

USING SCHEMATA IN READING COMPREHENSION

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Abstract

The acquisition of new knowledge is in great measure dependent on reading comprehension. It is a function of the nature of the text itself and of the extent to which the reader possesses, uses, and integrates pertinent background knowledge, or schemata. There three types of schemata, namely: linguistic, formal, and content schemata. Linguistic schemata refer to readers' existing language proficiency in vocabulary, grammar and sentence structure. Formal schemata, on the other hand, refer to the organizational forms and rhetorical structures of written texts. Finally, content schemata refer to the knowledge relative to the content domain of reading materials. Schema theory is a general theory of knowledge. Understanding the concept of schemata will help those interested in reading comprehension to understand how readers can acquire new knowledge and also how we might help readers in this endeavor.

Key Words: *schemata, reading comprehension*

INTRODUCTION

Every day in school and at home students have many different texts to read such as textbook passages, worksheet questions, short stories, and internet articles. It is through reading that they acquire much of their knowledge and understanding of the different lectures.

According to research by the British Council, English has official or special status in at least seventy-five countries with a total population of over two billion. English is spoken as a native language by around 375 million and as a second language by around 375 million speakers in the world. Speakers of English as a second language will soon outnumber those who speak it as a first language. Around 750 million people are believed to speak English as a foreign language. One

out of four of the world's population speak English to some level of competence.

The British Council also says that English is the main language of books, newspapers, airports and air-traffic control, international business and academic conferences, science, technology, diplomacy, sport, international competitions, pop music and advertising. Over two-thirds of the world's scientists read in English. Three quarters of the world's mail is written in English. Eighty per cent of the world's electronically stored information is in English. Of the estimated forty million users of the Internet, some eighty per cent communicate in English, but this is expected to decrease to forty per cent as speakers of other languages get online.

In learning a language, such as English, reading skill is one of the most important language skills. It appears that reading is an essential skill for people. Reading is intended to get people especially students always keep up with the development of sciences and technologies.

Reading is the ability to understand written text, which is usually referred to as reading comprehension. Comprehension of the information in text, or of the author's meaning, is the ultimate reason for reading.

According to Webster's Dictionary, comprehension is "the capacity for understanding fully; the act or action of grasping with the intellect." Webster also tells us that reading is "to receive or take in the sense of (as letters or symbols) by scanning; to understand the meaning of written or printed matter; to learn from what one has seen or found in writing or printing.

Comprehension is a complex cognitive process that is regulated by a person's mental, emotional, perceptual, and social experiences. When reading, readers apply an array of comprehension strategies to monitor and sustain their reading.

Reading in the students' native language is definitely different from that in foreign languages. In their native language,

it is believed that students easily comprehend the text they read, as they are familiar with the vocabulary and grammatical rules used. Reading in foreign languages such as English, on the other hand, requires adequate knowledge of the language, which has a different vocabulary and grammatical system.

Reading, according to Wikipedia, is a complex interaction between the text and the reader which is shaped by the reader's prior knowledge, experiences, attitude and language community. Readers may use morpheme, semantics, syntax and context clues to identify the meaning of unknown words. The readers integrate the words they have read into their existing framework of knowledge or schemata. The concept of schemata (plural: schemata) itself has been used by linguists, cognitive psychologist, and psycholinguists to understand the interaction of key factors affecting the comprehension process.

According to Brown (2001) the hallmark of schemata theory, with regards to reading, is that a text does not by itself carry meaning. The reader brings information, knowledge, emotion, and culture – that is schemata, to the printed word. Clark and Silberstein (1977, quoted in Brown 2001) indicate that research has shown that reading is only incidentally visual. More information is contributed by

the reader than by the print on the page. This would all seem to point to the fact that our understanding of a text depends on how much related schemata, as readers, possess while reading. Consequently, readers', native and non-natives, failure or confusion to make sense of a text is caused by their lack of appropriate schemata that can easily fit with the content of the text. This lack of appropriate schemata can be either formal or content-based. Brown (2001) defines these two as follows: content schemata includes what we know about people, the world, culture and universe, while formal schemata consists of our knowledge about discourse structure.

