

A Review of: Carrell, Patricia L. *Content and Formal Schemata in ESL Reading*. 1987. *TESOL Quarterly*. 21:3 September, 461-481.

**By Yunkyong Kang
Department of Linguistics, San Diego State University**

Schema theory is a framework for the mental representation of knowledge. Schema, also called the “building block of cognition” (Rumelhart 1980), is a significant notion in understanding the knowledge structure of our brains. What we know exists as schemata hierarchies and this prior knowledge is activated when we encounter new information. This is the essential point to understanding how schema theory works and this fact has been investigated in the cognitive science field for decades. Rumelhart defines schema as follows:

A schema theory is basically a theory about... how knowledge is presented and about how that representation facilitates the use of the knowledge in particular ways. According to schema theories, all knowledge is packaged into units... [called] schemata. Embedded in these packets of knowledge is... information about how this knowledge is to be used.

A schema, then is a data structure for representing the generic concepts stored in memory. There are schemata representing our knowledge about all concepts: those underlying objects, situation, events, sequences of events, actions and sequences of actions. A schema contains, as part of its specification, the network of interrelations that is believed to normally hold among the constituents of the concept in question. A schema theory embodies a prototype theory of meaning. That is, inasmuch as a schema underlying a concept stored in memory corresponds to the meaning of that concept, meanings are encoded in terms of the typical or normal situations or events that instantiate that concept.

Schema theory has been utilized in research fields such as ESL education, especially in reading and writing instruction. According to schema theory, ESL students from different countries have different schemata and most have difficulties in processing knowledge like English native speakers. As this theory states, proficient readers are able to activate prior knowledge stored in memory to integrate new linguistic data in the comprehension process. Therefore, under schema theory, ESL reading and writing classes should utilize pre-reading and pre-writing activities to activate prior knowledge and teachers should provide minimal

background knowledge when students do not have sufficient prior knowledge, especially due to cultural differences.

Despite all the recent developments in ESL research, the traditional grammar-translation approach is still practiced in most English classes throughout Asian countries such as Korea and Japan. In these countries, memorization and sentence level analysis using bottom-up skills is dominant in reading classes and students suffer from the inevitable lack of ability to use top-down skills. Therefore, reading practice based on schema theory is highly recommended for such students not only because it focuses on training for culture-specific texts but also since it trains students to use a top-down process in reading. This directly contrasts with the bottom-up process that these students are familiar with from traditional grammar-translation exercises.

Summary: Content and Formal Schemata in ESL Reading

Carrell is a well-known researcher on schema theory who has written various papers on it as well as on ESL/EFL teaching. According to Carrell, there are two types of schema: content and formal. Much research has studied the effects of each type separate from the other. In testing for content schemata effects, the formal rhetorical structure of a text constant is kept the same while content is manipulated for each comparable group of subjects to process each different content. Similarly, formal schemata effects can also be tested by keeping the content of a text constant while varying the rhetorical organization, and having comparable groups of subjects process each different rhetorical pattern. Research on content schemata consists of Steffensen, Joag-dev, and Anderson (1979), and Johnson (1981)'s study. Their findings suggest that text which contains culturally-familiar content schema is easier to process. Conversely, research that studied the effects of formal schemata (e.g. Carrell's own previous studies, 1984a, 1984b) found that familiar formal schemata helped subjects better recall protocol information.

However, Carrell acknowledges that no research has successfully studied the combined effects of both content and formal schemata in a single controlled study. Kintsch and Greene (1978), Carrell (1981), and Berkowitz and Taylor (1981) attempted to combine them in a single study but failed in controlling variables. Therefore, in the article, the author tries to examine the combined interaction of content and formal schemata in a single study, distinct from many studies which studied them separately. The purpose of this study is to show the simultaneous effects of both formal and content schemata on ESL reading comprehension which will make possible the rendering of specific hypotheses about reading familiar content in an unfamiliar rhetorical form, or unfamiliar content in a familiar rhetorical form.

