Explicit Instruction of Reading Strategies
at Senior High School in Taiwan

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論文摘要內容：

本論文目的在研究明示閱讀策略教學對於台灣高中生閱讀能力之效益，並探究此訓練對高中生在回答不同閱讀測驗試題的影響。另外，高中生對閱讀策略的認知、對英文閱讀的態度及對閱讀策略教學的回應亦在本文中加以探討。

參與本實驗的受試者為來自高雄市一所高中之89位高三的學生。這些受試者在三個月內接受五種閱讀策略的訓練，內容包括略讀了解主旨、區分主題與主旨、預測、推測及利用上下文猜測生字的意思。訓練方式採明示策略教學，強調老師說明及示範、引導練習、自我練習及應用。分析研究主題之資料，主要蒐集自受試者於實驗前後之閱讀測驗成績及對閱讀之回應，予以質與量的分析。

本研究之主要發現如下：
1. 明示閱讀策略教學有助於增強學生對閱讀策略的觀念及用法。大部分受試者在實驗前不知道這些策略，但於教學後都了解並喜歡使用這些策略。
2. 明示閱讀策略教學有助於提高學生對英文閱讀的興趣及其對自我閱讀能力的自信，但無法在短時間內建立其主動閱讀的習慣，並沒有改變其對英文閱讀的看法。
3. 明示閱讀策略教學有效地提升學生的英文閱讀理解能力，但對中低成就學生的效果比高成就學生顯著，且以低成就學生的獲益最大。
4. 明示閱讀策略教學有助於提高學生對確認主旨、文章細節及推論理解等類型之測驗題目的理解力，但對猜測字義類型的題目沒有顯著的差異。
5. 大部分受試者對本策略教學之成效給予正面的回應，尤其以利用上下文猜測生字的意思及略讀了解主旨為大多數受試者認同最具實用的閱讀策略。

本實驗的研究結果建議高中生應學習閱讀策略以提昇閱讀理解能力，並且英文老師們應於高一時即有系統地將閱讀策略教學融入英文課中，以幫助學生長期並廣泛地使用閱讀策略。此外，老師們應加強學生靈活運用由上而下及由下而上的閱讀策略，以達到有效的閱讀。再者，於評量閱讀能力時，老師們應加強學生使用閱讀策略回答測驗問題的能力。最後，老師們應藉由策略教學及有趣的教材提高學生的閱讀興趣及動機。
ABSTRACT

The purpose of the present study is to explore the effects of the explicit instruction of reading strategies on EFL senior high school students’ reading comprehension. The students’ comprehension for different types of questions is also examined. In addition, the students’ perceptions of reading strategies, reading attitudes, and their responses to the strategy instruction are investigated.

The subjects of this study were 89 third-grade students from two classes at Hsiao-kang Senior High School in Kaohsiung. A three-month explicit strategy instruction with a focus on five strategies (skimming for the main idea, identifying topics and main ideas, making predictions, making inferences, and guessing the meanings of unfamiliar words from context) was given to all the subjects. These strategies were taught in an explicit approach which emphasized modeling, guided practice, independent practice, and application. Besides, reading comprehension tests and questionnaires were conducted before and after the treatment to collect the related data for analysis and discussion.

The major findings of the study are summarized as follows.

1. The strategy instruction helped build up the subjects’ knowledge and use of the instructed strategies. Most of the subjects did not have a clear idea of these strategies before the treatment, but had learned to use them and liked to use them after the treatment.

2. The strategy instruction helped enhance the subjects’ learning interests toward English reading and their confidence in their English reading ability. Nevertheless, it did not significantly promote their self-initiative learning toward English reading and influence their opinions toward English reading.
3. The strategy instruction was effective in promoting the subjects’ reading comprehension. However, its effect was more significant on the intermediate and the lower proficiency subjects. Besides, the lower proficiency subjects benefited most from the treatment.

4. The strategy instruction helped improve the subjects’ comprehension for main idea, detail, and inference questions, but not for word-guessing questions.

5. Most of the subjects had a positive response toward the strategy instruction. The strategies regarded by the subjects as the most practical ones were “guessing the meanings of unfamiliar words from context” and “skimming for the main idea”.

The study findings suggest several pedagogical implications. First, EFL high school students should learn reading strategies to promote their reading comprehension, and EFL teachers should provide them with explicit strategy instruction in a systematic way from the first year. Second, the strategy instruction should be incorporated into regular English class to help strengthen students’ long-term and holistic strategy use. Third, EFL teachers should help students develop the flexible use of both top-down and bottom-up strategies to achieve efficient and effective reading. Fourth, in assessing students’ reading comprehension, EFL teachers should strengthen students’ use of strategies in answering comprehension questions. Last but not least, EFL teachers should help students cultivate interest and motivation for English reading through strategy instruction and attractive text resources.
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CHAPTER ONE

INTRODUCTION

Background and Motivation

It is widely recognized that reading is one of the most important skills for ESL/EFL learners to master. As Anderson (2003a) emphasized, the mastery of reading skill could help ESL/EFL learners have success not only in English learning but also in other content class where reading in English was required. Richards & Renandya (2002) stated that many foreign students viewed reading as an important goal, for they would be able to read for information and pleasure, for their career, and for study purposes. Huckin & Bloch (1993), on the other hand, argued that reading was the most crucial skill to a student entering into a second-language academic environment, and it was the skill most foreign students depended on for getting success in a program of study. Besides, Chen (1987) pointed out that reading was an important skill because it gave learners the input to advance the output of other language skills. Accordingly, reading often receives a special focus in ESL/EFL learning settings.

Reading is a complex process. Traditionally, it was viewed as a decoding process in which the reader merely took a passive role to decode the written symbols. This is the so-called bottom-up model of reading. However, the psycholinguistic perspectives of reading proposed by Goodman (1967; 1976) and Smith (1971; 1973) have shifted reading from the bottom-up to top-down information processing. Goodman (1976) described reading as a “psycholinguistic guessing game”, in which the reader took an active role to reconstruct a message from the writer. Smith (1971) argued that comprehension was achieved by reading for meaning first. Nevertheless, the current view of reading emphasizes that reading is an interactive process in which the reader
efficiently integrates both bottom-up and top-down strategies for comprehension (Eskey, 1988; Murtagh, 1989). In view of these, both bottom-up and top-down strategies are important skills for readers to achieve successful reading.

Paris, Wasik, & Turner (1996) emphasized that good readers were those who used strategies to organize, elaborate on, and evaluate text. Thus, different strategy use may distinguish good readers from poor readers. Keer (2004) indicated that proficient readers were typified by the mastery and use of both metacognitive and cognitive strategies that facilitated text. That is to say, proficient readers are strategic readers who are better at monitoring their comprehension and who can use various strategies flexibly to repair their understanding for better comprehension (Dole, 2000). In contrast, poor readers are struggling readers who use few strategies and are not able to use them flexibly to enhance their comprehension. Consequently, it needs strategy instruction to help poor readers to achieve effective and efficient reading as proficient readers do.