DISCUSSION

Schemata Theory

In his article, Learning Theory-Schemata Theory, Brewer writes that schemata were initially introduced into psychology and education through the work of the British psychologist Sir Frederic Bartlett (1886–1969). In carrying out a series of studies on the recall of Native American folktales, Bartlett noticed that many of the recalls were not accurate, but involved the replacement of unfamiliar information with something more familiar. They also included many inferences that went beyond the information given in the

Furthermore, Steffenson & Joag-Dev (1984, quoted in David and Norazit 2000) schemata theory proposes that readers possess different conceptual frameworks, called schemata, which they bring to the reading of a text and which they use to make sense of what they read. Such schemata are used by readers in interactive bottom-up and top-down processing. Schemata provide a framework for readers to check their understanding of the text, fill in information gaps within the text, and clarify ambiguities. Efficient readers use prior knowledge of content and textual features stored in schemata to make meaning out of the text.

original text. In order to account for these findings, Bartlett proposed that people have *schemata*, or unconscious mental structures, that represent an individual's generic knowledge about the world. It is through schemata that old knowledge influences new information.

Rumelhart (1980, cited in Jun, Xioa-hui and Wei-hua 2007) puts forward the concept of schemata theory basically as a theory of how knowledge is mentally represented in the mind and used. He wrote that “all knowledge is packaged into units.

These units are the schemata". Three years later, Widdowson defined schemata as "cognitive constructs which allow for the organization of information in a long-term memory".

Types of Schemata

Generally, there are three major types of schemata, namely, linguistic schemata, formal schemata and content schemata, which are closely related to reading comprehension.

Linguistic Schemata

Linguistic schemata refer to readers' existing language proficiency in vocabulary, grammar and idioms. They are the foundation of other schemata. As is known, linguistic knowledge plays an essential part in text comprehension. Without linguistic schemata, it is impossible for the reader to decode and comprehend a text.

Therefore, the more linguistic schemata a reader has in his mind, the faster the reader acquires information and the better understanding the reader may get.

Formal schemata

Formal schemata are the organizational forms and rhetorical structures of written texts. They include knowledge of different text types and genres, and also include the knowledge

From the above definitions, we may conclude that schemata is the prior knowledge gained through experiences stored in one's mind. It is an abstract structure of knowledge.

that different types of texts use text organization, language structures, vocabulary, grammar and level of formality differently. Formal schemata are described as abstract, encoded, internalized, coherent patterns of meta-linguistic, discourse and textual organization that guide expectation in our attempts to understand a meaning piece of language. Readers use their schematic representations of the text such as fictions, poems, essays, newspaper articles, academic articles in magazines and journals to help comprehend the information in the text. Studies show that the knowledge of what type and genre the text is can facilitate reading comprehension for readers because the type of the text will offer detailed evidence of the content of the text. Nonetheless, compared with the linguistic and content schemata, the formal schemata offer less power in the reading process (Carrell, 1984).

Content schemata

Content schemata refer to the background knowledge of the content area of a text, or the topic a text talks about. They include topic familiarity, cultural knowledge and previous experience with a field. Content schemata deal with the knowledge relative to the content domain of the text, which is the key to the understanding of texts.

Since one language is not only the simple combination of vocabulary, sentence structure and grammar but also the bearer of different levels of the language's culture. To some extent, content schemata can make up for the lack of language schemata, and thus help

Reading Comprehension

Reading can be seen as an "interactive" process between a reader and a text which leads to automaticity or (reading fluency). In this process, the reader interacts dynamically with the text as he/she tries to elicit the meaning and where various kinds of knowledge are being used: linguistic or systemic knowledge (through bottom-up processing) as well as schematic knowledge (through top-down processing).

Comprehension is a complex process. There exist as many interpretations of comprehension as there

learners understand texts by predicting, choosing information and removing ambiguities.

