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# **Application of Schema Theory in College English**

## **Reading Teaching for Non-English Major**

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of the Requirements for the Degree of  
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## **M. A. THESIS**

# **Application of Schema Theory in College English Reading Teaching for Non-English Major**

**Major:** English Language and Literature  
**Specialty:** English Linguistics  
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## **Abstract**

The definition of “schemata” was first pointed out in the late 1600's, and consequently theorized in the 1980's. Researchers abroad and home state that schema theory has a significant effect on English reading. Nevertheless, scholars at home have made few studies on the relationship between schema theory and English reading for non-English major students. This thesis is organized to instruct college English reading for non-English major students by means of schema theory in order to find an effective way to promote non-English students' reading comprehension.

On the basis of traditional linguistics, reading comprehension is a bottom-up decoding process. Teachers normally lead the students all through a class, explaining new words and phrases with analyzing the grammatical structure. As a result, seldom students have chances to take actively part in the reading process. They only remember the words and grammar points by rote. They understand the meaning of the single sentences without grasping the main idea and the structure of the text.

Schema theory highlights that reading comprehension is an interactive process between readers and texts. Readers can employ schemata to follow the relationships among pieces of information and to fill in information that is not mentioned clearly. Accordingly, this thesis is chiefly to study three effective reading approaches- Bottom up

model, Top down model and Interactive model, and analyze their application to the English reading teaching for non-English major students. Based on the careful analysis of the nature of reading process and the comparison of the three approaches to reading (the bottom-up model, the top-down model and the interactive model) by means of teaching process, it steps into a conclusion that the three approaches to teach English reading for non-English major student should fit to various reading materials. It advises that on the time of the reading process, the focus should be put both decoding the text and schematic knowledge on active guessing and predicting, activating the systemic of the reader, with the bottom-up and top-down strategies functioning interactively in order to improve the non-English major learners' reading ability and their ability of using the English language.

This thesis consists of five chapters: Chapter One is Introduction, Chapter Two refers to Literature Review: schema theory, reading study and schema theory to English reading comprehension. Chapter Three is methodology; Chapter Four focuses on the application of schema theory to English reading teaching for non-English major students; and finally Chapter Five is the Conclusion.

**Key words:** Schema theory; English reading teaching; non-English major students

## 硕士学位论文

# 图式理论在非英语专业大学生英语阅读教学中的运用

学科专业：英语语言文学

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## 内 容 摘 要

图式理论提出于十七世纪晚期，二十世纪八十年代得到确立和完善。国内外研究均表明，图式理论对阅读有重要的指导意义。但是，国内研究者针对图式理论在非英语专业学生阅读中应用的相关研究较少。本文旨在将图式理论运用于大学非英语专业学生的阅读教学中，以期对大学非英语专业学生阅读理解的有效教学和学习方法作一定的探索。

在传统语言教学理论指导下的阅读教学通常采用“自下而上”的教学方法。教师是课堂的中心，学生只是被动的接受老师传授给他们的单词和语法知识，使得学生无法把握整个语篇意义。他们只是机械地记忆单词和语法点，对文章的理解也停留在对单个句子的理解上，不会从整体上把握文章的结构，理解其主旨大意。

图式理论应用于非英语专业学生的阅读教学中强调阅读理解是发生在学生和文本间一个交互式的过程。通过使用图式，读者能够明白各种信息之间的关系，进而进一步理解文本中未曾提及的潜在信息。这一观点的支持者认为，读者从阅读活动中获取知识的决定因素是他们已有的知识。基于此观点，本文通过分析非英语专业学生阅读过程的本质，研究自下而上的阅读方法、自上而下的阅读方法和交互阅读方法等几种不同的阅读方法，通过教学实践，论证在大学非英语专业的阅读教学中，自下而上的阅读方法、自上而下的阅读方法和交互阅读方法的实际应用场景，做到根据不同的阅读材料指导学生在阅读过程中应用不同的方法，既要以阅读材料为本，重视语言文字的解码过程，又要积极调动和发挥学生的主观能动性，运用阅读策略，激活头脑中的相关图式。综合运用语言知识和图式知识是提高非英语专业学生英语阅读理解能力的一种有效途径。

全文共分五章，第一章简要介绍研究背景、研究目的和研究问题。第二章介绍

国内外的图式理论，图式理论的概念以及在教学中运用的研究情况。第三章叙述了本研究的研究方法。第四章是研究的实践应用部分。第五章阐述了本研究对高中英语教学的意义和结论。

**关键词：**图式理论；英语阅读教学；非英语专业学生

# **Chapter One**

## **Introduction**

### **1.1 Rationale of the Study**

English is an international language, and it is increasingly important for non-English speakers to learn English to be competitive in this information age. The purpose of English education is to cultivate students' basic English communication proficiency, to build students' habits, interest, and skills in learning English, and to promote students' understanding of native and foreign culture.

The ultimate purpose of EFL instruction is to cultivate students' skills of self-study and lifelong learning in English. According to a great number of EFL/ESL (English as a Second Language) studies, effective English learning strategies suitable for individuals' need facilitate English learning. Language learning includes four dimensions: listening, speaking, reading, and writing. The present study focuses on the dimension of reading. Reading is a receptive behavior in knowledge acquisition.

Effective English reading strategies help increase English reading comprehension. One purpose of reading is to obtain reading comprehension for long-term memory, which can shape individuals' schemata or experiences. According to Goodman's (1967) statement, "Reading is a psycholinguistic guessing game," schemata or background knowledge is helpful to English reading comprehension. Meanwhile, Carrell maintains that ESL teacher must provide the students with appropriate schemata she/he is lacking, and must also teach the student how to build bridges between existing knowledge and new knowledge. Coady (1979) has suggested a model "in which the EFL reader's background knowledge interacts with conceptual abilities and process strategies, more or less successfully, to produce comprehension". Brown and Yule (2000) states that the listeners should find out the best storage concept for handling the pre-existing conventional knowledge. All above these indicates schema theory has been applied to

language teaching. Reading strategies stress the mental decoding process in reading including prediction, guess, inference, analysis, synthesis and evaluation.

Proficient reading strategies can enhance individuals' reading skills, which may inspire individuals' reading motivation actively. Numerous studies (Oxford & Ehrman, 1995; Bremner, 1999; Brown, 2001) support that EFL reading comprehension correlates with effective reading strategies, motivation, and positive learning attitudes. EFL instructors should consider developing students' basic language skills as well as their motivation for English reading and provide them with appropriate reading materials for their needs, interests, and English proficiency levels. Reading skills can be defined as a set of abilities for improving reading proficiency. The present study aims to explore the implication of schema theory and Chinese college Non-English major students' perceptions of and attitudes toward English reading comprehension in an EFL reading class.

## 1.2 The Aim of the Thesis

Studies have shown that many factors may influence reading comprehension such as background knowledge, effective reading strategies and motivation. As a response to the above difficulties for Chinese college Non-English major students in reading comprehension, the researcher of this study will explore some effective cognitive reading strategies to improve their EFL reading comprehension, building up background knowledge of texts and enhancing the motivation in learning English reading. Generally speaking, Chinese college Non-English major students lack formal schema and content schema as well. It is useful to offer them the schema-based course which is designed in this study to enhance their motivation in English reading and to build their schema or prior knowledge. By the way, the ultimate goal of the schema-based course is to cultivate students' ability of using effective English reading strategies to be strategic and active readers.

This study aims to explore the relationship among schema, reading strategies and reading comprehension for improving Chinese college Non-English major students' reading comprehension.

The specific purposes of this study are stated below: to examine students' ability to apply their schema knowledge to English reading comprehension; to identify effective reading strategies which Chinese college Non-English major students prefer to use.

In addition to the above three purposes, the study also investigates the selection of appropriate teaching materials suitable for students' interests and proficiency levels, effective cognitive reading strategies for English reading comprehension, and students' preference in teaching methods are also investigated in the study.

### 1.3 General Organization of This Thesis

This thesis is departed into five parts. Chapter one of this thesis provides a general introduction of the whole paper: the rationale of the study, the aim and organization of the thesis. Chapter two reviews the definition of schema theory, the historical and existing views on reading and the study of schema theory to reading comprehension. The third chapter displays the methodology, including the research design, research instrument, participants and procedure. The fourth chapter offers case studies to explain the functions schemata perform in English reading class the guidance of schema theory, referring to three styles respectively; meanwhile, some pedagogical implications are illustrated. In the fifth chapter, it comes to a natural conclusion that summary and recommendations are provided. Meanwhile, the significance of employing some metacognitive strategies is also emphasized because it is quite crucial in enriching the schematic view of reading instruction and turning a diligent reader to a strategic and proficient reader.

# **Chapter Two**

## **Literature Review**

### **2.1 Studies of Schema**

How do readers construct meanings while reading? How do they infer from a writer's message? How do they decide what to believe and evaluate? How can they understand what they read? These are the sorts of questions addressed by what has come to be known as schema theory, the hallmark of which is that a text does not by itself carry meaning and it is the reader who brings information, knowledge, emotion, experience, and culture to the printed word in the course of reading.