Many researchers have noted that strategy instruction is beneficial to enhancing effective reading (Alfassi, 2004; Beckman, 2002; D’Arcangelo, 2002; Grabe, 2002; Janzen, 2002; Keer, 2004; Rhoder, 2002; Thompson, 2000). Oxford (1990) emphasized that appropriate language learning strategies would result in improved proficiency and greater self-confidence, and that learners who received strategies training generally learned better than those who did not. As Janzen (2002) stressed, strategies helped to improve reading comprehension as well as efficiency in reading, and they enabled readers to process the text actively and read in the way that expert readers did. Thompson (2000), on the other hand, pointed out that incorporating strategies into instruction would help increase comprehension levels and move students from passive learners to active learners. Therefore, as emphasized by Anderson (1991), teaching readers how to use a strategy successfully and orchestrate
its use with other strategies should be a prime consideration in the reading classroom.

A great body of research documents that through explicit strategy instruction students can be taught to acquire and independently apply reading strategies for better comprehension (Pearson & Gallagher, 1983). Besides, the method widely recommended for improving learners’ ability to comprehend L2 texts is explicit instruction in reading comprehension strategies (Kern, 1989). As Tierney, Readence and Dishner (1995) described, through the explicit teaching of reading comprehension, students could develop their reading comprehension skills and strategies that could be applied to other reading situations without teacher support. In addition, Alfassi (2004) emphasized that it required explicit instruction of strategy use to help students construct meaning from text. As mentioned above, explicit strategy instruction can be effective to improving ESL/EFL students’ flexible and independent use of strategies as well as promoting their reading ability.

In Taiwan, English is learned as a foreign language and as a required subject in school settings. Especially at senior high school level, English is tested not only in school settings but also in the college entrance examination, which mainly tests students’ reading comprehension. Therefore, with good reading ability, senior high school students can be more successful in their English learning, and most of all, in the college entrance examination. Due to the special test-oriented English learning context, among the four language skills, reading is the most important skill that senior high school students have to master. Furthermore, reading has been a focus in senior high school English learning classrooms.

However, reading instruction in Taiwan has been not effective in training students to become strategic readers who can use both bottom-up and top-down strategies flexibly to achieve effective and efficient reading (Tsao, 1992). In fact, grammar-translation approach is still a dominant teaching method in senior high
school English learning settings. Thus, reading instruction is mainly on the explanation of difficult words, the analysis of difficult grammatical structures, and the translation of the text into learners’ native language. There is little time for the teaching of reading strategies to enhance students’ reading comprehension. As Chang (1994) pointed out, the focus of reading instruction in Taiwan was mainly on word recognition and structure analysis. Therefore, reading behaviors of Taiwanese students tend to be more bottom-up than top-down or interactive (Chiang, 2002). That is, they are often passive decoders who usually read in the bottom-up model of information processing.

Coady (1979) examined the relative changes in process strategies used by ESL readers and indicated that ESL readers would shift to a greater reliance on syntax, lexical meaning, contextual meaning, and higher-order processes as they advanced. However, Fischer-Kohn (1986) stressed that in China, English was taught intensively through bottom-up processing style, which emphasized lexical, morphological, and syntactic skills only; therefore, top-down strategies including proposition-making, integration of ideas, and inference-making were neglected. Kern (1989) also argued that L2 readers often processed texts in a “bottom-up” manner. Besides, Field (1985) pointed out that advanced Chinese students did not actually achieve fluent reading in English. These show that ESL/EFL readers may not follow Coady’s model. Consequently, ESL/EFL students need to receive strategy training, especially that of top-down strategies, to improve their integration of both bottom-up and top-down strategies for better comprehension.

There have been a lot of research studies examining the use of reading strategies among EFL students in Taiwan (Chang, 1998; Cheng, 2000; Hsu, 2000; Joe, 1995; Shih, 1992; Yi, 1994; Yuan & Nash, 1992). However, most of the studies explore the reading problems at college level. Thus, little is known about the effects of strategy
instruction on EFL senior high school students’ reading comprehension. In terms of EFL senior high school students’ failure in achieving strategic reading, there is a need for them to receive explicit strategy instruction to improve their reading ability. It is hoped that through the explicit approach of strategy instruction, they can become strategic readers who can use both top-down and bottom-up strategies flexibly for more successful reading.

Given that EFL senior high school students need to receive strategy instruction to improve their reading ability and that explicit strategy instruction is proved effective in promoting reading comprehension, the researcher is motivated to explore whether EFL senior high students in Taiwan will benefit from the explicit instruction of reading strategies and achieve effective and efficient reading.

Problems of the Study

Reading instruction in senior high schools in Taiwan is not effective in promoting students’ reading ability through the instruction of reading strategies. Therefore, most EFL senior high school students are not strategic readers who can use strategies flexibly to achieve effective and efficient reading. In fact, successful comprehension requires readers’ flexible use of both top-down and bottom-up strategies in their process of reading. Besides, a lot of research has revealed that strategy training is beneficial to enhancing students’ reading comprehension. Especially, the explicit approach of strategy instruction is widely recommended for improving ESL/EFL students’ reading ability. In order to bridge the gap between theory and practice, the researcher is going to conduct a study to examine whether explicit strategy instruction can be incorporated into the regular English classroom to promote EFL senior high school students’ strategy use and reading comprehension. In addition, the researcher hopes to investigate whether the strategy instruction can help
enhance students’ positive attitudes toward English reading.

**Purposes of the Study**

The purpose of this study is to investigate the effects of the explicit instruction of reading strategies on senior high school students’ reading comprehension. The selected instructed strategies include skimming for the main idea, identifying topics and main ideas, making predictions, making inferences, and guessing the meanings of unfamiliar words from context. These strategies are taught to students in an explicit approach of strategy instruction. In the study, the researcher also intends to examine students’ perceptions of reading strategies and their attitudes toward English reading. What is more, the researcher hopes to find out whether the strategy instruction is effective in improving students’ comprehension for different types of questions, and whether the strategy instruction is beneficial to them. Specifically, this study features the following six points:

1. the subjects’ perceptions of the instructed strategies before and after the treatment and their reaction toward the learning of each strategy,
2. the subjects’ attitudes toward English reading before and after the treatment,
3. the effects of the strategy instruction on reading comprehension for all the subjects,
4. the comparison of the effects of the strategy instruction on the higher, intermediate and lower proficiency groups’ reading comprehension,
5. the influence of the strategy instruction on different types of reading comprehension questions, and
6. the subjects’ responses to the explicit strategy instruction.

**Research Questions**

The present study addresses the following research questions:
1. What are the subjects’ perceptions of the instructed strategies before and after the treatment, and what is their reaction toward the learning of each strategy?

