sounds as required in implicit phonics requires consideration. Although implicit phonics requires less phonemic awareness because the sounds associated with letters are directly provided, blending instruction for consonant clusters (previously mentioned as an area of difficulty for NESB learners) would need to be provided (Beck, I. & Juel, C. 1992, p.113).

Others argue against providing any phonic instruction for NESB learners, citing a central flaw in the strict 'Bottom Up' model which assumes that the reader, once they know how to pronounce a word, will associate it with the spoken word and therefore understand it (Nuttall, C. 1982, p.2), and that the multitude of rules and exceptions can only confuse an NESB learner who has learnt to read in a language that employs scripts with great phonic regularity (Smith, F. 1978, cited in Nuttall, C. 1982, p.2). In addition, individual letter processing is considered too slow and difficult a task for human working memory, thought to be capable of holding only seven items at once. That is, in accordance with this model, the reader would often fail to remember the beginning of a word or sentence before finally decoding it.

Implications for EFL/ESL reading instruction based on the 'Bottom Up' model

The difficulties previously outlined suggest providing explicit instruction at early stages of reading that will enable NESB learners to increase their abilities to visually and aurally process alphabetic text. This is particularly important for NESB students from non-alphabetic backgrounds at early stages of reading instruction, who will require more explicit instruction in helping them gain an understanding of both the orthographic conventions and alphabetic principle of English print.

Furthermore, at the early stage of reading development, explicit pronunciation instruction would need to be provided to correct pronunciation habits of NESB learners which may cause them to aurally misinterpret and misread words, with particular focus given to the short vowels and consonant blends of English which do not correspond to their native languages.

Moreover, to address a major criticism of this approach (i.e. that decoding is ineffective unless the learner possesses knowledge of the word being decoded), vocabulary instruction needs to be given high priority in a reading program utilizing this method, and text selection will need to reflect the vocabulary knowledge of the learners so that these decoding skills can be put to use, and for these skills to become viewed by the learner as beneficial.

Another major criticism of this approach (i.e. that attending to the decoding of each individual phoneme is not compatible to the capacity of active memory) suggests that careful consideration be given to the type of phonic instruction provided. In early stages of English reading development, phonic instruction should be given to provide learners with an attack strategy for non-recognizable words, and to develop their understanding of sound-letter correspondence in the English alphabet. However, at later stages a sight word method of instruction should be utilized (i.e. words are introduced to learners as whole units without analysis of their subword parts). This method will allow the NESB learner to develop a sight word vocabulary, requiring less conscious attention to the code and allowing them to focus more on meaning than on the decoding process itself ; particularly important for long words and sentences which NESB learners will find difficult to process while relying on short term memory.

The 'Top Down' Model

The behaviorist theories of language development, which views reading as essentially a decoding process, have gradually declined in acceptance in favor of models of reading that emphasize the importance of comprehension and of the background knowledge that the learner brings to the task of reading texts (Hammond, J. -source unknown, p.439).

Unlike the 'Bottom Up' model, which emphasizes decoding of distinctive cues contained within each word, the 'Top Down' model places more importance on the reader's use of context to generate hypotheses which help determine the meaning of words and phrases.

An influential 'Top Down' model, 'The Psycholinguistic Model' proposed by Goodman, argues that reading consists of a "psycholinguistic guessing game", involving the active reconstruction of written messages by the reader drawing on information available from the 'semantic, syntactic and graphophonic' cueing systems in texts as well as their past experiences and knowledge of language to gain meaning (Goodman, K. 1967, 1973 cited in Hammond, J., source unknown, p.439).

Another 'Top Down' model is 'Schema Theory'. In this model, reading is seen as an active process in which the reader constructs meaning by connecting old knowledge with new information encountered in text. That is, given a particular text on a particular topic, a certain schema is generated which helps readers comprehend and predict text. New text data causes readers to reconsider their schema, either reconfirming its usefulness or prompting them to revise, review or discard their schema altogether in light of this new information (Pearson, P. et al. 1992, p.149).