#### **2.1.1 Definition of Schema**

The term "schema" (plural form is schemata or schemas) can be traced back to Plato who proposed the invisible ideal types existing in the mind. Kant (1781) is the first man to use the term "schema" in literature. He developed schema theory to explain background knowledge for reading comprehension and found out that if subjects read a story with an unfamiliar topic, they would modify the original version of the story according to their previous knowledge. In the mid-1970's researchers began studying the influence of background knowledge and the organization of texts on reading comprehension from psychology (Rumelhart and Ortony, 1977; Spiro, 1977; Rumelhart 1980, 1984), psycholinguistics (Goodman, 1967), linguistics (Fillmore, 1982; Chafe, 1977a, 1977b; Tannen, 1978, 1979), and artificial intelligence (Schank and Abelson, 1975).

In addition to the term "schema," other terms referring to schema appear such as script, frame, and textual schemata (Schank, 1982). Rumelhart (1980) gave a definition of schemata as data structures representing concepts stored in memory. Schemata are the fundamental elements on which information processing depends (Rumelhart, 1975), and then he suggested that a schema is generalized knowledge about a sequence of events

(Rumelhart, 1977). Pearson and Spiro (1982) posited schema as an abstraction of an experience that one is constantly fine-tuning and restructuring according to new information one receives. Bartlett (1932) defined a schema as “an active organization of past reactions and experiences which are always operating in any well-developed organization” (p. 201). Reid (1993) indicated that a schema is the previously acquired background knowledge structures.

Since ESL readers encode meaning in ways that are different from native English speakers, Carrell (1984) suggested that teaching ESL readers the text structures of academic prose facilitates reading comprehension. When form and content are familiar, reading and writing are relatively easy. But when one or both are unfamiliar, efficiency, effectiveness, and success are problematic. Reading and writing are connected. A schema represents generic knowledge and an internal knowledge structure. A general category will include slots for all the components, or features. Schemata are embedded with one another at different levels of abstraction. Relationships among them are conceived to be like webs (rather than hierarchical), thus each one is interconnected with many others (Schema Theory of Learning, 1999). Schemata are highly organized, generic knowledge structures composed of “slots” or “placeholders” for each component (Den Uyl & Van Oostendorp, 1980; Anderson, Reynolds, Schallert & Goetz, 1977).

### 2.1.2 Types of Schema

Carrell (1983) posited that schemata could be grouped into two main categories: formal schema and content schema. Formal schema is called as textual schema which refers to the organizational forms and rhetorical structures of texts including text genre, rhetoric, syntax, semantics, or background knowledge of rhetorical structure. Rhetorical form plays a significant role in the comprehension of episodic arrangements of a text and in the understanding of event sequences and temporal relations among events (Carrell, 1984a, 1984b). Content schema means the content-related knowledge, which is beyond the linguistic knowledge and even culture-specific background knowledge. It refers to a reader’s background, world knowledge, and general or specific information on a given topic providing readers with a foundation, a basis for comparison (Carrell, Pharis, & Liberto, 1989).

Johnston (1983) offers a good reader-text interaction model of reading comprehension, which illustrates the reader and utilizes both the high-levels schemata and the lower-level bottom-up schemata to test the sampled information from the text. If the input information matches the prediction, one of the processing cycles of comprehension has completed.

Carrell and Eisterhold (1983) distinguished formal schemata (knowledge about the structural configuration of texts) from content schemata (knowledge about the subject matter of text) and found out that a reader might fail to understand a text if s/he did not follow a formal schema (coherent organization) or if content schema was lacking. Content schemata include specialized knowledge and cultural knowledge. Carrell (1984) and Alderson and Urquhart (1988) stated the discipline-specific effect of content schemata in their work with students who found it difficult to read texts that did not relate to their area of study. Steffensen, Joag-dev and Anderson (1979) found that if schema is culturally specific, the texts used in a test should be culturally accessible. Cultural schema theory presents a cognitive approach to the question of how the theory represents the cultural knowledge (Palmer, 1996; D'Andrade, 1995; Strauss & Quinn, 1997). Cultural schemata are conceptual structures about an individual's culture and make interpretations of cultural experiences and expressions. Culture provides "templates" that help guide interpretation of cultural events.

In 1982, Carrell followed the researches by Rumelhart, Steffensen, and Joag-dev and differentiated among the groups by reading the text and listening to the text. The results revealed that the subjects would modify automatically the content of the text to their own specific culture (Carrell, 1987). The more cultural background knowledge about a text a reader has, the better s/he comprehends.

In short, the richer the schema is for a given topic, the better a reader will understand the topic. Readers rely on their prior knowledge and world experience when trying to comprehend a text. Comprehension occurs when a reader is able to use prior knowledge and experience to interpret an author's message (Bransford, 1985; Norris & Phillips, 1987).

### 2.1.3 Functions of Schema

Bower, Black, and Turner (1979) indicate schemata have two functions. The first is to guide actions in typical or generic situations such as going to a restaurant and going to the library. Persons know how to act in order to deal with everything well according to generic experience. The second is comprehension. Schemata allow readers to make inferences and fill in information not explicitly included in the text (Anderson, 1978). Readers make inferences based on the given clues in the text and on information from the schema, whether from default values or from relationships that are specified among slots; for example, when eating at a restaurant, readers use schemata to fill in details that are not specifically mentioned and to make inferences based on the given information. Entering a splendid restaurant, a customer may think this is an expensive restaurant or high-class restaurant, especially if there are no prices on the menu (Kitao, 1988).

Schemata show the relationships among parts called “slots” (also known as nodes or variables). According to schema theory people can understand the world in terms of prototypical patterns (scripts, schemas, narratives) in which are embedded a vast array of relationships, concepts, and vocabulary works (Schema Theory, 2003).

Take another instance: one knows how to use the faucets in one’s house, but there are a variety of faucets; some faucets one must tap loosely or tightly by one’s hands, but another kind of faucet can sensor body temperature and control water by itself. If one encounters this kind of faucet, made he or she does not know how to use it for the first time, but after observing other people using it, he or she will imitate the action and get the experience to use it for the next time, so that becomes the schema that is stored in the brain. Therefore, content schemata can be modified consistently to the changing environment for survival. Wilfredo (1995) maintained that schemata are the knowledge that is organized and stored in the reader’s mind. Fluent readers relate their schemata with the new information presented in a text.

## 2.2 Studies of Reading

### 2.2.1 Definition of Reading

Reading is one of the most directive and effective methods of accumulating

knowledge. Reading is a receptive language process. It is a psycholinguistic process in that it starts with a linguistic surface representation encoded by a writer and ends with meaning which the reader constructs. There is thus an essential interaction between language and thought in reading. The writer encodes thought as language and the reader decodes language to thought.

Smith (1994) describes reading as a creative and constructive activity of making sense of written language rather than a matter of mechanically extracting sound from print. It is mentioned in Understanding Reading (Smith, 1994) that reading activity has “four distinctive and fundamental characteristics-it is purposeful, selective, anticipatory and based on comprehension”.

As Anderson (1999) says, “Reading is an essential skill for English as second/foreign language (ESL/EFL) students and for many, reading is the necessary skill to master. With strengthened reading skills, ESL/EFL readers will make greater progress and attain greater development in all academic areas”. (p.1) In the 20<sup>th</sup> century, major theories on the processes of reading comprehension developed from 1950’s behaviorism (a transmission model) (Rosenshine, 1986) stressing the bottom-up approach (data-driven or knowledge of language) through 1970’s cognitivism based on the top-down approach (the information processing approach or background knowledge) to 1980’s constructivism emphasizing on the interactive reading process combining the top-down and bottom-up approaches, which can be called the extension of cognitivism. Sanchez (2002) posited cognitivism could be group into two main schools of cognitive learning psychology: the information processing approach focusing on the senses encoded, stored, retrieved and utilized by the brain and the cognitive constructivism providing understanding of learning through accounts that relate the learners with their schemata.

### 2.2.2 Intensive Reading and Extensive Reading

The intensive reading strategy and the extensive reading strategy facilitate vocabulary acquisition as well as reading comprehension. Anderson (1999) indicated that the intensive reading is designed to explicitly teach readers the comprehension skills necessary for them to transfer the strategies and skills to their own reading when they are not in the classroom and the extensive reading as the combination with other activities so

that reading is only a portion of what the learner is expected to do, for example, readers may read a large amount of text and then prepare a paper comparing and constructing various viewpoints on the topic.