2. Does the strategy instruction change the subjects’ attitudes toward English reading?

3. Does the strategy instruction improve the subjects’ reading comprehension?

4. Which of the groups, higher, intermediate or lower proficiency group, would benefit most from the strategy instruction?

5. Which types of reading comprehension questions (main idea questions, detail questions, inference questions, and word-guessing questions) would be influenced by the strategy instruction?

6. What are the subjects’ responses to the explicit strategy instruction?

**Research Hypotheses**

Corresponding to these research questions, the hypotheses of this study are stated as follows.

1. Most of the subjects would not have a clear idea of the instructed strategies and would not know how to use them before the treatment. However, after the treatment, most of the subjects would learn to use the instructed strategies and like to use them.

2. After the treatment, most of the subjects would change their attitudes toward English reading in their learning interests toward English reading and their perceptions of their English reading ability, but not in their self-initiative learning and opinions toward English reading.

3. Most of the subjects’ reading comprehension would be significantly improved after the treatment.
4. The lower proficiency group would benefit most from the strategy instruction.

5. Main idea questions, inference questions, and word-guessing questions would be influenced by the strategy instruction, but detail questions would not.

6. Most of the subjects would have positive responses to the explicit strategy instruction.

Significance of the Study

It is hoped that both teachers and students may benefit from the results of the study in terms of the following aspects. First, this study may highlight the effects of the explicit instruction of reading strategies in improving students’ reading comprehension. In this way, EFL teachers may take it into consideration to incorporate the explicit instruction of reading strategies into their reading instructional programs. Second, the investigation of students’ perceptions of reading strategies may provide EFL teachers with an understanding of senior high school students’ knowledge and use of reading strategies. Therefore, teachers may help students learn to use the strategies they are not familiar with or those they seldom use. Third, the examination of students’ attitudes toward English reading may help teachers understand what attitudes students hold toward English reading. Most of all, it may emphasize that the strategy instruction may to some extent influence students’ attitudes towards English reading. As a result, teachers may consider implementing strategy instruction to help students have more positive attitudes toward English reading. Last but not least, this study may find out the effects of the strategy instruction on students’ comprehension for different types of reading comprehension.
questions. In this way, teachers can check whether students are able to apply their acquired strategies to reading comprehension tests. Besides, teachers can examine which types of reading comprehension questions can be influenced by the strategy instruction and provide more strategy instruction and practice for students to improve their comprehension for those questions more difficult to them.

**Definition of Terms**

**Reading strategies**: According to Duffy (1993), reading strategies referred to the plans for readers to solve problems encountered in constructing meaning from texts. Pressley et al. (1989) described that reading strategies were conscious, instantiated, and flexible plans readers applied and adapted to a variety of texts and tasks. D’Arcangelo (2002) indicated that reading strategies were tools which allowed readers to be more actively involved while reading. The selected reading strategies for the strategy instruction in this study include skimming for the main idea, identifying topics and main ideas, making predictions, making inferences, and guessing the meanings of unfamiliar words from context.

**Reading comprehension**: It is defined as the process of simultaneously extracting and constructing meaning (Snow & Sweet, 2003). Specifically, reading comprehension is the ability to understand information in a text and interpret it appropriately (Grabe & Stoller, 2002). Tonjes & Zintz (1987) indicated that the process of comprehension was viewed as an interactive one, where the readers comprehended through what they already knew about the topic as they interacted with the text.

**Explicit strategy instruction**: It refers to the instruction of reading strategies in an explicit approach which involves (1) Describing the strategy and its purpose—the why, when, how, and where of the strategy, (2) modeling its use and explaining to the
students how to perform it, (3) providing ample assisted practice time—monitoring, providing cues, and giving feedback, (4) promoting student self-monitoring and evaluation of personal strategy use, (5) and encouraging continued use and generalization of the strategy in independent learning situations (Beckman, 2002).

**Top-down processing**: It is an approach for processing a text in which the reader uses background knowledge, makes predictions, and searches the text to confirm or reject the predictions that are made (Anderson, 2003a).

**Bottom-up processing**: It is an approach for processing a text in which the reader builds up a meaning from the black marks on the page: recognizing letters and words, working out sentence structure (Nuttall, 1996). Letters, letter clusters, word, phrases, sentences, longer text, and finally meaning is the order of bottom-up model for achieving comprehension (Anderson, 2003a).

**Higher proficiency group**: Based on the subjects’ English mean scores in the second year, those whose scores are the top 27% are categorized as the higher proficiency group. It consists of 23 students.

**Lower proficiency group**: The students whose English mean scores in the second year are the down 27% are labeled as the lower proficiency group. It includes 23 students.

**Intermediate proficiency group**: Excluding those students in the higher and lower proficiency groups, the rest of the students are classified as the intermediate proficiency group. It consists of 38 students.

**Limitations of the Study**

There are some limitations in this study. First, the researcher took only one semester to conduct the experiment; therefore, students’ long-term use of their acquired reading strategies would not be explored. Second, the researcher was only
able to select five reading strategies for the treatment due to the time limit. Thus, students’ knowledge and application of other strategies would not be investigated. Third, since the subjects in this study are a minority of third-grade students at a senior high school in southern Taiwan, the generalization of this study is limited. Consequently, the findings may not be representative of other EFL senior high school students in Taiwan. Finally, the assessments of students’ reading comprehension are restricted to multiple-choice questions, and thus student’s overall reading proficiency can not be tested.
CHAPTER TWO
REVIEW OF LITERATURE

Introduction

Reading is regarded as a complex process and the prime objective of reading is comprehension. A dozen of studies have proved that reading strategies are effective in promoting comprehension (Anderson, 1992; Carrell et al., 1989; Paris, Lipson & Wixson, 1983). Besides, considerable research documents that good readers are strategic readers who use more strategies than poor readers as they read (Dole et al., 1991; Irwin & Baker, 1989; O’Malley et al., 1985). Therefore, teaching readers how to use specific reading strategies should be a prime consideration in the reading classroom (Anderson, 1999; Oxford, 1990). In addition, reading teachers should be aware of the need for students to become effective strategy users through explicit teacher modeling in reading instruction (Richards & Renandya, 2002).

In this chapter, perspectives of reading and models of reading are presented first in order to shed light on the process of reading and comprehension. Second, ESL/EFL reading theories and instruction are discussed. Third, the role of reading strategies is explored in terms of their relations to reading comprehension. Fourth, explicit comprehension instruction is introduced. Finally, five selected reading strategies, such as skimming for the main idea, identifying topics and main ideas, making predictions, making inferences, and guessing the meanings of unfamiliar words from context are reviewed.

