

Teaching Reading Based on Schema Theory

by

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I. Introduction

Today in Japan, teaching English has the main idea that gives its priority to English as a means of communication. Although we have many ways of communication, people in Japan regard a way of communication as an exchanges of spoken language. For one reason, internationalization has been so promoted that we are required of the English speaking ability. For the other, we put so much emphasis on the skill of reading that we neglected our studies about speaking English.

However, with the rapid development of information technology today, we can get much information from web sites as well as printed matters. The ability to understand written English is required in order to make use of those media. In other words, we need the ability to read English. *Explanation of New Course of Study* (Ministry of Education, Science and Culture, 1999) also shows that the students need skills to read web sites. So I do not have the slightest doubt that reading English will keep on holding an important position in teaching English.

Moreover it adopted a new language activity in Reading: "To read English while inferring the meaning of the unknown word and making use of background knowledge." The present *Course of Study* (Ministry of Education, Science and Culture, 1989) does not mention it.

Therefore, I will examine *reading* as I did last time. (The Bulletin of Tokyo Kasei University No.40)

This time I will focus on the background knowledge, called schema or schemata, and think about the effect on teaching English.

II. Schema Theory

We cannot read a group of letters without any information because the alphabet doesn't have the meaning of their own. Therefore we store the knowledge of regulation to give them the meaning. Those symbols have the notion of writers, and we decode the symbols and receive those notions. We transact the information through sensory organs employing the schema.

It is necessary for readers to use different strategies properly according to the purpose of reading. Furthermore, it is important for readers to have schema, background knowledge, and use it skillfully in order to comprehend the content of text correctly and efficiently. Schema is very important because readers' expectations are based on their prior knowledge. Schema that aids in text comprehension has recently been studied under the rubric of schema theory. (Silberstein, 1994)

Originally, the term "schema" was used by the philosopher Kant. According to *OED*, "schema" in Kant's writing is "Any one of certain forms or rules of the 'productive imagination' through which the understanding is able to apply its 'categories' to manifold of sense-perception in the process of realizing knowledge or experience." That is, he showed that human experiences are gathered in mind as memories and constructed the frame of schema.

The first man who used the word in its present sense was a psychologist, Bartlett, (1932:201). He defined "schema" as "an active organization of past reactions, or past experience." According to Bartlett, schema theory suggests that the knowledge we carry around in our head is organized into inter-related patterns. These are constructed from our previous

experience of the experiential world and guide us as we make sense of new experiences.

Then Rumelhart (1977) used this term to indicate the crucial role of previously acquired background knowledge in language comprehension. He calls previously acquired background knowledge structures *schemata*.

Schema theory says that comprehending a text is an interactive process between the reader's background knowledge and the information provided in the text. According to this theory, two information processings have the following roles. We should do the simultaneous interaction of two processings in reading comprehension.

We use top-down (or knowledge-based) processing when readers use background knowledge to make predictions about the information they will find in the text. This processing helps readers to resolve ambiguities or to select between alternative possible interpretations of the incoming data. This processing is also called conceptually-driven information processing. Activities that assist students in getting or accessing background knowledge make top-down processing easier.

We employ bottom-up (or text-based) processing when linguistic input from the text is mapped against the reader's previous knowledge. This processing ensures that readers will be sensitive to information that is novel or that does not fit their inferences about the content or structure of the text. This is also termed data-driven information processing.

In background knowledge there are two kinds. One is a formal schema, involving knowledge of rhetorical structures and conventions. The other is a content schema, involving knowledge of the world beyond texts (Silberstein, 1994 : 8).

Carrell and Eisterhold (1983) asserts that ESL reading comprehension may be marred not only because the ESL readers lack the appropriate schema, but because they fail to activate the appropriate schema. They begin reading a text with words and combine them into sentences and paragraphs. They do not use the schema efficiently. They rely on bottom-up processing. Because of this, they cannot do top-down processing smoothly and there will be no interaction between the text and the reader.

Carrell (1984, 1985, and 1987) examined the relationship between the rhetorical organization of texts and reading comprehension. She reported that a good reader uses rhetorical

organization efficiently; a teacher improves the students' reading proficiency in English by giving them the means to recognize the rhetorical organization.

Carrell (1987 : 476-7) states as follows:

The overall finding of this study seems to be that when both content and rhetorical form are factors in ESL reading comprehension, content is generally more important than form.... Teachers of ESL reading need to be aware of the important role in ESL reading of background knowledge of text content, especially cultural content... ESL reading teachers also need to be cognizant of the rhetorical organization of texts and should teach students to recognize and use the top-level rhetorical organization of text to facilitate comprehension and recall.

In my opinion, once the readers learn the formal schema like the patterns of the paragraph organization, the readers can apply them to various kinds of texts. So, first the readers learn the formal schema in advance, and then they read the texts, making up the content schema.

Grabe (1991 : 390) concluded that schema theory has provided a strong rationale for both prereading activities and comprehension strategy training. Other research on schema theory has argued that a high degree of background knowledge can overcome linguistic deficiencies. The major implication to be drawn from this research is that students need to activate prior knowledge of a topic before they begin to read. If students do not have sufficient prior knowledge, they should be given at least minimal background knowledge from which to interpret the text. Writers do not always write all their ideas. They are especially likely to omit ideas which readers would already have. So readers cannot grasp the ideas unless they have the knowledge which the writer expects them to have. This is why readers need the schema.

In order to extract the content schema from the reader, it is efficient to associate the content with information, such as the title or illustrations, but not the text. Audio-visual aid such as videotapes and cassettes are useful.