Reading teachers have to teach students how to transfer intensive reading skills to extensive reading contexts. Anderson (1999) asserted that good readers do more extensive reading than intensive reading. Improving readers' reading rate can enhance reading efficiency and reading comprehension. Segalowite, Poulsen, and Komoda (1991) indicated that second language reading rates of highly bilingual readers are 30% or slower than L1 reading rates and need to enhance the automaticity of word recognition processes in their L2 reading. Slow reading speed results in a serious handicap for ESL reading. The study at UCLA conducted by Weigle and Jensen (1996) specified that the advanced readers began the quarter at an average rate of 184 words per minute (wpm). After nine weeks of instruction the students' reading rate increased more than 100 wpm; some of them even improved as many as 400 wpm. The study indicated that readers could be trained and improved by planned instruction. Nuttal (1996) described the "vicious cycle of the weak reader":

Readers who do not understand often slow down their reading rate and then do not enjoy reading because it takes so much time. Therefore, they do not read much. These readers continue in the vicious cycle. By increasing reading rate, the reader can get into the 'virtuous cycle out of the good reader'. By reading faster, the reader is encouraged to read more and, with more reading, comprehension improves (p. 127)

Carver (1990) suggested five reading processes with typical rates (see Table 1). He emphasized that readers could adjust their reading rate according to the purposes of reading.

Table 1 Carver's Reading Rate, for Five Reading Processes (Carver, 1990, p. 14)

Reading Process	Processing Components	Target Wpm
Scanning	Lexical accessing	600
Skimming	Semantic encoding	450
Rauding (reading and auding)	Sentence integrating	300
Learning	Idea remembering	200
Memorizing	Fact rehearsing	138

“Rauding” is a term that Carver defines as comprehension of all or almost all of the consecutively encountered thoughts during reading or auding (listening): reading comprehension may increase about 75 % or more thought encountered during the operation of the rauding process (Carver, 1990, p.467). Anderson (1999) supported Carver’s proposals and suggested that rate adjustment fits the purpose for engaging in the material readers are covering: skimming, scanning, reading/listening, learning, or memorizing. The reasonable criterion of an L2 reading rate can be 200 words per minute at 70% comprehension in accordance with Dubin and Bycina’s (1991) statement that a rate of 200 words per minute would appear to be the absolute minimum for ESL/EFL readers in order to read with full comprehension. According to Carver (1990), only when readers are engaged in learning or memorizing processes and when the extra time is given, the effects of schemata will become relatively large and important. Readers will use the different strategies during various reading processes to demonstrate what degrees of reading comprehension have been achieved.

Coady, Magoto, Hubbard, Graney, and Mokhtari (1993) suggested that direct instruction of vocabulary is best done by treating the vocabulary word in context. There are approximately 2,000 high frequency words that account for almost 80% of the words found in average texts.

Extensive reading and intensive reading are beneficial to the promotion of vocabulary acquisition and reading comprehension. They have the function of compensation and mutual benefits owing to their various strengths and weaknesses. Extensive reading can increase the readers’ prior knowledge and vocabulary acquisition while intensive reading facilitate elaboration, organizing, analysis, inference, and verification of a text.

### 2.2.3 Modes of Information Processing

How does reading happen in the reader’s mind? This has been a controversial issue and has been studied by numerous researchers. Up to now three models of EFL reading have been proposed to account for the comprehension process: bottom-up model, top-down model and interactive model. It is the interactive model that fundamentally promotes the development of the teaching theories in reading.

### 2.2.3.1 Bottom-up Processing

The reading process is initially regarded as a decoding process of reconstruction the author's intended meaning via recognizing the printed letters and words, building up a meaning for a text from the smallest textual units at the "bottom" and up to the largest unit at the "top" in a strict hierarchical way. In Gough's (1972) model, reader begins with letters, which are recognized by a scanner. "The information thus gained is passed to a decoder which transforms the string of letters into a string of systematic phonemes. The string is then passed to a librarian, where, with the help of the lexicon, it is reorganized as a word. The reader then fixates on the next word, and proceeds in the same way until all the words in a sentence have been processed. At this point they proceed to a component called Merlin, in which syntactic and semantic rules operate to assign a meaning to the sentence" (Urquhart & Weir, 1998:48).

In the bottom-up model, a text is divided into three levels of units, namely: letters, words and then sentences. The model suggests that readers deal with these levels of units in strict accordance with their sizes. That is to say, one stage of the process is over before the next stage begins.

To state it more accurately this model assumes that a reader proceeds to read by moving his eyes from left to right across the page, first taking in letters, then combining the words to form the phrases, clauses, and sentences of the text.

But psycholinguistics and reading researchers find that such model is too simple to explain the complex process of reading. They found that it is really hard to know when the reader stops processing words and moves to processing sentences. In an actual reading process, there exists no clear-cut borderline between stages of the process. Owing to its own deficiencies, the bottom-up model gradually gives way to the top-down model.

### 2.2.3.2 Top-down Processing

Top-down process moves from the higher level mental stages (the top) down to the text itself. In the process of top-down models, the reader uses general knowledge of the world or general knowledge of particular text component to make intelligent guesses about what might come next in the text, the reader samples only enough of the text to confirm or reject these guesses. The reader brings to this interaction his prior experience to the content of the text, rather than decoding each symbol, or even every word. The reader

forms hypotheses about the text and then “samples” the text to determine whether or not the hypotheses are correct.

Goodman (1967) is often cited as the representative who is keen about the top-down approach. He views reading as a process of hypothesis verification, whereby readers use selected data from the text to confirm their guesses. It should be clarified that the top-down model stresses the important role of not only the reader’s active participation in the reading process, but also everything in the reader’s background knowledge and prior experience.

The top-down view of reading has had a profound impact on EFL reading and has been a tendency to substitute bottom-up model. But “top-down models do have some limitations” (Eskey, 1988). A top-down model can be an appropriate one for the skillful, fluent readers, for whom the perception, decoding or recognition of graphic cues has become automatic. But for those less proficient readers, problems other than those of top-down processing occur.

The recognition of the limitations of the top-down model results in a more comprehensive view of reading as an interactive process.

### 2.2.3.3 Interactive Reading Processing

Goodman and Smith’s work have led to the recent mainstream in reading comprehension. Coady (1979) suggested that comprehension takes place from the interaction of conceptual abilities, background knowledge, and process strategies. After Goodman (1967) advocated that reading is a psycholinguistic guessing game, people accepted reading as an active process. Readers made predictions and then sampled from the print just enough to confirm guesses to cue more semantic and syntactic information or to disconfirm the predictions (Goodman, 1970). Coady (1979) confirmed Goodman’s view of reading as a reconstruction of the writer’s messages through a “cyclical process of sampling, prediction, testing, and confirming”(p.5) One cycle of sample ends, and the next cycle starts if the reader confirms that the reconstruction of meaning matches the expected outcome and previous knowledge. If reading comprehension is impeded, readers may choose some compensatory strategies to deal with the difficulties (Kuo, 2002). Coady (1979) built a triangle model to illustrate the interactions among readers’ conceptual abilities, background knowledge, and process strategies.

Many L2 pedagogical models for supporting pre-reading activities to activate readers' background knowledge are also based on this top-down view of reading as a psycholinguistic process. Afterwards, some researchers went back to the bottom-up model in response to the overemphasis on the top-down model again. Meanwhile, an interactive reading model to support reading as a complex task of simultaneously combining text-based and reader-based models was presented by Rumelhart in 1977 (Barnett, 1989). It stresses the importance of both the text and the reader in the interactive reading process, an amalgamation of the two models---bottom-up and top-down. They found out that less proficient L2 readers did not have sufficient linguistic competence to use automatic word recognition for making guessing or prediction in context (Kang, 2002).

Eskey (1988) claimed that L2 readers need more bottom-up reading skills than L1 readers. In order to compensate the deficiency of language knowledge, effective readers should use both top-down and bottom-up strategies interactively to aid reading comprehension (Rumelhart, et al., 1977; Stanovich, 1992; Kintsch & Van Dijk, 1975).

In the late 1970s, an interactive or holistic approach began calling attention to reading comprehension. The interactive model views reading as a cognitive, developmental, and socially constructed task that goes beyond understanding the words on a page, as a more dynamic process in which the reader "constructs" meaning based on information the reader gathers from the text (Arieta, 2001). Arieta (2001) also pointed out that college students may encounter a plethora of literary genres that they are required to read, understand, and apply for academic success, yet in an average class, there will be little or no attention paid to the reading process or the strategy training that is so important to the learning tasks.