Evolving Perspectives of Reading

Reading was traditionally viewed as a passive process in which the reader simply
decodes the written symbols without bringing his own knowledge to interact with the
text. As Clarke & Silberstein (1977) stated, in the past the reader was regarded as
“working through a text in a rigid, word-by-word fashion, decoding information in a
precise manner from print to speech to aural comprehension” (p.136). Carpenter and
Just (1986) pointed out that early reading research emphasized that “the first step in
reading is to register the printed text and decode words, identifying the orthographic
form and accessing the corresponding word in the mental lexicon” (p.15). Ruddell
(1976) also indicated that “one of the central tasks of early reading instruction is that
of discovering the nature of the correlation between printed units and their oral
counterparts” (p.453). Accordingly, the old view of reading emphasized the process of
fluent decoding, in which the reader proceeded letter by letter to unlock sounds,
combined them into words, and then strung the words into sentences to achieve
comprehension (Orasanu & Penney, 1986). Alderson (2000) called these readers
passive decoders of sequential graphic-phonemic-syntactic-semantic systems.

Recent research on reading has shown that reading is actually an active process,
in which the reader creates meaning from the printed words. Especially after the
mid-1960s, the emergence of the psycholinguistic model of reading has had a great
Goodman & Smith elaborated the “psycholinguistic method” of reading and argued
that it had provided new insights into the reading process as well as the process of
learning to read. Goodman (1988) defined that

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 (p.12).
This indeed challenges the old view of reading. More than the decoding process, reading is an interactive process between language and thought. That is, the reader is not merely a passive decoder, but an active constructor of meaning. Obviously, Goodman’s use of the term decoding focuses on the reconstruction of a message from the writer, rather than simply decoding the written symbols. Therefore, Goodman (1976) described reading as “a psycholinguistic guessing game”, in which the reader actively interacts with the text to construct meaning.

Generally, reading research in the past did not explore the reader’s mind, and what went on within the recesses of the mind that enabled the reader to make sense of the printed page. In contrast, the psychological view of reading began to show how processes, such as memory and attention, went on within the recesses of the reader’s mind to construct meaning (Samuels & Kamil, 1988). Besides, in Goodman’s psycholinguistic perspectives of reading, efficient reading does not result from precise perception and identification of all elements, but from skill in selecting the fewest cues necessary to produce guesses and verify them. Specifically, it is a process of sampling, predicting, testing and confirming (Goodman, 1973).

So far in the review of the psycholinguistic model of reading, we see that reading is not only an active process of constructing meaning, but an interactive process in which the reader brings his background knowledge to guess the writer’s message and utilizes the linguistic cues to verify the predictions he makes. There is an interaction between the reader and the text, which is greatly different from the traditional view of reading. According to Orasanu & Penney (1986), the new view did not deny the need for skill in decoding or the need to teach it, but focused on the active construction of meaning from text and assumed decoding as a means to the construction of meaning rather than the end in itself. Most of all, they argued that reading was now seen as a
flexible set of interacting processes in which good readers used many strategies to create meaning based on the text, and their existing knowledge about its content, language and structure.

Given that reading is not a decoding process but an interactive one in which the reader uses many strategies to interact with the text for comprehension, the following section will further explain the process of reading in terms of the models of information processing. Different models of reading may differentiate passive readers from active readers, or decoding reading from interactive reading.

**Models of Reading**

Researchers build explicit reading models to conceptualize knowledge and theory about the reading process. Most reading models can be classified as bottom-up, top-down, or interactive (Harris & Sipay, 1985). Bottom-up and top-down are two basic modes of information processing resulting from the principle of the schema theory (Carrell & Eisterhold, 1988). Therefore, the schema is fundamental to the process of comprehension.

**The Schema Theory**

The reader’s background knowledge structures are called schemata. Schema theory refers to the role of background knowledge in language comprehension. Based on schema theory, the process of interpretation is guided by the principle that every input is mapped against some existing schema, and all aspects of the schema should be compatible with the input information. That is, readers activate an appropriate schema to the extent that they have comprehended a text. Therefore, there is a close relationship between background knowledge and comprehension.

According to schema theory, comprehending a text is an interactive process
between the reader’s background knowledge and the text. That is, what a text provides for readers is only directions for them to retrieve or construct meaning from their own, previously acquired knowledge. This implies that comprehending words, sentences, and entire texts involves more than the reliance on one’s linguistic knowledge (Carrell & Eisterhold, 1988). As Anderson et al. (1977) emphasized, “every act of comprehension involves one’s knowledge of the world as well” (p.369). Specifically, they argued that many problems in reading comprehension were traceable to deficits in knowledge rather than deficits in linguistic skill narrowly conceived. In Hudson’s (1988) viewpoints, what Anderson et al. suggested was that the schemata which the reader brought to the text were far more important than structures and patterns in the text. Accordingly, background knowledge plays an important role in the process of reading.

Most discussions of schema theory have emphasized the use of schemata to assimilate information (Anderson & Pearson, 1988). Research indicates that a lot of comprehension problems actually come from a lack of prior knowledge. As Irwin & Baker (1989) emphasized, with prior knowledge of the content, readers were able to interpret ambiguous words, make necessary intersentence inferences, and make important predictions and elaborations. On the other hand, a reader’s failure to activate an appropriate schema during reading resulted in various degrees of noncomprehension. Consequently, readers should be trained to activate their background knowledge to achieve better comprehension.

**Bottom-up Models**

Bottom-up models feature a mechanical pattern of reading, in which the reader creates a mental translation of the information in the text step by step, seldom activating the reader’s own background knowledge (Grab & Stoller, 2002).
Specifically, in bottom-up processing, the reader follows the order of beginning with the printed word, recognizing graphic stimuli, decoding them to sound, recognizing words and decoding meanings (Alderson, 2000). As Anderson (2003a) emphasized, bottom-up models consisted of lower-level reading processes, in which letters, letter clusters, words, phrases, sentences, longer text, and finally meaning was the order a reader followed to achieve comprehension. In sum, the bottom-up model suggests a step-by-step linear reading process, moving from the very bottom of the hierarchy of the text, and then gradually to the top (Ko, 2004). Accordingly, we see that in this model of reading, the reader takes a passive role, merely processing information by decoding words.

**Top-down Models**

Top-down models highlight the importance of background knowledge and the reader’s contribution to the text. Thus, the reader takes an active role, constructing meaning from the printed page. The psycholinguistic model of reading proposed by Goodman (1967; 1976) and Smith (1971; 1973), which characterizes an active process of reading, exactly supports the perspectives of top-down approaches. In the psycholinguistic process of reading, the reader reconstructs a message which has been encoded by a writer as a graphic display. To derive meaning, the reader samples the graphic signals encoded in the text, predicts structures, tests them against the semantic context, and confirms a correct prediction (Goodman, 1973). Thus, as Goodman described, the top-down process of reading was cycles of sampling, predicting, testing, and confirming.