To determine how both these models will need to be reconceptualized for NESB learners, it is useful to examine the potential problems they will encounter under each of the three cueing systems outlined in the 'Psycholinguistic Model' of reading. Each of the cueing systems will be presented in this discussion in the same hierarchy of importance for which they are believed to aid prediction in the 'Top Down' model of reading.

Difficulties the NESB learner may have in predicting via the semantic cueing system

Semantic cues, the reader's knowledge of word meanings in various contexts which assists the reader in predicting the correct word, is believed to provide the most useful information for the reader in the 'Top Down' model.

Within a text, much of the semantic information is contained in content words (nouns, adjectives and verbs -i.e. words which create our mental pictures), which are often specific to the field of a text (Gibbons, P. 1991, p.72). For the NESB learner, if there is a high proportion of new content words in a text, uncertainty may be too great for inferences to be made (Nuttall, C. 1982, p.74). Current thinking on vocabulary, drawing on schema theory, has unified into the notion that learning vocabulary involves learning the conceptual knowledge associated with the word (Carrell, P. 1987, p.151). Often content words will be very specific to the field of the text, therefore general topic knowledge is considered very important to their comprehension (Gibbons, P. 1991, p.72).

This notion has great implications regarding NESB learners from non-technical society backgrounds, who may lack the general topic knowledge that is needed to fully understand the meaning of a word. In addition, unlike technical words, which usually have an equivalent in the L1, conceptual problems are more likely to occur in sub-technical words like *average*, *effect*, *determine*. That is, words which are needed in most fields of study (Nuttall, C. 1982, p.76).

It is also likely that the NESB learner will have problems predicting meaning from text containing such lexical items as metaphor, idioms and phrasal verbs, words with several meanings, and irony. The problem with these lexical items is that they do not mean at first glance what they seem to mean, and that their meaning cannot be deduced by attending to the meaning of individual words (Nuttall, C. 1982, pp.76-78).

Another important aspect of the semantic cueing system is the ability to make predictions based on knowledge of the rhetorical structures of text. A sociolinguistic view of language encourages that consideration be given to the extent to which readers predict based on an awareness of different genres and of the relationship of different language features to different text types and contexts (Hood, S. & Joyce, H. 1995, p.53). Similarly, the notion of 'Intertextuality', while not strictly a 'Top Down' model, encourages us to view the degree to which comprehension is influenced by readers discorsal knowledge ; That is, schema of rhetorical structure which develops through familiarity with a range of related texts.

Such considerations are particularly relevant to NESB learners, who are not only unfamiliar with the formal conventions of the language, but also lack familiarity with the culture and shared knowledge of the language as well. (May, T. 1987, p.32). That is, without schema of the various cultural-specific conventions that govern how an argument can be developed in English, the NESB learner's ability to predict from rhetorical structure is greatly diminished.

Difficulties NESB learners may have in processing via the syntactic cueing system

The second most useful cues for prediction in reading within the 'Top Down' model are those provided by the reader's knowledge of syntax. However, elementary aspects of syntax can cause difficulties for NESB learners. Word order can vary among the L1 of NESB learners (e.g. Japanese employs an SOV pattern, unlike the common English pattern SVO), or may be identical for both statements and questions (e.g. Chinese). Furthermore, the ability of NESB learners to process even single embeddings are limited, and some Asian languages do not recognize the relative clause as part of the main sentence (May, T. 1987, p.28 ; Robinson, G. 1993, p.229 ; Chang, J. 1987, p.230). Also, fluency is liable to be disrupted and comprehension hindered for these learners when shifts occur in the SVO ordering, as in passives, or the placement of theme before rheme segments of a clause (Berman, R. 1984, pp.190-191).

In addition, the presence of any of the following features in text, outlined by Nuttall (1982, pp.85-8), are likely to hinder the NESB learner's ability to predict meaning using the syntactic cueing system :

- i) Complex noun groups (i.e. difficulty in recognizing the head noun from the modifiers that precede or follow it)
- ii) Nominalization (i. e. difficulty in recognizing the verb from which the noun is formed),
- iii) Co-ordination in complex sentences (i.e. difficulty in determining the extent of the parts joined by the conjunctive)
- iv) Subordinate noun clauses, particularly when it employs passive verbs (i.e. difficulty in identifying the subject or object of the sentence).
- v) Participle phrases (i.e. difficulty in determining which phrases are part of a noun group).
- vi) Prepositional phrases (i.e. difficulty in determining which prepositions belong to infinitive verbs and which are genuine prepositions).