Schema theory that is now widely accepted as a key role in reading comprehension is based on the assumption that the reader's prior knowledge directly impacts new learning situations. The reading process involves identification of genre, formal structure, and topic, all of which activate schema and allow readers to comprehend the text (Swales, 1990). In fact, there will never be a total coincidence of schemata between the writer and readers (Wallace, 1992). The problems may be absent or alternative schemata (often culture-specific), as well as non-activation of schemata, and even overuse of background knowledge. Carrell, Devine and Eskey (1988) claimed that schema theory has provided

numerous benefits to ESL teaching, and “most current ESL textbooks attempt schema activation through pre-reading activities” (p.4). As Carrell and Eistenhold (1983) stated:

One of the most obvious reasons why a particular content schema may fail to exist for a reader is that the schema is culturally specific and is not part of a particular reader’s cultural background. Some key concepts may be absent in the schemata of some non-native readers such as dragons in China and in Europe have different interpretation. (p. 80)

The gap of writer intention and reader comprehension may exist in the perceptive differences between the writer and the reader in the life experiences. Readers sometimes also feel that they comprehend a text but have a different interpretation to the author (Hudson, 1982). In addition to schema deficiencies, the linguistic knowledge and skills are also one of the major reasons of failure of reading comprehension; in other words, basic bottom-up processing must not be ignored. ESL/EFL readers have to accept the training of the skill of rapid recognition of large numbers of words and text structures for building up and improving the schemata they need for enjoyment of the text they read. The instruction of unfamiliar words or the relevant vocabulary at the stage of pre-reading will benefit the schema activation and reading comprehension. Carrell (1988) suggested a parallel approach in which vocabulary and schemata are developed by pre-teaching vocabulary and background knowledge concurrently for sets of passages for accessing reading comprehension more easily. If readers are insufficient in background knowledge, narrow reading within their reading proficiencies or interests may improve the situation (Carrell and Eisterhold, 1983), that is, providing students with more topic-related articles to read for building up sufficient background knowledge. A teacher can start with short selections having students become familiar with both the events and the vocabulary about the topic.

Gradually, a teacher can increase the amount of information on these events as the students become proficient in their ability to comprehend the texts. Aebersold and Field (1997) advocated that extensive reading is a good gateway to vocabulary acquisition. Learners can see a word many times in different contexts before it is learned. Several authors encourage students to read for pleasure (Carrell & Eisterhold, 1983; Wallace, 1992). Bamford and Day (1997) stated that “students will not become fluent readers until they read in quantity.” (p.7)

Maria (1990) defines reading comprehension as the holistic process of constructing meaning from written text through the interaction among the knowledge the reader brings to the text, the reader's interpretation of the language that the writer used in constructing the text; and the situation in which the text is read.

Reading comprehension involves readers' formal schemata including knowledge of rhetoric and linguistic skills and content schemata including readers' prior knowledge and background knowledge of the text. Basically, interactive reading process theory is rooted in schema theory which emphasizes that, if new textual input does not fit into readers' schemata, the readers will misunderstand the new information. They may ignore the new information, adjust the schemata to match the input from a text, or accept the new input as their new schemata in their brains.

Content schemata (background knowledge) as a big picture look into the pieces of a text including letters, words, sentences, syntax, and semantics called small pictures. A reader can use a big pair of magnifying glasses to examine the structure and meaning of a text by means of inference, analysis, synthesis, comparison and contrast, cause and effect analogy, and concepts mapping for constructing meaning of the text, and then reading comprehension takes place.

## 2.3 Schema Theory and Schema Theory to ESL/EFL Reading Comprehension

Schema theory describes the process by which readers combine their own background knowledge with the information in a text to comprehend that text. All readers carry different schemata (background information) and these are also often culture-specific. This is an important concept in teaching, and prereading tasks are often designed to build or activate the learner's schemata.

Schema theory is based on the belief that "every act of comprehension involves one's knowledge of the world as well" (Anderson et al. in Carrell and Eisterhold 1983:73). Thus, readers develop a coherent interpretation of text through the interactive process of "combining textual information with the information a reader brings to a text"

(Widdowson in Grabe 1988:56). Readers' mental stores are termed 'schemata' (after Bartlett in Cook 1997:86) and are divided (following Carrell 1983a) into two main types: 'content schemata' (background knowledge of the world) and 'formal schemata' (background knowledge of rhetorical structure).

Content schema or cultural orientation in terms of background knowledge frequently influences ESL/EFL reading comprehension a lot. Carrell (1987) conducted a study with 54 subjects (28 Muslim Arabs and 24 Catholic Hispanic ESL students of high-intermediate proficiency) enrolled in an intensive English program at a Midwest university. The instrument was two texts, one with Muslim-oriented content and the other with Catholic-oriented content. The results of the study showed that schemata affected the ESL readers' comprehension and recall. Subjects better comprehended and remembered passages that were familiar to them. Carrell (1987) suggested if subjects are familiar with both rhetorical and content form, they remember the content at most, but unfamiliar content causes more difficulty for readers than unfamiliar rhetoric does. Steffensen and Joag-Dev (1984) conducted a study using two passages about weddings, both written in English for L2 Indian students and L1 American students. They found that readers comprehended the passage about their culture more than the unfamiliar one. Johnson (1981) investigated the effects of the cultural origin of prose on the reading comprehension of 46 Iranian intermediate advanced ESL students at the university level. Half of the subjects read the un-rewritten English tests of two stories, one from Iranian folklore and one from American folklore, while the other half read the same stories in rewritten English. The results revealed that the cultural origin of the story had a greater effect on comprehension than grammar or semantic complicity of the text. Johnson (1982) prepared 72 ESL students at the university level with a reading text on Halloween for recalling protocols. The results showed that prior cultural knowledge provided readers with comprehending the familiar information about the topic. The unfamiliar words do not seem to affect their reading comprehension to a great extent. Kang (1992) examined how L2 readers checked information from L2 texts through culture specific background knowledge. A think-aloud protocol assessing Korean graduate students' understanding and inferences indicates culture specific schemata and inferences' influence on reading

comprehension.

From the above studies one can recognize that background knowledge (content schema) plays a dominant role in reading comprehension. Specific schema helps to explain the differences between experts and novices. Experts have more specific schemata than novices do for interpreting and reacting to new information in a particular subject area. Specific schemata come from individuals' experiences in specific fields (Tip: concepts-schema, 1988).

An individual's experiences with people, objects and events create schemata in the world. Event schemata are easy to be activated in a familiar environment through the accumulation of experiences, common sense, and memory; for example, going to a restaurant, one knows the whole process of having a meal such as menu, waiter, order meals and tips. In fact, the world is changeable; sometimes schemata need to be modified consistently to adjust to the new information, especially in high-tech products. Schemata refer to background knowledge that can be improved and renewed through individual's constant learning and interpretation. Learning occurs by means of comprehension.

Background knowledge contributes to comprehension. It will actively construct meaning existing in the messages conveyed by something. Schema theory can be applied in reading comprehension. Activating and restructuring background knowledge benefit reading comprehension. All readers carry different schemata (background knowledge) and shared schemata (culture-specific) to interpret the meanings existing in texts; therefore, they have reading comprehension at different degrees. Schemata are also considered to be important components of cultural difference in cognition (Quinn & Holland, 1987). Culture and experience play an important role in creating an individual knowledge. Different experience develops different schema, and diverse culture builds diverse shared schema among people.

Nist and Mealey (1991) indicated that schemata organize knowledge in memory by putting information into the correct slot, each of which contains related parts; when new information enters memory, it not only must be compatible with one of the slots, but it must actually be entered into the proper slot before comprehension can occur. If no information is available to fill a slot, the reader fills the slot with a value that s/he knows to be typical in that slot, that is, default schema. Schemata are hierarchically organized,

with most important information at the top, down to the least important information (Anderson, 1978).

Mandler (1984) had further developed schema concepts. Schemata have received significant empirical support from studies in psycholinguistics; for example, the experiments of Bransford and Franks (1971) involved showing people pictures and asking them questions about what the story depicted; people would remember different details depending upon the nature of the picture.

Schema theory also has implications for text design. Designers should employ strategies to facilitate students' recall of related materials, such as using analogies to draw connections between related content (Wilfredo, 1995). Armbruster (1996) also encouraged the use of analogies and comparisons in order to draw attention to learners' existing schema and to help them make connections between existing schema and the new information.

Many reading instructional strategies are logically centered on schema theory. The most important implication of schema theory is the role of prior knowledge in processing. Therefore, Wilfredo (1995) advocated teaching learners metacognitive strategies for activating their schemata before reading, such as reading the heading and the title, looking at visuals in the text, and making predictions based on the title and pictures. Gagne and Glaser (1987) also supported explicit teaching mental models to provide students with appropriate schemata.

## **Chapter Three**

### **Methodology**

The study aims to investigate the accomplishments of schema theory for improving EFL reading comprehension of college English reading for Chinese Non-English major students.

Two purposes are stated in this study. The first is to examine students' ability to apply their schema to English reading comprehension. The second is to identify effective reading strategies that Chinese college non-English major students prefer to use. In addition to the above purposes, selection of appropriate teaching materials for students' needs and their preference of English reading methods were also taken into consideration in the study.

#### **3.1 Research Design**

This study employed three experimental texts. The participants were from two College English classes with 102 freshmen in Chongqing University of Technology. They all were taught by the same instructor based on schema theory, which emphasized the process of recalling background knowledge, guessing, prediction, inference, analysis and synthesis, self-evaluation, self-regulation and self-monitoring in English reading.