Alderson (2000) elaborated Goodman’s psycholinguistic perspectives of reading and argued that in the process of reading, the reader sampled the text for graphic clues, predicted grammatical structures and meaning, confirmed the validity of the
hypotheses advanced and corrected the hypotheses and predictions as necessary as text sampling proceeded. In other words, in top-down models, the reader has a set of expectations about text information and samples enough information from the text to confirm or reject these expectations (Grab & Stoller, 2002). As Nuttall (1996) described, the reader drew on the predictions they could make and based on the schemata they had acquired to understand the text. Anderson (2003a) also stressed that top-down models began with the idea that comprehension resided in the reader, and the reader used background knowledge to make predictions, and then searched the text to confirm or reject the predictions that were made.

On the other hand, Smith’s (1971; 1973) viewpoints also supported the top-down approach of information processing. He indicated that reading was not primarily a visual process, but involved two kinds of information: visual information (information found through the eyes) and nonvisual information (knowledge of language and subject matter behind the eyes). As he stated, the reader who relied too much on the visual system would be unable to get as much information as he needed. As a result, he argued that identifying every word perfectly did not bring about comprehension; instead, meaning should take priority over the identification of individual words. That is, comprehension is achieved by reading for meaning first, and the reader should move from meaning to words, rather than from words to meaning.

In sum, as Alderson (2000) indicated, readers in the top-down model of reading were not passive identifiers of letters and words but active constructors of their own knowledge. They begins with meaning, the top of the hierarchy of a written text, and then moves down to words, the bottom of the hierarchy of a written text (Ko, 2004).

**Interactive Models**

Beginning with Rumelhart (1977), researchers have proposed an interactive view
of reading which argues that lower-level and high-level processes work together interactively as parts of the reading process (Grabe, 1988). According to Rumelhart (1977), both bottom-up and top-down models were linear models which passed information along in one direction only without the interaction of information contained in a higher stage with that of a lower stage to make up for the deficiency. However, an interactive model, as he pointed out, permitted the information found in a higher processing stage to influence the analysis of a lower stage. Motivated by the interactive model of reading, Stanovich (1980) proposed an interactive-compensatory model which stressed that a process at any level could compensate for deficiencies at any other level. As Stanovich emphasized, interactive models of reading provided a more accurate conceptualization of reading performance than did strictly top-down or bottom-up models.

Anderson (2003a) pointed out that the models that were accepted as the most comprehensive description of the process of reading were interactive models. As Carrell & Eisterhold (1988) emphasized, bottom-up models ensured that readers would be aware of information that did not match their ongoing hypotheses about the text, while top-down processing helped readers to resolve ambiguities or to determinate possible interpretations of the incoming data. Nuttall (1996) elaborated the interactive model of reading and stressed that the reader continually shifted from one focus to another in the process of reading, adopting a top-down approach to predict the probable meaning, then moving to the bottom-up approach to verify whether the prediction was what the writer meant. In fact, as Rumelhart (1977) emphasized, both bottom-up and top-down processing should be occurring at all levels simultaneously.

As mentioned so far, reading is mostly believed to be an interactive process, which involves both the bottom-up and top-down approaches of information
processing. Therefore, both bottom-up and top-down strategies are important skills for readers to comprehend texts. As Eskey (1988) highlighted, successful reading was much more than simply decoding but required the integration of both bottom-up and top-down skills for comprehension.

**ESL/EFL Reading Theories and Instruction**

ESL/EFL reading theory has been influenced greatly by the theories of first language reading. The psycholinguistic perspectives of reading have to a large extent directed the development of ESL/EFL reading, and have dramatically changed the theory of ESL/EFL reading from a bottom-up model to “reading as an interactive process” (Eskey & Grabe, 1988; Grabe, 1988). Besides, the schema theory model also provides insights to second language reading that efficient comprehension requires not only one’s linguistic knowledge but the ability to relate the textual material to one’s own knowledge (Carrell & Eisterhold, 1988). What is more, the interactive model of reading has led many researchers to emphasize that efficient and effective second language reading requires both top-down and bottom-up strategies operating interactively (Carrell, 1988; van Dijk & Kintsch, 1983; Eskey, 1988). Accordingly, ESL/EFL reading is a combination of both top-down and bottom-up information processing.

Coady (1979) reinterpreted Goodman’s psycholinguistic model and suggested a model more specifically suited to second language learners. He argued that ESL/EFL reading consisted of an interaction among three factors: higher-level conceptual abilities, background knowledge, and process strategies. In other words, ESL/EFL readers produced comprehension by the interaction of these three components of reading. Besides, he argued that ESL/EFL students would gradually shift from concrete process strategies such as phoneme-grapheme correspondences and word
meaning to more abstract conceptual abilities and making better use of background knowledge.

However, ESL/EFL readers do not exactly follow Coady’s model. In fact, as Kern (1989) pointed out, L2 readers tended to process texts in a bottom-up manner, by which they “focused on surface structure features and built comprehension through analysis and synthesis of this visual input” (p.135). That is, L2 readers are not skillful in the top-down approach of reading. As Fischer-Kohn (1986) stressed, in China, English was taught intensively through bottom-up processing style, which emphasized lexical, morphological, and syntactic skills only; therefore, top-down strategies including proposition-making, integration of ideas, and inference-making were neglected. As a result, ESL/EFL reading instruction should help students develop both bottom-up and top-down strategies to achieve more successful reading.

Clarke & Silberstein (1977) emphasized that ESL/EFL reading teachers should train students to apply strategies to their reading, and provided them with practice in using a minimum number of syntactic and semantic clues to achieve the maximum amount of information. Most importantly, in their views, students should be encouraged to take risks, to guess, and to ignore their impulses to be always correct. This shows that ESL/EFL students need to receive strategy training, especially that of top-down strategies, to improve their integration of both bottom-up and top-down strategies for better comprehension.

Grabe (1991) emphasized that a primary goal for ESL/EFL reading theory and instruction was to understand what fluent L1 readers did, and moved ESL/EFL students in that developmental direction. However, second language reading may be even more complex than first language reading. The obvious reason is that the language skills used by the second language learner for information processing are
still in developmental stages and they are not firmly established in the learner’s mind (Phillips, 1984). Therefore, it takes more instruction and training to help ESL/EFL students achieve effective and efficient reading as L1 readers do.

**The Role of Reading Strategies**

Many researchers have defined the term “strategy” in different ways. Langer (1982), for instance, emphasized that strategies revealed a reader’s resources for understanding. With comprehension strategies, readers are able to conceive a task, attend to textual cues, make sense of what they read, and solve problems when they do not understand (Block, 1986). Garner (1987) explained that strategies were deliberate, planned activities undertaken by active learners to remedy perceived cognitive failure. Besides, Pressley et al. (1989) described that strategies were conscious, instantiated, and flexible plans readers applied and adapted to a variety of texts and tasks. Paris, Wasik, & Turner (1996), on the other hand, viewed reading strategies as a wide variety of tactics that readers used to engage and comprehend text. Moreover, Broek & Kremer (2000) defined reading strategies as mental and behavioral activities that people used to increase their likelihood of comprehending text. In addition, D’Arcangelo (2002) indicated that since reading was a recursive process that requires active engagement, all the strategies were tools which allowed us to be more actively involved while we are reading. Finally, Stahl (2004) emphasized that strategies could be tools in the assimilation, refinement, and use of content. Accordingly, we see that strategies play an important role in the process of comprehension.