Cohesive devices (as outlined in Halliday and Hasan, 1976) may also hinder comprehension for NESB learners in their attempts to gain meaning from sentences that employ reference, substitution, deletion or ellipses ; requiring them to recognize the reference word (or omission) and fill the gaps by referring to other parts of the text (Nuttall, C. 1982 p.89). Multiple anaphora (e.g. the repeated use of the pronoun 'it') is particularly problematic, especially when used with different references in the same passage (May, T. 1987 p.31). Such rhetorical devices may render a text opaque to NESB learners whose mother tongue not only tolerates but also approves of lexical and grammatical repetition as a preferred rhetorical device, as does Hebrew and Arabic (Berman, R. 1984 p.142).

Prediction from syntax may also be hindered by conventions of English print, where meaningful linguistic units such as words and phrases are often separated on different lines, and grouped into paragraphs and page clusters (Crystal, D. 1981-cited in Robinson, G. 1993, p.230).

Difficulties the NESB learner may have in predicting via the graphophonic cueing system

Least emphasized in this model, graphophonic knowledge is thought to provide the reader with cues that, combined with semantic and/or syntactic information, enables greater accuracy in prediction of meaning (Gibbons, P. 1991, p.73). In this regard, the previously discussed difficulties that NESB learners will have in coming to terms with the visual and auditory processing of print are also relevant to this particular model of reading.

Implications for EFL/ESL reading instruction based on the 'Top Down' model

Difficulties stemming from the NESB learners' ability to predict from either of the three cueing systems due to the presence of certain language, rhetorical and lexical features suggest the necessity for careful selection of text in a reading program employing the 'Top Down' model. At early stages of reading development, text will need to be provided that is semantically accessible to the NESB learner by limiting unknown and conceptually abstract content words, and by providing lexis which is literal rather than idiomatic or metaphorical.

In addition text selection at this early stage of instruction should be guided by knowledge of the rhetorical features and discursal styles of the various learners' L1, and text initially provided which contains culturally familiar structures and discourse, so that NESB learners' ability to semantically predict meaning is not diminished.

The text must also be syntactically accessible to the learner by avoiding texts that contain a high incidence of such features as shifts in SVO pattern ordering, embeddings, cohesive devices with multiple anaphora, complex noun groups, nominalization, co-ordination in complex sentences, subordinate noun clauses, participle phrases, or prepositional phrases.

Instruction must also be provided to learners for developing schemata that they will use to predict from each of the cueing systems. To allow learners greater prediction ability through semantic cues, general knowledge schema must be developed within a variety of fields, so that word knowledge and their concepts can develop in relation to these different fields. In addition, schema of the rhetorical structures and discourse styles in English needs to be developed. For this, a genre approach involving the explicit examination of various genre and the language features they entail might prove effective.

To allow greater prediction via syntactic cues, instruction must be provided to increase grammatical knowledge which will allow the learners to better comprehend such difficult features as complex sentence structures, cohesion, variations in SVO ordering, and complex noun groups.

To allow greater prediction via the graphophonic cueing system, instruction will need to be provided to allow NESB students to develop the concept of sound-letter correspondence, with the same implications for its instruction, previously discussed within the 'Bottom Up' model, holding true for this model also.

Following instruction aimed at developing such schemata, text should be provided that will enable assessment of these understandings by presenting NESB learners with content that is within their zone of proximal development (Vygotsky, L. S. 1978-cited in Pearson P. et al. 1992, p.181).

The 'interactive' model of reading

Rumelhart (1977) and Stanovich (1980) argue that an effective model of reading requires a more explicit account of the two-way interaction between recognition of print in text and the reader's own prior knowledge, proposing 'Interactive' models of reading that consider the simultaneous contribution of both these types of processing for gaining a degree of comprehension from written text (Hammond, J. source unknown, p.439 ; Gebhard, J. 1996, p.198).