The instructional experiment was performed two hours per week for one semester from September to December in 2010 so as to check the participants' development of English reading comprehension.

#### **3.2 Research Instrument**

The teaching materials for the course include: (a) NEW HORIZON COLLEGE ENGLISH (Volume 1) as a textbook (b) Handouts on effective reading strategies. The instructor taught the participants with effective English reading strategies in handouts, the

bottom-up processing approach, the top-bottom processing approach, and interactive reading processing approach for one semester. Making a conclusion at the end of the semester, the researcher could understand the participants' development of English reading comprehension.

### 3.3 Participants

The 102 participants were given the designed schema-based course and effective English reading strategies training, as well as the handouts on reading strategies. The reading strategies were limited in the course as the following: asking one's self questions, distinguishing fact and opinion, finding main ideas, making a story outline, making a time line, making inferences, paraphrasing, prediction, previewing, reading for specific information, scanning, summarizing, taking notes in a chart, using context, writing margin notes, and using 6 Wh-questions: who, what, when, where, why, and how.

### 3.4 Procedure

The present study refers to an experimental instruction: Instructing participants the designed schema-based course and using effective reading strategies including schema theory for about four months (from September to December in 2010, 90 minutes per week).

The schema-based course is to cultivate participants' knowledge as well as to instruct them effective reading strategies including schema theory for improving EFL reading comprehension. NEW HORIZON COLLEGE ENGLISH (Volume 1) was selected as the textbook of the course and the handouts on effective English reading strategies links were distributed as supplementary reading materials.

Before reading, the instructor taught the participants some effective reading strategies to activate their background knowledge; during reading, the instructor guided them to predict, analyze, synthesize, infer the meaning of the text verify, and adjust or modify their strategies; and after reading, the instructor asked students to answer the questions, think aloud, make summaries or outlines, and draw creative graphic organizers in groups or

individually to examine the participants' reading comprehension on the texts they had read. The reading was based on the interactive reading processing approach with bottom-up (data-driven) and top-down (prior knowledge /background knowledge) methods. The students needed to have both linguistic knowledge and background knowledge for reading comprehension. The instructor provided the participants with some schema theory such as guessing the meaning of the unfamiliar word in context, inference self-question, brainstorming, discussion, think-aloud, and summarization to help organize the process of their thinking how to think in reading.

## **Chapter Four**

# **Cases of the Application of Schema Theory in College English Reading Teaching for non- English major**

This chapter presents the cases study of the instructional experiment following the procedures described in Chapter Three. This study aims to improve English reading comprehension of Chinese college non-English major students by means of schema theory with bottom-up processing approach, top-down processing and interactive reading processing approach.

### **4.1 Case A for Bottom-up Processing Style**

Texts are of various types which categorize reading into various component skills and knowledge fields, such as vocabulary and grammar structural knowledge, formal discourse structure knowledge, world background or content knowledge and so on. To obtain vocabulary and grammar structural knowledge typically includes recognizing letters, characters and words and it includes low-level processing. It should be named as significant in language reading. In college English texts are seldom intended merely for word-learning, but we can frequently lend texts intended for grammar learning. In such grammar-oriented texts, we would like our non-English major students chiefly to concentrate on the bottom-up skill strengthening. In such a class, non-English major students are more word-bound, and meaning attempts to take part at the word level, for they have no enough knowledge of the grammar structure. Therefore, they attempt to leave vocabulary acquisition emphasized and are encouraged to exclusively do a number of specific word-by-word processing in a bottom-up processing mode. As to a grammar-oriented text, I think the lower level turns to be the characteristics and functions

and then the structure. Take Unit 7, Book 1 of New Horizon College English, for example. The text is chosen for students to review and get more about the structure of the Attributive Clause.

#### 4.1.1 Step One

For they have to confront with the structure difficulties, students should be instructed to focus on the structure acquisition and know and know about the characteristics and functions of the structure. The first step is to make students review and know about the structure of the Attribute Clause, without which students cannot learn more about the clause. We can plus new grammar knowledge to a pattern the students have already known, which is to make further learning easier, because students are usually familiar to learn from known-knowledge. What's more, the new grammar knowledge added to the known parts is to act as a new instance of the structure and therefore to stimulate students' former schemata which permit them to relate the incoming information to the known information.

First, review an already known pattern. Show the students a Chinese sentence “看起来像一朵花。” and invite students to translate it into English. The answer turns to “It looked like a flower.”

Second, extend the sentence. “她微笑的脸像一朵盛开的鲜花。”Signal the students that “盛开的” is attributive to describe how the flower is. So in the sentence “Her smiling face looked like a flower that was blooming”, “that was blooming” is as well attributive, which guides us that “that was blooming” describes “a flower”.

Display and practice more examples like that, then students can remember and grasp the structure step by step and consequently recognize what the attributive clause is. Meanwhile, the following knowledge is related with the already known information; the new grammar structure is filled into the known one. The new content relates to the features of the attributive clause that means to modify a noun and is usually following the noun; additionally, there is a pronoun which integrates the noun and the following sentence which modifies the noun.

#### 4.1.2 Step Two

Modifying the method students have known is to ask students to review a grammar

pattern and modify it, which is to stimulate their familiar with the newly knowledge by relentless practicing and ask them to transfer the knowledge into their own step by step in order to provide themselves with a knowledge base of formal schemata.

Via the method of modifying, the non-English major students will be leaded to demonstrate their understanding of the new learned information in order to make the new knowledge clear and forth new schemata, as follows.

Firstly, give some easy sentences and guide students to plus new grammar structure to turn them into attributive clauses, like adopting “that”. Sentences can be as the following: (a) The meat was not fresh; (b) She prefers the cheese; (c) She wasn’t hungry; and (d) The noodles were delicious.

Secondly, write down the sentence that the non-English major students make on the blackboard, and signal how this structure differs when the modified noun changes, such as the person of the noun, which agrees with the number of it.

Thirdly, review “that” can be turned into “which” if the noun refers to things and “who” if the noun refers to people.

Fourthly, ask them to correct mistakes in the sentences on the blackboard, if there are any. This step is to check how well they are going on with the indication I gave. It helps students to recognize the relation between the structure and their existing schemata and to further prepare students to construct new knowledge into their own knowledge system.

#### 4.1.3 Step Three

To add a new method of reorganization is to guide students to learn, remember and use a new way of organizing knowledge. For instance, ask students to read the text to find out all attributive clauses, and then translate all the sentences into Chinese; meanwhile, tell the functions of the linking words like “that”, “which” in each sentence, such as subject or object; following, tell students when the linking verbs can be omitted and assemble all the pieces and make a conclusion.

#### 4.1.4 Step Four

Give some incorrect sentences that do not match to the structure and ask them to pick up that they have been used. In this way, their view will go through an obvious challenge

before eventually being confirmed. In the entire process, students will begin with characteristics and functions, and as they focus on them, they start to hope for the structure. As structures are recognized, they are decoded to their memory, from which they acquire the meaning of each sentence and thus the new information and structure is eventually combined. That meaning is decoded from lower levels of characteristics and functions to higher levels of structures and sentences can be called the top-down process.

Consequently, after the structure difficulties are acquired, the meaning of the entire text is no more difficult to obtain. The approaches above attract the students' attention out of the processing of meaning and free it for decoding the structure. Currently, a number of the combinations between the grammar and the meaning have already been learned, which will turn to kind automaticity via further reading.

## 4.2 Case B for Top-down Processing Style

When a reading material is pointed to be employed as a content-oriented text, we would like non-English major students to concentrate chiefly on cultural learning with schema build. The background knowledge will guide them to understand at a reasonable rate and keep them included in the material despite syntactic difficulty. For strong semantic input can facilitate compensate when syntactic control is not strong, the subject of reading materials should be made to be of high interest and related well to the background or the experiences of non-English major students. From one perspective, when non-English major students comprehend an English text, they build a mental representation for new coming pieces of verbal information, and synthesize textual subsystems, such as content, context, intent and language into a larger meta-system of meaning. What are in fact comprehended are not sentences, but conceptional contents. If students can make the content related to their interest and their known knowledge, their relative concept of the text would be activated and they will thus become interested in reading comprehension. From the other perspective, students who no longer leave difficulties in vocabulary and structure, are encouraged to do more global and predicting practice in the top-down processing mode, because that presents an opportunity to build new culture-special is schemata for the students to do appropriate reading. Let me take

*Five Famous Symbols of American Culture*- Unit 4 of Book 3-for example. As to students of non-English major in college or university, grammar is no longer a breakdown. In the text, all they are intended to know is the culture knowledge of New York.