Comprehension strategies are important to a reader because they have the potential to provide access to knowledge that is removed from personal experience (Stahl, 2004). According to Johnston (1983), strategies not only aided the reader in
constructing a model of the meaning of text, but were also used to help the reader
monitor understanding and take action when necessary. Other research on second
language reading also shows that reading strategies are beneficial to helping readers
achieve better comprehension (Barnett, 1988; Carrell et al., 1989; Kern, 1989; Shih,
1992). Consequently, we know that there is a close relationship between strategy use
and comprehension. Most importantly, they are effective to helping readers enhance
their comprehension.

A lot of research on comprehension strategies has compared the performance of
good and poor readers in their strategy use while reading. The result of some studies
suggest that good readers, compared with poor readers, are more able to monitor their
comprehension, that they are more aware of the strategies they use, and that they use
strategies more flexibly (O’Malley et al., 1985). Irwin & Baker (1989), on the other
hand, argued that good readers actively looked for meaning. They further pointed out
that good readers were more likely than poor readers to notice the problems hindering
their understanding and to know how to solve them. Besides, good readers who were
actively in control would often choose strategies that would help them with the task at
hand. Dole et al. (1991) also emphasized that expert readers possessed a set of flexible,
adaptable strategies that they used to make sense of text and to monitor their ongoing
understanding. In view of these, the flexible use of reading strategies differentiates
good readers from poor readers. Therefore, there is a need for reading teachers to take
strategy instruction into consideration to help struggling readers improve their
strategy use.

**Strategy Instruction and Reading Comprehension**

Recent reading research has focused on deliberate attempts to teach students
comprehension strategies to improve their reading ability (Stevens, 1988). Besides,
current research in second language reading has also started to center on readers’ strategies (Carrell et al., 1989). Grabe (1991) pointed out that the potential for reading comprehension improvement from comprehension strategy training was enormous. According to Carrell et al. (1989), less competent readers were able to improve their comprehension through training in strategies evidenced by more successful readers. Rhoder (2002), on the other hand, emphasized that teaching students to use strategies to understand and remember texts made them more active, engaged readers.

A great deal of research documents that strategy instruction improves students’ performance on tests of comprehension and recall (Anderson, 1992; Brown et al., 1996; Carrell, 1985; Carrell et al., 1989; Collins, 1991; Pearson & Fielding, 1991). Anderson (1992) revealed that the students who received instruction in multiple comprehension strategies made greater gains on standardized comprehension measures than the control group, and the strategies-instructed students improved their ability in reading for meaning. Brown et al. (1996) investigated the effects of strategy instruction and reported that the strategies-instructed students made more diverse and richer interpretations of what they read than did the control group students.

In Paris, Lipson & Wixson’s (1983) study, strategies were proved important to reading comprehension, and children who received reading strategies instruction increased their awareness of the significance and utility of strategies through practice and discussion. Besides, they scored significantly higher on measures of reading comprehension. Thus, they argued that reading strategies could be taught directly and that teachers and students alike would appreciate the value of learning reading strategies. In addition, Paris, Cross & Lipson’s (1984) study showed that students could be taught about the existence and use of reading strategies through informed, direct instructions in their regular classrooms, and they had greater knowledge about reading strategies after receiving the instructional program ISL (Informed Strategies
As mentioned so far, strategy instruction is effective in promoting reading comprehension. Anderson (1991) emphasized that teaching readers how to use strategies should be a prime consideration in the reading classroom. He further argued that strategic reading was not only a matter of knowing what strategy to use, but also the reader should know how to use a strategy successfully and orchestrate its use with other strategies. That is, it is not sufficient to merely know what strategies are; instead, a reader should know how to apply them strategically. As Anderson (1999) emphasized, students needed to learn how to orchestrate the use of reading strategies to achieve better comprehension. Besides, Anderson (1992) highlighted that strategies instruction helped increase student’s willingness to read difficult material and attempt to understand it, and the strategies-instructed students were more likely to collaborate with classmates to discover meanings in text.

Sprenger (1975) explained that Chinese viewed reading as an activity students learned automatically as they made progress in their language learning; as a result, the development of reading skills was hardly given in the formal instructional settings. On the other hand, Anderson (2003a) pointed out that in many instruction programs more emphasis and time were on testing reading comprehension than on teaching readers how to comprehend. In fact, as he stressed, reading teachers needed to provide learners with shorter passages to teach specific reading skills and strategies explicitly (intensive reading), and they also needed to encourage learners to read longer texts (extensive reading) to practice strategies introduced during intensive instruction. In this way, students can improve their reading ability through strategy instruction.

**Explicit Comprehension Instruction**

The Explicit Teaching of Reading Comprehension aims to help students develop
reading comprehension skills and strategies that can be applied to other reading situations without teacher support. Throughout the 1970s and early 1980s, several research studies began to explore that students could be made aware of reading comprehension strategies or be taught skill that would transfer to independent reading situations through Explicit Teaching of Reading Comprehension. From then on, “Explicit Teaching” was recommended as effective reading comprehension instruction for teaching selected reading comprehension strategies and skill (Tierney, Readence & Dishner, 1995).

Pearson & Gallagher (1983) indicated that much of the research about metacognitive awareness and comprehension monitoring could not be separated from research about explicit comprehension instruction. Explicit comprehension instruction emphasizes that students should be trained to perform a strategy before being asked to monitor its application. In other words, in explicit comprehension instruction, teachers do not merely mention what the skill or strategy is, but model or provide direct explanation of what, how, why, and when a comprehension strategy ought to be used. Besides, they provide guided practice in which they gradually and slowly release responsibility for task completion to students until students are able to complete the task on their own. Finally, teachers ask students to apply their strategies to new and different reading situations (Pearson & Dole, 1987).

To be more specific, the features of Explicit Teaching of Reading Comprehension are: (1) relevance: students are made aware of the why, when, how, and where of the strategy, (2) definition: students are informed as to how to apply the skills through teachers’ modeling, (3) guided practice: students are given feedback on their own use of the strategy or skill, (4) self-regulation: students try out the strategy for themselves and monitor their own use of the strategy or skill, (5) gradual release of responsibility: after modeling and directing, the teacher gradually gives more
responsibility to the student, and (6) application: students try their skills and strategies in independent learning situation (Tierney, Readence & Dishner, 1995). Through these steps, reading strategies are explicitly taught to students.