In Rumelhart's 'Interactive' model, readers are seen to simultaneously process text via their orthographic, syntactic and semantic knowledge, modifying comprehension on the basis of interaction

between this knowledge (schemata) and the input received from 'bottom up' and 'top down' processing in short term memory (Carrell, P, 1987 p.146-147).

Stanovich's 'Interactive-Compensatory' model (1980), proposes that readers may compensate for deficiencies in either phonological, lexical, syntactic, semantic or discoursal knowledge by relying more heavily on decoding or prediction strategies.

Difficulties the NESB learner may have in processing text via 'top down' and 'bottom up' processing modes

Research into second language reading has shown that NESB readers are not efficient interactive processors, tending to rely on either a totally 'bottom up' or 'top down' method of processing to facilitate comprehension (Carrell, 1983 ; Carrell and Wallace, 1983 ; Steffensen, Joag-Dev, and Anderson, 1979 ; Johnson, 1981 ; Carrell, 1981-cited in Carrell, P.1987, p.147). This over-reliance on either mode of processing has been found to cause reading difficulties for these learners, who either engage almost exclusively in text-based processing to the detriment of comprehension, or almost exclusively in conceptually-based comprehension, where they are subject to schema failures or schema interference (Carrell, P. 1987, p.147).

Why NESB learners are more likely to rely on one mode of processing

Fitzgerald's (1995) review of major American research into ESL reading concluded there was no particular reliance on any of the psycholinguistic cueing systems for ESL learners as a group. However, studies generally showed that these learners employed metacognitive strategies (i.e. the systematic ways in which readers approach texts, monitor their comprehension, and try to repair miscomprehension) less slowly, efficiently and with less frequency than L1 readers. In addition, a major contrast between these two groups was the speed with which they processed information in short-term memory.

These findings indicate that NESB learners, because they are more likely to be slower at decoding, predicting, and monitoring comprehension, will be less able to integrate these sources of information simultaneously as they interact within the short-term memory; providing a likely reason as to why NESB learners tend to rely more heavily on one particular mode of processing.

Implications for EFL/ESL reading instruction based on the 'Integrative' model

The problems NESB learners are likely to have regarding the slowness with which they simultaneously process information from text-based and conceptually-based information, suggests that instruction is required in this model that will lead to more rapid decoding and prediction so that integration of information from both modes can take place in working memory. In facilitating faster decoding ability, a sight word method of instruction may be preferable for developing a sight word vocabulary that will enable greater working memory to be applied to information from syntactic and semantic constructs, rather than to the decoding process itself. In facilitating faster prediction ability from context, instruction aimed at increasing the learners schema to more accurately predict from semantic and syntactic constructs, as previously mentioned for the 'Top Down' model, is required (the caveat for careful text selection discussed in the 'Top Down' model applying to instruction for this model also).

To address the tendency with which NESB learners rely on one particular mode of processing, instruction should also be provided that aims to make the NESB learner metacognitively aware of the strategies they use, and alternative strategies provided through explicit modeling by the teacher to develop specific understandings about when, where and how to use strategies to determine and monitor meaning from text. Such instruction will also enable learners to view reading as a more 'holistic' process, involving an adaptable application of both decoding and prediction skills, according to the text, the reading task and the reading purpose. In addition, it will make clear to these learners the importance of monitoring their own comprehension, and the measures they can take to repair miscomprehension.

Conclusion

This discussion has attempted to highlight those areas of difficulty that NESB learners will have in developing the necessary decoding and conceptual skills that are required for each of the three main reading models. The cultural, graphophonic and language differences between English and the L1 of NESB learners have been shown to be a major source of these difficulties. These differences implicate the need for reconceptualization of these models in regard to these differences, so that approaches to the types of instruction specified by each model can be adjusted accordingly.

A common thread underlying such instructional adjustment is the need for providing reading material which is meaningful to the NESB learner in terms of cultural, linguistic and textual knowledge, so that the cultural, graphophonic and language differences that hamper comprehension for these students are minimized. Another common thread regarding instruction for NESB learners among these models is the importance in building vocabulary knowledge and quick recognition of their forms in print, so that greater attention in working memory can be given to the other semantic and syntactic constructs within text to allow greater reconstruction of meaning.

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