#### 4.2.1 Step One

Ask students to look at the picture on the first page and read the title, and then guide them to predict what they will talk about if they are asked to write about the country. Three minutes later, the teacher collected their answers: population, location, history, government, sports, transportation, parks, buildings, weather and so on. Afterward, ask them to read the text for the first time, and lied out what topics the text is about. This step is believed to use the possible information to make hypotheses, which will be supported or rejected through reading, and then to activate students' known knowledge about U.S.A., which is focused around the idea that people possess schemata of objects, events and situations in the world around them, and that these schemata guide their interpretations and reading behaviors. For the task of reading, students are thought to make use of a large number of interrelated schemata, organized in some structure of their knowledge systems. That means, if the relative schemata are activated, students will possess a general schema concerning the reading of the given text in a given environment, and that this schema may be broken down into sub-schemata. In this text, the elements used to describe what kind of country U.S.A. is. During the reading process, the general reading schema will contain many default values before the text is actually read, but these values may be replaced a difference encountered between expectations and actual experience of reading. For example students may think that when people talk about America, the point is sure to be focused on the finance and the development of economy. But when they dip into the text, they will discover they are wrong in their expectations and they can thus replace their incoming schemata with a different one. Therefore, the next step is to check their prediction and provide clues to interest their guessing.

#### 4.2.2 Step Two

Check topics they find from the text. Present what kind of country America is through some phrases. (Richest and freest country, millions of people came to America, many

skyscrapers, UN head office, unpleasant weather, noisy and crowded.) Then, find out the main idea of each paragraph by careful reacting. The text is aimed to let students know what American symbols are. When the general idea is gained, the goal is achieved.

Afterward, ask students to fill in the background knowledge on page 112 (exercise three) in the textbook. To check their predictions against what they read is to modify or reformulate predictions. But it is just a matter of providing students with the right background knowledge and encouraging them to make full use of that knowledge in decoding texts. That is to say, checking topics of the text is only to arouse their interest in the text and what the text is really about has not yet been reached. If teachers present phrases from the text, it is better for students to further understand the text. For one thing, students will find they can pick up allusions from what they have already read. This joy of success in reading will lead to better reading. For another thing, all texts contain traces of other texts, and frequently they cannot be readily interpreted or at least fully appreciated-without reference to other texts. Given the phrases of the texts, students can be able to perceive the cultural references to deep-rooted common cultural stores of allusions so that their interpretation of the text can be improved and this helps to get the general ideas.

In general, during the process of interpretation, students will forget the actual language but remember the message, so the messages of the text can be used as references in order to enhance the enjoyment of the text and lead students to overall message. Since the text is intended for culture acquisition, it is vital for students to try to accomplish as much reading as possible in order to capture some of what active readers carry to a text: both textual memory and schemata. The exercises for filling in background knowledge with what they have read can help students enhance their textual memory and form new schemata.

#### 4.2.3 Step Three

At this step, the teacher gave some new words of the text and asked students to read them in the sentences again, trying to find out what they mean. Then, check their understanding.

Practically, individual words are not likely to be pulled from the students' visual

memory unless they fit with the semantic and syntactic clues they are using while actively processing a text. It is important for students to guess the meaning of words from the context after they generally comprehend the text, for meaning is obtained by using only as much information as necessary from the syntactic and semantic cue systems. Some cues are based on the students linguistic competence and some are derived from their known knowledge of the text, which allow them to comprehend the text and anticipate what will probably occur next in print and so the meaning of some words are obtained. This process is to identify words by comprehending the text. Something about the meaning fullness of words in context will facilitate the identification of individual words and for the meaning of the sentence or the text had already been comprehended before it. In other words, comprehension precedes the identity of individual words for the simple reason that words in isolation are essentially meaningless. For example, people can easily tell what “turn” and “away” mean, unless when they are put together in the sentence “Two million of people were turned away”, meaning “refuse to admit”.

In a word, comprehension precedes the actual word. In the whole process, students are believed to go directly to the meaning before processing the word by letter or groups of letters and they can obtain meaning without accurate word identification. This is sure to be called the top-down processing. Above all, in the top-down processing, activation is the first thing for reading comprehension. Teachers should first prepare proper exercises to activate students’ relative schemata.

### 4.3 Case C for Interactive Reading Processing Style

Some texts contain strong elements of story structures, which require students to be fluent in both the texts and the story structures. Strong structures can promote students to develop reading comprehension skills, which is to form proper formal schemata and after they know how such story processes, they thus make the understanding of the text fluent. In turn, once students form the fluency of the text, which may be relevant to everyday life, their existing schemata can be further shaped by their comprehension of the text. This is the general interaction between the students and the text, that is, the students make use of the information from their background or prior knowledge of text structure in constructing

the text information, and the constructed text information refine their existing knowledge so that the text structure is so firmly stored as part of their reading skills. This is also interaction between top-down processing and bottom-up processing, because so many component skills are working together simultaneously in the reading process, which involves: a low level of word or structure identification skills and a high level of interpretation skills. Now, let us take “A Rose Is a Rose” for example.

#### 4.3.1 Step One

First step refers to presentation. The teacher gave enough references to all the names that appear later in the text. The text is a narration, in which there are lots of characters. For the students, do not read in a continuous manner, but begin in the middle of the text, characters in the story must be a problem. The references can help students quickly understand who is being quoted so as to read the text fluently.

Second instruction part is to introduce what type of writing the text is, so that the aim of writing can be conveyed and students can be fluent in the structure. It is obvious that being aware of the function of a passage is vital to its comprehension. Therefore, one of the very first thing students should be led to do is to find out whether the text aims at convincing the reader, giving him information, asking him for something, etc. In many cases, the very form of the passage, the way it is printed, laid out, or the place where it was found, are sufficient to give us clues as to its function, and elements. As to narration, what are important is how the writer organized the text and how the text developed. Did he use a chronological sequence of events, listing the major events in time order? Did he act as a participant or a reporter to narrate the story? Although the organization of a narration is not always determined by its contents and the nature of the information to be conveyed, it is still essential for the students to grasp the method used to present the information. Once they have recognized the pattern that is being used, they can apply their reading skills to the text and predict what is likely to follow. That is to say, if their relative formal schemata are activated, these sources of information appear to interact in many complex ways during the process of reading. If students lack a piece of actual knowledge relative to the text, comprehension is believed to be obstructed. Therefore, activation is the first thing in this reading process.

### 4.3.2 Step Two

The first part of this step is to do note-making. List all the names of the characters and ask students to find out details about each character. Taking notes is essential in order to remember what one reads, but has a further use: when taking notes, it is necessary to establish the structure of the text and its key ideas and to learn to leave out unessential information. Each of these notes has specialized knowledge about some aspect of the reading process and helps to scan the message center for the hypothesis relative to its own knowledge. The message centre in turn confirms, disconfirms or removes the hypothesis, and a new hypothesis is added to the center. This process continues until a decision is made about the text. And main idea will be gained little by little through the forming of the new hypothesis. In this process, when comprehension is hampered, students compensate by decoding a word, relying on the context, or both. So the top-down and the bottom-up processing occur simultaneously. In other words, comprehension is depended on both graph information and information in the students' mind. That is interactive processing.

The second part is to find out each character of the story. This is a good way for teachers to check whether students correctly understand the text and for students to check their hypothesis. Students can take advantage of the hypothesis they made during the note making step and concentrate on what the text is about—the meaning of the story. In addition, more complex phonic elements are learned, because this is a time when growing importance of word meaning and prior knowledge of the students appears. Students still use decoding skills learned earlier to derive meaning. Since both decoding and meaning are part of acquisition, this is viewed as both a bottom-up and top-down model. On the other hand, to describe each character of the story, students learn to deal with more than one point of view in reading. In this stage, students are able to use selectively the printed materials are of interest to them and learn to construct knowledge by themselves that they read, that is, to balance their comprehension of the ideas they read, their analysis of them, and their own ideas of them. This is also characterized as top-down and bottom-up.

### 4.3.3 Step Three

In summary writing, minor details must be rejected. A summary is usually written in

one's own words and should be an accurate and objective account of the text, leaving out our reaction to it. Reading, however, is characterized by active engagement through which meaning is created. So reading has as much to do with what the reader brings to the text and how the reader interacts with the text as with the text itself. Much of the meaning understood from a text is really not actually in the text, but in the reader. That is, the texts we create in our own minds while we read—or just alter we read—become part of the life we believe we lived. Reading, then, if it is to represent engaged and meaning-making activity, must allow for the ways in which students contribute to and wake connections with the text. Writing reading reports provides a unique opportunity for discovering and exploring these contributions and connections, for it allows students to dialogue with a text and tin d a particular way into it. On one hand, while reading provides ideas to be used and a basis for writing, it controls writing. Therefore, students can find their reactions and responses to texts by reflecting on them through reading writing. Such “writing to read” method is good to those students who have had little experience with reading or who have a limited understanding of what reading means, because they can learn how print comes to represent meaning through writing. On the other hand, writing teaches reading. The process of writing shares much in common with the process of learning. Writing in this way makes reading an activity of finding and making connections, of figuring out what speaks to the students and why. Writing, because it gives rise to our own ways of probing and working with texts, is thus a way to construct, and to compose the reading. Moreover, it makes students conscious of their own reactions to texts and gives students the sense that experienced readers have when they read. Though students may not always respond in writing to our texts, when they underline portions of texts, mark them up, they giving insight into their meaning making. What these actions represent is the complex intersection of who they are, what they know and how they make sense. The act of writing serves to justify, to repair or to speak into coherence an experience that feel more like loss and confusion.