The role of teacher explanation is an integral part of success in learning how to verify strategy use. Its effect is proved effective in Hansen & Pearson’s (1983) study on inference training. Winograd and Hare (1988) suggested five elements that could be included in teacher’s explanation about strategy use: (1) what the strategy is, (2) why the strategy should be learned, (3) how to use the strategy, (4) when and where the strategy is to be learned, and (5) how to evaluate the use of the strategy. As Hansen & Pearson’s (1983) finding showed, poor readers benefited most from the clear teacher explanation. Aulls (1986), on the other hand, pointed out that explanatory teacher talk had a significant effect on learning comprehension skills. Besides, as Pearson & Dole (1987) emphasized, the guided practice phase, in which teachers slowly and gradually turned the responsibility for completing the task over to students, was crucial to improving students’ independent strategy use. Therefore, as Rosenshine & Stevens (1984) emphasized, students learned to read most effectively when teachers used systematic instruction, monitored student responses, and gave students feedback about their performance.

As mentioned above, we see that in the explicit instruction, the strategy is modeled, practiced, and applied to the whole comprehension task. Besides, the strategy is modeled in a variety of ways and with different tasks, and the adaptability and flexibility of strategies are emphasized (Pearson & Dole, 1987). Pearson & Gallagher (1983) commented on the studies on explicit comprehension instruction (Day, 1980; Palincsar & Brown, 1983; Raphael & Pearson, 1982, all cited in Peason & Gallagher, 1983) and suggested that, through explicit comprehension instruction, students could be taught to acquire and independently apply reading strategies which
would enhance reading comprehension. Besides, they argued that comprehension skills could be taught to students if teachers could define them carefully, model them for students with methods they could use to complete comprehension tasks, offer plenty of guided practice and feedback, and then allow students to practice the skills on their own. In addition, Kern (1989) pointed out that the method widely recommended for improving learners’ ability to comprehend L2 texts was explicit instruction in reading comprehension strategies.

Pearson & Gallagher (1983) argued that explicit instruction did not assume that complex strategies had to be broken down into separate, sequentially ordered subskills. Instead, as they stressed, it was possible to talk about explicit instruction in holistic strategies. As Dole (2000) emphasized, explicit instruction in comprehension focused on practice with the whole comprehension. That is, with explicit instruction, teachers direct and students practice the whole process of comprehension every time they read (Pearson and Dole, 1987).

Levels of Understanding and Types of Questions

In comprehending a text, readers should distinguish three levels of understanding: reading “the lines”, reading “between the lines”, and reading “beyond the lines”. Alderson (2000) emphasized that these three levels of understanding referred to the literal meaning of text, inferred meanings, and readers’ critical evaluations of text. Actually, it is common for readers to distinguish these three levels of understanding.

It is also commonplace to distinguish items that focus explicitly on one part of a text from those that cover more of a passage. In general, there are three different types of comprehension questions. Textually explicit questions are those where both the question information and the correct answer are found in the same sentence. The second type is textually implicit questions, which require respondents to combine
information across sentences. Finally, script-based questions require readers to integrate text information with their background knowledge because correct responses to the questions can not be found in the text itself (Alderson, 2000).

**Selected Reading Strategies**

**Skimming for the Main Idea**

Skimming is a specific reading technique for quick and efficient reading. By skimming, readers go through the reading material quickly in order to get the gist of it, to know how it is organized, or to get an idea of the tone or the intention of the writer (Grellet, 1981). Besides, it is an important technique which enables readers to neglect non-essential information and remember points of importance to them. As Nuttall (1996) pointed out, skimming did not remove the need for careful reading, but enables the reader to select texts, or parts of texts, that are worth spending time on. Accordingly, to achieve efficient reading, students need to skim to adapt their reading speed and determine the main idea.

On the other hand, skimming to get a top-down view is valuable as a way of approaching difficult texts (Nuttall, 1996). That is, in reading difficult texts, skimming helps readers have a general idea of the text they are going to read, which can be effective to facilitating their comprehension of the text. This is especially a practical strategy for EFL/ESL readers. As EFL/ESL readers tend to process texts in a “bottom-up” manner (Kern, 1989), learning to skim for the main idea is a good way to improve their top-down reading, which is beneficial to enhancing their comprehension of difficult texts.

Efficient readers know how to adjust their reading pace whenever necessary, whereas inefficient readers read all material at a consistently slow pace (Cohen & Poppino, 1984). Therefore, poor readers should be trained to know when to skim to
achieve efficient reading.

Identifying Topics and Main Ideas

Stevens (1988) pointed out that readers needed to extract the main idea, or gist, of what they had read, and retained that and related information for future use when learning from text. He further argued that many students were not proficient in recognizing the main idea or theme of passages, and the deficiency would decrease students’ ability to comprehend passages as well as to recall information presented in them. What’s worse, he emphasized that this would hinder and frustrate students in many of their learning activities in school. On the other hand, Williams (1988) also highlighted that the skill of identifying the main idea was fundamental to successful comprehension as well as many aspects of comprehension, such as drawing appropriate inferences from the text, studying effectively, and reading critically. Accordingly, the ability of identifying the main idea can not be overemphasized. As Williams (1988) indicated, “identifying the main idea” was an essential comprehension skill worth receiving a primary place in the reading curriculum, especially in the instruction of learning-disabled youngsters.

Cognitive studies have revealed a lot of distinct differences between good readers and poor readers in terms of their ability of recalling main ideas while reading (Brown & Smiley, 1977; Thorndyke, 1977, cited in Stevens, 1988). Results of these studies show that more proficient readers recall more information from passages they have read, and they are tended to remember the main points of what they read. On the contrary, less skilled readers recall much less information and what they recall is not systematically related to the theme or main idea of the passage (Brown & Smiley, 1977). In other words, poor readers are less sensitive to the important information in text than good readers (William, 1988). Therefore, it is necessary for poor readers to receive more training on this skill.
In all main idea tasks, readers are required to recognize some information more important than other information. The factors that regulate readers’ attention toward particular information are either readers’ purposes for reading or writers’ presentation of information, or both (Cunningham & Moore, 1986). These two are classified by van Dijk (1979) as textually important and contextually important information. Textually important information is considered important by the author, and well written text is usually organized to communicate this importance to the reader. In contrast, contextually important information is regarded as important by the reader for any personal reasons.

van Dijk (1979) pointed out that textually important information was what students needed to identify when asked to get the main idea, central content, or the gist of a passage. Cunningham & Moore (1986) also emphasized that when students were asked to identify the main idea of a passage, they were actually led to rely on the author’s presentations of ideas (textually important information) for determining importance rather than on their own organization (contextually important information). Accordingly, students are usually required to read for some specific facts and ideas the author makes prominent in a main idea task.

To establish the importance of text information and to interpret the author’s signals as to what is important, a reader needs two complex and different sorts of knowledge: declarative knowledge (knowing what a skill or strategy entails) and procedural knowledge (knowing how to perform a skill or strategy). For main idea skills, declarative knowledge indicates knowledge of what a topic is and knowledge of what the explicit or implicit main idea statement is. On the other hand, procedural knowledge refers to how to identify, infer, and generate main ideas or topics (Aulls, 1986). These are important components involved in the main idea instruction. That is,
students need to acquire these two forms of knowledge to facilitate their ability in reading for the main idea.