To examine this hypothesis, Carrell had two groups of ESL students (28 Muslims and 24 Catholics) read either culturally familiar content or culturally unfamiliar content. Within each group, half of the group read a familiar well-organized rhetorical format and the other half an unfamiliar, altered rhetorical format. Familiar content and familiar form in this

study were defined as “texts which reflected the content domain of the reader’s cultural-religious group membership and a well-organized temporal sequence ordering, both presumed to be related to the reader’s content and formal schemata, respectively.” Unfamiliar content and unfamiliar form in this study were defined as “texts which reflected a content domain opposite to the reader’s cultural-religious group membership and an interleaved/scrambled organization, both presumed to be unrelated to the reader’s content and formal schemata, respectively.” After the subjects read the text at their own pace, they were tested on recall by writing down everything they could remember from the passage. Also, a set of 14 multiple-choice comprehension inference questions for each text was given to the subjects.

The outcome supported the results of previous studies that reading is easiest when both content and form are familiar and that reading is the most difficult when both are unfamiliar. When either form or content was unfamiliar, it was revealed that unfamiliar content schemata affected reading comprehension to a greater extent than formal schemata. In other words, reading familiar content even in an unfamiliar rhetorical form is relatively easier than reading unfamiliar content in a familiar rhetorical form. However, rhetorical form played a significant role in the comprehension of the top-level episodic arrangements of a text and in the understanding of event sequences and temporal relations among events.

Based on this result, Carrell claims that in the ESL reading classroom, content is of primary importance. Therefore, ESL reading teachers should be facilitators of the acquisition of appropriate cultural content knowledge to exemplify the schemata-embodying background knowledge which helps students comprehend, learn, and remember well. Carrell also suggests that ESL reading teachers should be aware of the rhetorical organization of texts in addition to teaching students how to identify and utilize top-level rhetorical organization of text for better comprehension and recall.

The greatest strength of the analysis was the careful control of variables. For example, Carrell paid careful attention to detail in organizing texts, forming culturally homogeneous groups (based on religion), and analyzing multiple-choice questions both quantitatively and qualitatively with the fewest possible variables. One commendable feature of this article is that this study was not only pioneering – being the first of its kind – but it also called for further research on this issue. ESL teachers and researchers will both benefit greatly from Carrell’s thorough treatment of this topic.

Works cited:

Berkowitz, S., & Taylor, B. (1981). The effects of text type and familiarity on the nature of information recalled by readers. In M.L. Kamil (Ed.), *Directions in reading: Research and instruction* (pp. 157-161). Washington, DC: National Reading Conference.

Carrell, P.L. (1981) Culture-specific schemata in L2 comprehension. In R. Orem & J. Haskell (Eds.), *Selected papers from the Ninth Illinois TESOL/BE Annual Convention, First Midwest TESOL Conference* (pp. 123-132). Chicago: Illinois TESOL/BE.

Carrell, P.L. (1984a). The effects of rhetorical organization on ESL readers. *TESOL Quarterly*, 18, 441-469.

Carrell, P.L. (1984b). Evidence of a formal schema in second language comprehension. *Language Learning*, 34, 87-112.

Johnson, P. (1981). Effects on reading comprehension of language complexity and cultural background of a text. *TESOL Quarterly*, 15, 169-181.

Kintsch, W., & Greene, E. (1978). The role of culture specific schemata in the comprehension and recall of stories. *Discourse Processes*, 1, 1-13.

Rumelhart, D.E. (1980). Schemata: the building blocks of cognition. In R.J. Spiro, B.C. Bruce, & W.F. Brewer (eds.) *Theoretical issues in reading comprehension*. 33-58. Hillsdale, NJ: Lawrence Erlbaum Associates.

Steffensen, M.S., Joag-dev, C., & Anderson, R.C. (1979). A cross-cultural perspective on reading comprehension. *Reading Research Quarterly*, 15, 10-29.