Many studies show that readers' content schemata influence their reading comprehension more greatly than formal schemata. On the whole, the familiarity of the topic has a direct influence on readers' comprehension. The more the reader knows about the topic, the more easily and quickly he gets the information of the text. Therefore, if one wants to be an efficient reader, he needs to try to know the knowledge about more fields and topics. Learners with more prior knowledge can better comprehend and remember more the text.

are of reading. According to Durkin (1993, cited in DEECD 2007), this may be so because comprehension is often viewed as 'the essence of reading'. He defines reading comprehension as: ...intentional thinking during which meaning is constructed through interactions between text and reader. According to this view, meaning resides in the intentional, problem-solving, thinking processes of the reader which occur during an interchange with a text. The content of meaning is influenced by the text and by the reader's

prior knowledge and experience that are brought to bear on it.

Harris and Hodges (1995, cited in DEECD 2007) define reading comprehension as the construction of the meaning of a written text through a reciprocal interchange of ideas between the reader and the message in a particular text.

Reading comprehension is the process of constructing meaning from text. The goal of all reading instruction is ultimately targeted at helping a reader comprehend text. Reading comprehension involves at least two people: the reader and the writer. The process of comprehending involves decoding the writer's words and then using background knowledge to construct an approximate understanding of the writer's message. Comprehension of the information in text, or of the author's meaning, is the ultimate reason for reading.

Word identification is a process that results in a fairly exact outcome. Different readers will interpret an author's message in different ways. Lenz writes that comprehension is affected by the reader's knowledge of the topic, knowledge of language structures, knowledge of text structures and genres, knowledge of cognitive and meta-cognitive strategies, their reasoning abilities, their motivation, and their level of engagement.

Reading comprehension is also affected by the quality of the reading material. Some writers are better writers than others, and some writers produce more complex reading material than others. Text that is well organized and clear is called "considerate text," and text that is poorly organized and difficult to understand can be called "inconsiderate text." The more inconsiderate the text, the more work will be required of a reader to comprehend the text. Readers who do not have the background, abilities, or motivation to overcome the barriers presented in inconsiderate text will have more difficulty comprehending these types of texts.

Students who had trouble learning to decode and recognize words often will have difficulty with reading comprehension. Students who struggle with decoding rarely have a chance to interact with more difficult text and often learn to dislike reading. As a result, these students do not have sufficient opportunities to develop the language skills and strategies necessary for becoming proficient readers.

Readers with poorly developed language skills and strategies will not have the tools to take advantage of the obvious structures and comprehension cues that are part of considerate text nor will they have

the extra tools needed to overcome the barriers of inconsiderate text.

The type of instruction that a student receives will also affect reading comprehension. Strategies for improving reading comprehension must be taught directly by teachers. Simply providing opportunities or requiring for children to

The Process of Reading Comprehension

From the analysis above, it is clearly seen that schemata plays an important role in reading comprehension. The next three models of reading process will be introduced and analyze the relationship between schemata and reading comprehension.

Psychologists have generally distinguished three kinds of processing: bottom-up model, top-down model and interactive model.

Bottom-up model

It holds the view that reading is a process of building symbols into words, words into sentences and sentences into the overall meaning, which reflects traditional attitudes toward reading. In this model, readers begin with the lowest level, from which the symbols are identified. Strings of symbols are then analyzed into morphological clusters, from which words are recognized and then strings of words are analyzed into phrases and sentences.

read will not teach many students the comprehension strategies they need to be proficient readers. These need to be taught directly as students learn to read simple sentences and this direct instruction needs to continue in different forms throughout a student's elementary and secondary school experience.

The meaning of the text is expected to come naturally as the code is broken based on the reader's prior knowledge of linguistic units like vocabulary, grammar, syntax.

Therefore, from the point of view of bottom-up model, accuracy in understanding linguistic units is very significant and the lower-level processing skills in reading are important. This model weakens the significance of reading comprehension because the focus is on the understanding of linguistic knowledge but little attention is paid to schemata, i.e. related cultural background, the whole text, etc.