By enabling students to formulate, judge, modify, extend and refine their responses, writing helps dispel the notion that reading is a matter of interaction between the reader and the text, and is a matter of multiple interpretations. This reading process is neither purely a bottom-up model nor a top-down model. It is viewed as an interactive processing.

## 4.4 Pedagogical Implication

The bottom-up, top-down, and interactive reading processing approaches, which are based on schema theory, are active EFL/ESL teaching methods. They, especially the interactive reading processing, emphasize the interaction between teachers and students in class. It is very important for instructors to activate students' learning motivation in reading. Before reading, teacher-modeling instruction is needed for recalling students' background knowledge in text. Selecting appropriate reading materials (i.e., fit for students' English proficiency levels and interests) may promote students' motivation and reading comprehension. Selecting familiar reading materials about daily life or authentic topics can activate students' background knowledge for guessing or predicting the meaning of the texts.

Students can be taught effective reading strategies before, while and after reading class to cope with the individual differences and text genre. Active readers can adjust their reading strategies and reading rates according to the different situations, which they encounter while reading. Instructors need to teach students some effective reading strategies or techniques including cognition and meta-cognition for training students' logic and thinking ability. The capacity of vocabulary is a major element of building reading proficiency. One should encourage students' extensive reading to increase their vocabulary, phrases and background knowledge. In fact, sufficient vocabulary can speed up the rate of reading, which benefits English reading comprehension and the building of the habit of lifelong learning.

Visual presentations benefits students' understanding the relationship of all concepts with one another in the text. One needs to provide students with the instruction of graphic organizers to increase their reading comprehension before, while, and after reading. After reading, instructors can ask students to make concept maps of the text or think aloud for examining students' reading comprehension. Background knowledge is helpful for the students with low-level English reading proficiency to predict or guess the meaning of unfamiliar words or sentences in the text for compensation of insufficient vocabulary by schema strategy, which may enhance their self-confidence in reading.

Based on the findings and conclusions from the study, recommendations were developed for English reading instructors to improve EFL reading instruction, for college Non-English major students to enhance their English reading comprehension.

# **Chapter Five**

## **Conclusion**

### **5.1 Summary**

Schema theory views organized knowledge as an elaborate network between ideas. A large proportion of learners' difficulties may result from insufficient general knowledge, especially in cross-cultural situations. Schemata grow and change as new information is acquired. The general knowledge provides a framework into which the newly formed structure can be fitted. Schema theory plays a very important role in reading comprehension. Meaning does not come from the text alone; it needs the reader to predict and interpret the message presented in print. Meanings and comprehension occur when readers' prior knowledge or schemata are compatible with the information retrieved from the text. Goodman (1967) advocates that reading is a psycholinguistic guessing game. Reading is defined as an active interaction between the reader and text. Good readers are characterized as strategic readers who can use their effective metacognitive reading skills and effective reading skills for concept mapping. It is necessary for English instructors to provide students with effective reading strategies for cultivating students' English reading skills for reading comprehension which is the most important purpose of English reading. In essence, reading is an interactive process through bottom-up and top-down approaches to make sense of the text. It is two-way approach between the reader and the text to construct meaning in print. Reading is a complicated psychological process. When readers encounter new words they do not know in reading, they need to synthesize, analyze, infer, and judge the complex meaning of words by the linguistic factors (vocabulary, syntax, rhetoric, semantics) and non-linguistic factors (background knowledge, experience, cultural literacy). In comparing the content of an article to an iceberg, its explicit meaning is just the part over the water, and the implicit meaning of the article that readers need to construct with their related background knowledge is hidden in the words and sentences.

Carrell (1984) listed ways in which a reader could miscomprehend or not comprehend because of ways that schemata interact with the text: 1) no existing schema (background knowledge) that the reader possesses, 2) naive schema (insufficiently developed schema), 3) poor text (not enough cues to the appropriate schema), 4) multiple appropriate schemata, and the reader does not know which one to choose, and 5) Schema intrusion (A reader chooses an inappropriate schema). Therefore, EFL/ESL instructors should know how to set up students' prior knowledge necessary for English reading. According to the study of Aptitude-Treatment Interactions (ATI), there is an affirmative finding: If students have sufficient "prior knowledge" in the specific subject, any teaching approach will do for students' learning. If students' "prior knowledge" is less, they need more support such as improving the models of teaching sources, supporting definite teaching or directive teaching, so as to help students deal with message into memory (Roshenshine, 1986). Appropriate teaching materials and methods benefit students to organize the messages and direct students to notice the focal points of learning for reducing their burden of memory.

There are three suggestions for effective reading: 1) The careful and appropriate choice of texts in accordance with students' interests presented in the classroom will have an effect on the reading performance of the learners. 2) If the teacher provides a gist of the text, students can recall more units. Students can organize better the sequencing of these ideas in their summaries, and their answers to the open-ended comprehension questions are more complete. 3) The familiarity with the topic of the passage facilitates constructing highly plausible meaning for unfamiliar vocabulary words.

The purposes of the study aim to promote college non-English major students' English reading comprehension in China to cope with the new environment with many changes and challenges and, in turn, to enhance their international competitive ability for productivity. In fact, it is not easy to discover the most appropriate reading strategy or theory for the college non-English reading class; maybe a comprehensive strategy or theory can be used in an individual's situation. Inspiring students' learning motivation is also indispensable for effective reading. Motivation is the factor for curiosity, creativity, desire, and being fond of inquiry. It includes intrinsic motivation and extrinsic motivation. Building self-concept is intrinsic motivation, and incentives (carrots and sticks, awards

and punishments) are extrinsic motivation for students in learning reading.

The inspiration of learning motivation can be suggested in three fields: First, teaching method. Integrate four learning goals (listening, speaking, reading, writing), and encourage students to do social involvement such as cooperative learning method, group work, or pair work. Second, teaching resources. Focus on students' interests, authenticity, and humanistic orientation and be concerned with students' lives. Third, classroom management. Use cooperative learning approach and individualization stressed on Multiple Intelligence Theory. In reading, students can strive for the same goals. Low-level readers can read the easy reading materials, and high-level students can be trained to do projects or papers. Provide all students with computer aid instruction and multiple media instruction like videotapes, cassette tapes, CDs Internet information, and films by Sensory Stimulation Theory.

Stimulating the senses can enhance learning. Laird (1985) quotes research that found the vast majority of knowledge held by adults is learning through seeing (75070). Hearing is the next most effective (about 13070), and the other senses--touch, smell, and taste--accounted for 12070 of what we know. If multi-senses are stimulated, greater learning takes place.

This study has a triple importance. Theoretically, it is based on the influence of schema or background knowledge on reading comprehension. Pedagogically, it provides English teachers in China with some suggestions about the selection of EFL reading materials and the planning of reading class activities. Pragmatically, hope that the research can help technical college students be successful EFL readers.

A number of studies reveal that the most difficult English reading for technical college students comes from the comprehensive barriers in excessive new words so that students lose their interests in reading. The suggestion is to give students effective instruction in vocabulary techniques, especially intensive and extensive reading.

In conclusion, the interactive reading processing approach based on schema theory seems to have better effects in English reading comprehension than the traditional grammar-translation method according to the findings of the study.

## 5.2 Suggestions

### 5.2.1 For English Reading Instructors

Stress teacher-modeling instruction of the concept maps or webs of the key words before reading to activate or construct students' background knowledge to guess, predict, or infer the coming information from the text after reading for examining students' reading comprehension.

Encourage students to guess the meanings of words according to the clues around the words in the context by mnemonics such as synonym, antonym, prefix, suffix, and root of words for vocabulary acquisition.

Teaching students to be strategic readers is the most critical reading instruction. Strategic readers can monitor the text for meaning by consciously adjusting their reading strategies fit for specific situations in context. This awareness leads them to activate existing knowledge about a topic, make predictions about the content, and make inferences to fill in comprehension gaps (Lipson and Wixson 1997).

Directing vocabulary instruction before reading can activate prior knowledge or develop background knowledge about the topics and the supporting vocabulary to make predictions about the texts. Help students make connections between what they know and what they are learning. Preparing students with necessary vocabulary to read a text in advance is important for ESL/EFL English reading instruction. Grabe (1991) noted that L2 students' background knowledge base is different from L1 students'. L1 readers already have a sufficient vocabulary base and know thousands of words before they actually start to read; on the contrary, L2 students do not share these advantages. Vocabulary is the parameter of English proficiency and the priority of English comprehension. Comparing vocabulary to ingredients of a meal, if one does not have the basic ingredients, how can s/he cook a meal? Vocabulary learning techniques—for example, phonics, word roots, prefixes, and context reading—benefits their vocabulary acquisition.