In order to extract the formal schema from the reader, it is important to teach the patterns of the text and the knowledge of paragraph organization. In this case, deliberate and continuous training is needed. We do not need learning with short

steps like one page a day or three paragraphs a day.

The results of the preceding research suggest that (1) schema improves the readers' abilities in prediction and inference, and (2) if the readers read the text using formal and content schema, they can remember the meaning of the text as a whole for a long time.

III. The Nature of Schema

As mentioned above, schema is the term of psychology, especially cognitive psychology, and is applied to linguistic research. In this section, I will take up the nature of schema based on the writing of Nishida (2000), and think the application of teaching reading English.

1) When we read English using schema, we do not remember unknown proper nouns or unfamiliar details. We also tend to pay attention to the information we already have, so we cannot find which information is important or not where we do not have the schema. To the contrary, where we have the appropriate schema, we can get important information.

2) When we read English, we do not receive the whole story automatically. We understand the story to join the parts, that is, we reconstruct the story to match our own schema.

3) When we read, we combine between the fact and information, which resemble each other, together and make a new schema. In this case, we do not involve the detail of the information.

4) When we read English, we do not always get complete information from the text. In this case, we can compensate the information by their own schema. Moreover, if the information we get has a wrong part, we can correct it using schema.

5) The new information is assimilated with the existent schema. Therefore schema change their own style by assimilation. Assimilation is the way of digestion of new information combining between new information and existent schema.

6) When we have the appropriate schema, we can predict the sequel of story, or future action. By this nature, we can predict the result of the action, and escape the same failure based on our past experiences.

7) We classify the events and experiences into many categories, because we cannot remember all the particulars of each events. It is difficult to remember all things because we don't

have enough memory capacity to do, and take too much time to recollect. We can use schema efficiently when it is classified in terms of recalling the schema and our memory capacity.

IV. Discussion

Now I will examine the nature of schema and the application to teaching reading English.

When we understand the text making use of schema, we choose the important information which corresponds to their own schema, and understand the text without the information which does not match their own schema. If the readers have the appropriate and well-organized schema for the text, they can distinguish between the important and not so important information.

In the case of the readers who do not have the right schema to the contrary, some trouble will arise. They try to understand the text without the information which does not match their schema, even if that information is very important.

When we read, we combine between the fact and information, which resemble each other, together and make a new schema. In this case, we do not involve the detail of the information. The readers make prototypes of person or things. In this case, the readers have to pay attention to their schema. Once the reader uses some schema, they tend not to use the other schema and to catch the meaning under conditions of prototyping things and persons, so they do not pick out the detailed information.

When the readers remember the new information, we connect the existent schema and assimilate with them and classify them. If the readers do not remember the new information into the right group, it is difficult to pick out the right schema. So the teachers should let the students to classify their own schema and to refresh their schema. If the readers have the well-classified schema, they can understand the text easily.

We should classify the schema because schema connect with each other. When we read the text, we use the schema as well as linguistic knowledge. The schema bring out the other schema, and the other draw out another one. So if we have the well-classified schema, it can guide us to the right schema. If not, the schema guide us to the wrong way. Schema make a network. If one of them changes, it guides us to the different

way, and we act the different actions.

In the final analysis, we should present the key to recall the right schema for the readers at the right situations, or they are at a loss. We should pay attention to the students not to rely on the schema too much, because it sometimes guide the students to the wrong way where they don't have the well-classified schema.

We should let the student's schema activate properly, so we should teach the students to establish the schema and classify it.

One of teaching methods to make good network of information is semantic mapping. The readers pick out the unknown or unfamiliar words and related words. Then they connect the words in lines or classify them. Finally, they relate them to their own experiences and schema. I think that it is good practice to establish their shema.

V. Conclusion

When we read English, we compensate lack of understanding with a great number of schema unconsciously. Without using shema, we cannot possibly understand even the easiest text. We can understand the text using schema as well as linguistic knowledge. So it is important for the readers to relate schema with their own experience, and vise versa. Especially, immediate experiences are good to recall and activate the schema.

It is not sufficient to have the schema alone. We should classify the schema. It is necessary to activate and use them properly. We should pay attention to using the schema. If we use the schema in the wrong way, it prevents us from understanding the text properly. We should grasp the nature and restriction of schema, and make good use of them. We should pay attention, however, not to use schema too much. We should also employ the bottom-up processing, which is analysis on the linguistic knowledge, such as vocabulary, grammar, syntax and so on.

Not too much to say, I think, that human beings realize and predict the world referring to their own schema. When we understand the language like English, we use the schema like linguistic and cultural background knowledge. Part of schema being made of the experiences, it is natural that they have our own different schema. Therefore we should present the

various kinds of information to the students to recall their schema.

We should not only activate the schema but also store it. We need various kinds of experiences. We should encourage the students to make good experiences in order to establish their schema.

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概 要

「スキーマ論に基づいたリーディング指導」

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情報化がすすむ現在、インターネットなどの情報通信ネットワーク上の情報を読む能力、つまり、リーディング能力が重要となっており、新学習指導要領でも、その点を言及している。

ここでは、新学習指導要領でも取り上げている背景的知識であるスキーマをとりあげ、英語教育への応用を考察した。

英語を読む際、語彙や文法などの言語使用の知識だけでなく、経験や体験に基づいた知識がないと、書き手の意図した意味を汲み取ることは難しい。スキーマをきちんと分類し、活性化することで、読むことが容易になることがわかった。またスキーマに頼りすぎると、間違った推測をおこしやすいこともわかった。教師は、スキーマの性質や制限を把握して、指導にいかしていく必要がある。