Top-down model

It emphasizes the use of readers' real world knowledge in memory. The most influential and comprehensive top-down model is put forward by Kenneth S. Goodman in 1967. He says that the goal of reading is constructing meaning in

response to text; it requires interactive use of grapho-phonetic, syntactic, and semantic cues to construct meaning. Readers do not read every word, but see through the text in order to be able to guess the meaning of the words or phrases. During this model reading process, readers take in larger units of meaning of the text at a time, match what they already know with the meaning they derive from the text. Top-down processing occurs as the system makes general predictions based on higher level and general schemata. It searches the input for information to fit into these partially satisfied, higher order schemata.

Interactive model

From the discussion above, it can be concluded that both bottom-up and top-down models have limitations. The recognition of this results in a more comprehensive reading process, namely, interactive model which is an interaction of bottom-up and top-down models claiming that prior knowledge and prediction facilitate the processing of input from the text. The interaction in this perspective takes place at three levels:

- a. The interaction between lower-level and higher-level skills;
- b. The interaction between bottom-up processing and top-down processing;
- c. The interaction between the background knowledge presupposed in the text and the background of the reader.

In interactive reading processing, both bottom-up and top-down processing should be occurring at all levels simultaneously. Readers may employ bottom-up process as a base for comprehending a text and then turn to top-down process to execute high-level interpretation of the content of the text. Prediction of the content will be confirmed, revised or rejected through further data analysis. Interactive model of reading process is the combination of bottom-up and top-down models, and thus absorbs their merits and avoids the limitations to a great extent. Till now, this is the most effective reading processing. Hence, it is advocated by many researchers.

Function of Schemata in Reading Comprehension

The importance of schematic knowledge is now widely acknowledged in foreign language teaching and many researches in the schemata-oriented realm

of ESL/EFL reading have been carried out. The relationship of the three types of schemata and reading comprehension will

be introduced respectively in the following text.

Linguistic schemata and reading comprehension

As mentioned before, linguistic schemata refer to readers' existing language proficiency in vocabulary, grammar and sentence structure. As the basis of comprehension, language knowledge plays an important role on understanding of the text, especially for learners at the elementary stage of learning. Without basic language knowledge, no reading strategy or skill can function effectively. Therefore, the more language schemata readers have in their mind, the more information readers may acquire from the text, and the more effective readers they may become.

Formal schemata and reading comprehension

Formal schemata refer to the organizational forms and rhetorical structures of written texts, including knowledge of different text types and genres, and the acknowledgement that different types of texts use text organization, language structures, vocabulary, grammar and level of formality differently. Carrel (1984) made an experiment to investigate whether we can facilitate ESL/EFL reading comprehension by teaching text structure based on schematic knowledge. The result

of the experiment proved that explicit teaching of the text structure can improve students' reading comprehension. Different reading materials bear different characteristics and pose the correspondent reading requests for readers. A suitable employment of formal schemata plays a significant role in reading.

The formal schemata, which are also called *textual*, relate the organizational forms and rhetorical structures of written texts (Jun, Hui and Hua, 2007). They contain knowledge of various text types and genres and as well, they consist of knowledge of different types of texts use text organization, language formation, vocabulary, sentence structure and level of formality differently (Jun et al. 2007). Formal schemata are defined as knowledge of language and linguistic conventions, containing knowledge of how texts are structured and what the key characteristics of a particular genre of writing (descriptive, argumentative, expository, Narrative, and persuasive) are.

Content schemata and reading comprehension

Content schemata refer to the knowledge relative to the content domain of reading materials, which is the key to the understanding of a text. As a language is not only consisted of vocabulary, grammar and sentence structures, it is also the carrier of different levels of culture.

Studies proved that content schemata affect comprehension and remembering more than formal schemata do for text organization. Readers remembered the

most when both the content and rhetorical forms were familiar to them while unfamiliar content may cause more difficulties in correct comprehension.

CONCLUSION

From the discussion above, schemata plays an important role in reading comprehension. In general, reading can be regarded as the ability to gather meaning from printed symbols, taking into account both the individual's level of reading and purpose for reading. That reading involves the skill of identifying

information in the text and the skill of integrating knowledge in the reader's mind is a generalized consensus today. Also, there is general agreement that the phenomenon of inferencing is possible because of schemata in readers' and speakers' minds, for that matter.

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