Encourage students to critically think aloud. Have them speak what they are thinking about the meaning of the text. Thinking aloud facilitates reading comprehension, vocabulary acquisition, cultivation of metacognitive skills, systematical organization of a text, and concepts mapping for reading comprehension.

Select teaching materials suitable for students' English levels, interests, and needs in aid of activating students' schema or prior knowledge to match the background knowledge in the text for motivation and comprehension of English reading. The appropriate text should not present over five unfamiliar words, or the text will be too difficult for students to learn.

Provide students with cultural background knowledge. Grabe (1991) indicated that ESL readers are not equipped with the knowledge to perceive texts in a culturally authentic, culturally specific way owing to lack of content schema. Ausubel (1968) supposed that the activation of relevant prior knowledge was critical to meaning learning. Gagne (1977) raised stimulating recall of prior knowledge as the third item of nine teaching activities in teaching process. Carrell (1987) indicates that readers who are familiar with the content of an article have better comprehension and memory than the ones unfamiliar with the content do; the readers with both content schema and formal schema can read easily; the readers unfamiliar with both content schema and formal schema have difficult reading; and the readers unfamiliar with content schema have more difficult reading than the ones unfamiliar with formal schema; that is activating students' background knowledge and explaining the difficult and key words in the text before reading benefits students' reading comprehension.

The interactive reading processing approach with bottom-up approach and top-down approach can activate students' schemata for compensation of their deficiency of language skills such as rhetoric, syntax, and semantics in English reading comprehension instead of the traditional grammar-translation method focusing on the bottom up reading process only. Using both schema activation and linguistic knowledge may accelerate reading comprehension.

Instruction of reading strategies help students think how to think and plan, know what purposes of reading, how and when to use effective reading strategies for monitoring the reading process to adjust or verify their predicting of the text, evaluate what they have learned and give appropriate feedback, and integrate and apply all effective reading strategies.

Design pre-reading, while-reading, and after-reading activities to promote students' reading comprehension. Graphic organizers benefit activating background knowledge in

pre-reading brainstorming activities. They are also useful for increasing reading comprehension by combining concepts or ideas of a text and keeping the meanings of the text or vocabulary in long-term memory in after-reading activities.

Select reading materials with more supplementary pictures or designs based on schema theory to facilitate reading comprehension and retrieve more background knowledge from pictures, titles, subtitles, and captions. By the way, the topics in the textbook can be authentic or related to daily life and native culture for motivating students' interests and activating appropriate background knowledge easily.

Syntactic structure in Chinese is different from English. A greater degree of cognitive restructuring is required (Segalowitz, 1986). It is necessary for L2 instructors to explain some specific grammar structure in the text for increasing reading comprehension. Grabe (1991) also pointed out L1 readers have some grammatical knowledge of their own language; on the contrary, L2 readers do not share this strength. It is necessary for EFL teachers to instruct students on the basic English grammar concepts including basic sentence patterns. The grammar of the target language can be compared to the principles of driving cars and traffic rules. A good and proficient driver must be familiar with driving principles and traffic rules.

An EFL reader who is not familiar with culturally based knowledge or content schema, or a reader who does not possess the same linguistic base as the first language reader, will encounter difficulties of English reading. It is very important for English reading instructors to equip their students with effective reading strategies and instruct them to be strategic readers. Background knowledge can be instructed in reading class for enhancing students' reading comprehension and reading proficiency.

The finding of this study appears that EFL readers would benefit from some systematic instruction in the use of background knowledge in comprehension. The schema reading strategy seems to be able to be used as a method of remedial instruction for the students.

The careful and appropriate choice of texts of students' interests will have an effect on their reading performance and enhancing their reading motivation. If the teacher provided the gist for the content of the text, students can recall more units of schemata for organizing better the sequencing of these ideas in their summaries.

Inspire students' learning motivations and offer them some useful incentives for building their self-confidence in English reading. Researches indicate that a strong linear positive relationship exists between learning strategies and motivation (Oxford & Ehrman, 1995; Osanai, 2000).

Students should have a purpose for reading each time they read. One technique is to give students questions before reading as well as directions on how to read the text. Guide students to use effective reading strategies and let students repeat the specific strategies until they can use them by themselves. As stated by Carrel (1985), it is also helpful to teach students about the common rhetorical pattern of English, such as classification, problem-solution, cause and effect.

Teachers should have students do activities that involve real experience, for example, role-play.

Make on-line digital English reading materials in basic, intermediate, and advanced levels of a teaching platform for the individuals' learning.

Teach English reading according to students' English proficiency. Select the appropriate teaching materials in accordance with their interests and English proficiency. Appropriate levels of reading texts should be slightly above students' English level.

Encourage volume reading to list the books they have read for scoring students' learning performance in English reading.

Students should be encouraged to adjust their reading rate according to the difficulties of the content of the text to speed up reading comprehension.

Take advantage of various reading strategies and make use of multimedia facilities like videos, cassette tapes, and software for the teaching platform in English reading to cope with the individual differences in learning.

The instruction of unfamiliar words or the relevant vocabulary at the stage of pre-reading will benefit schema activation and reading comprehension. As suggested by Carrell (1987), use a "parallel" approach in which vocabulary and schemata are developed by pre-teaching vocabulary and background knowledge at the same time for accessing reading comprehension easier.

### 5.2.2 For College Non-English Major Students

Learn new words from the reading materials on familiar topics by “narrow reading” called intensive reading as well. Krashen (1981) advocated reading within one topic area. One possibility is to present reading passages in a graded order so that students read those that require little background knowledge first and those that require more background knowledge later. The passages that are read first will provide background knowledge for later passages.

Take advantage of extensive reading for vocabulary acquisition by reviewing new words several times. Through the effective reading strategy “repetition,” the meanings of new words can be made quickly and will be easily accessible during reading (Perfetti, 1988). Repetition can increase memory of vocabulary. Extensive reading is one of the best ways for building students’ schemata or background knowledge and word acquisition.

The study conforms Chen’s (1985) and Yang’s findings that indicate most college students read very slowly because of the deficient vocabulary and do not know how to guess the meaning of the unfamiliar words. Most students lack English grammar ability.

Reading aloud is an excellent way of introducing and expanding vocabulary. It facilitates reading comprehension and vocabulary acquisition.

Take advantage of effective English reading strategies to read the texts in English for improving English reading comprehension.

Thinking aloud is helpful to memorizing the meaning or the concepts of the text.

The extensive reading benefits building background knowledge and the acquisition of vocabulary. English magazines and English newspapers are good reading materials for extensive reading.

The intensive reading facilitates the training of elaboration, organizing, analysis, inference, and verification of a text.

Use the interactive reading processing approach (bottom-up and top-down model) to comprehend the text, that is, use the language knowledge and background knowledge to read a text at the same time.

### 5.2.3 For Chinese Educational Administrations

Increase teaching hours for English reading class up to three or four periods per week

to enhance students' reading proficiency.

Improve the environment of English reading, set up a reading center and a learning corner, self-study centers for providing the paths to self-study, and use the Internet.

Group students, according to their English reading proficiency levels (e.g., high intermediate, and basic levels), have an effective English reading instruction.

Offer English teachers a variety of workshops, seminars or training courses to increase their reading skills and professional knowledge on cognitive and metacognitive strategies based on schema theory.

Cultivate "EFL Seed Teachers" to enhance the quality of EFL instruction and train more professionals in English reading at college level.

Make a regular evaluation of teaching and learning efficiency in English reading class for examining students' reading performance in English reading.

### 5.3 Further Study

The study focuses only on the implication of schema theory in English reading for participants at non-English major college students. It can be expanded to study different sample populations such as students in elementary schools, junior high schools, senior high schools and English major to examine if schema theory is fit for all aged students. Schema theory can also be employed to the study of listening, speaking, and writing in English.

In fact, the metacognition is beneficial in English reading comprehension. How to build an individual's metacognition can be especially explored in the further study of the research. Non-English major students' metacognition in EFL reading is compared to a driver's skills in driving a car; if non-English major students know how to read an English text or an English article effectively and efficiently like native speakers, they can be strategic and active readers for lifelong learning. The study mainly focuses on cognitive reading strategies such as predicting, picturing, and using prior knowledge; as to metacognitive reading strategies like monitoring and adjustment, thinking aloud may be further study of the research.

A related area where further study is vital is reading materials development. Reading

materials that help students learn to use their background knowledge need to be developed and tested in the classroom.

The relationship among schema theory, the interactive reading processing approach, English reading metacognition and English reading comprehension could be identified in the path diagram. The selected method of path analysis is multiple regression analysis with an Enter Procedure which can be performed on the factors for examining the following four research hypothesis for the future study:

1. Background knowledge (schema) facilitates EFL reading comprehension.
2. EFL reading comprehension has a correlation with EFL reading meta-cognition.
3. The interactive reading processing approach benefits EFL reading comprehension.

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