The declarative and procedural knowledge must be more context free than context bound. Students tend to perform well when asked to infer implied main idea with exercises that provide multiple choice answers. In contrast, when asked to read texts without such cues and write out the main idea, they may perform poorly. In fact, main idea instruction should not merely focus on using multiple choice responses to cue students to what to look for in the text. This will make students bypass the use of knowledge and procedures required to infer and generate an implied main idea because the skill is cognitively bound to the context (Aulls, 1986).

Aulls (1986) stressed that in the stage of building the declarative knowledge, topic and main idea were central concepts to define and that students should be taught to differentiate between a topic and a main idea. Besides, he highlighted that the concept of topic should be taught before that of main idea because the central topic was introduced early in the text. Moreover, he suggested that teachers should use narratives first and later simple expositions in teaching topic, and expositions before narrative stories in teaching main idea.

Based on Aulls’s points of view, students need to be taught two forms of procedural knowledge. The first type is classification and categorization. In a categorization task, students learn to distinguish the superordinate topic category from the subordinate ones. Besides, students need to classify the superordinate topics to relate expository paragraphs together or infer superordinate topics when they are not explicitly stated. These are important tasks in learning to identify the central topic of a paragraph.
Making Predictions

Predicting is a skill which is basic to all the reading techniques and to the process of reading generally (Grellet, 1981). Besides, Smith (1988) also argued that prediction was viewed as the core and the basis of reading comprehension. In Nuttall’s (1996) explanation, if a reader understands a text, he can predict with a fair chance of success what is likely to come next and what is not. Therefore, the ability to predict is both an aid to understanding and a sign of it. That is why making predictions is fundamental to the process of reading and to comprehension.

According to Smith (1988), prediction helped readers to generate potential meaning to texts, to reduce ambiguity, and to eliminate irrelevant information. Besides, prediction begins from the moment we read the title and form expectations of what the passage is likely to contain (Nuttall, 1996). For more systematic training of the skill, students can be given unfinished passages to complete in order to predict what is likely to come next (Grellet, 1981). These require the reader to use schemata about the way stories work, the way texts are constructed, the way people tend to think (Nuttall, 1996). Therefore, making predictions is effective to promoting readers’ activation of their background knowledge, which is an important part in the process of reading.

Making Inferences

The construction of a functional, coherent representation of the information in a text is crucial to successful reading (Van den Broek, 1990; Vonk & Noordman, 1990). In order to achieve this goal, the reader can not simply depend on the explicitly-stated information to construct this representation. On the contrary, he needs to be aware that the representation may also contain some information that is implied by the text. As
stated by Vonk & Noordman (1990), the writer would leave implicit the information that was supposed to be computed from the text by the reader. Therefore, we see that the reader has to draw upon his prior knowledge or his understanding of the context to compute the implicitly-stated information embedded in the text. As defined by Vonk & Noordman (1990), this computation of the implicit information is drawing inferences. Garrod & Sanford (1990) added that no account of the reading process would be complete without explaining how a reader was able to form a coherent mental representation of the text as a whole—a representation that goes beyond the sum of the sentences.

Making inferences is an essential part of the comprehension process. Dole et al. (1991) indicated that inference was the heart of the comprehension process. Moreover, they highlighted that in the process of constructing their own models of meaning for a given text, both readers and listeners made inferences extensively to fill in details omitted in text and to elaborate what they read. Van den Broek (1990) called this a problem-solving process in which the reader inferred relationships among the ideas, events, and states that were presented in the text for the construction of a representation. Through the inferential process, the reader builds the coherent representations that will bring about successful reading.

Raphael and Pearson (1985) conducted a study by asking students to identify and label strategies used to answer inference questions. In the experiment, students were helped to decide whether their prior knowledge alone or a combination of prior knowledge and text information should be applied to answer the inferential questions. Results showed that students made progress in their answering of inferential questions. Hansen & Pearson (1983) conducted a study on inference training and provided modeling, guided practice, and feedback to students in their treatment. Besides, teachers’ explanation of what strategy they were going to learn, why the strategy was
important for them to learn, and when it was important to use the strategy before the treatment was focused. They found that poor readers improved in their inferential measures and they appeared to require the clear teacher explanation. Therefore, they concluded that the training was most effective for those students who typically exhibit frustration in performing higher-level comprehension tasks.

**Guessing the Meanings of Unfamiliar Words from Context**

With the development of psycholinguistic models of reading proposed by Goodman (1976) and Smith (1971) in the 1960s, the focus in teaching vocabulary has been shifted from learning words in isolation to learning words in context (Huckin & Bloch, 1993). Smith (1971) argued that the best way to identify an unfamiliar word in a text was to draw inferences from the rest of the text rather than looking it up in dictionary. This view differentiates top-down processing from bottom-up processing to deal with unknown words, emphasizing the reader depends on the context to interpret words.

According to Stanovich’s (1980) interactive-compensatory model of reading, processing at one level can compensate for deficiencies at another level. Thus, a reader who fails to recognize words fast and automatically would manage to compensate by using higher levels of processing such as contextual information and top-level schemata (Huckin & Bolch, 1993). Based on the interactive model, Coady (1993) argued that “readers do graphophonemic processing of word-forms and retrieval of their meaning, as well as inferencing from global and local context” (p.18). However, he commented that more fluent readers processed vocabulary automatically; therefore, they had more cognitive processing attention to make more top-down interpretations. Stanovich (1980) also claimed that good readers were more proficient in recognizing large amounts of vocabulary automatically and effortlessly than poor
readers, so that they possessed more free attention and cognitive processing resources available for guessing unknown words. Accordingly, helping struggling readers to develop expert guessing skills good readers have to deal with unknown words is what reading teachers should take into consideration in their reading classrooms.

Yorio (1971) indicated that for ESL readers, vocabulary was considered the most serious handicap in reading. Alderson (1984) also pointed out that second-language readers counted heavily on vocabulary, so that they regarded a lack of vocabulary knowledge as the largest obstacle to overcome. According to Sprenger (1975), many average college students in Taiwan considered reading English difficult because of their insufficient English words. Ironically, as he argued, a college student had spent at least six years in English classes studying almost nothing but grammar and vocabulary.

In Chinese EFL classes, accuracy in translation is considered the most important aspect of English learning. Therefore, Chinese students often scribble between the lines of a text, and the reading task is never considered complete without all the unknown words checked in the dictionary (Chern, 1993). Field (1985) proposed a model of Chinese students’ process strategies and suggested that reading was painful and comprehension was slow for the students she encountered in China. She claimed that the most frequently used strategies by intermediate and advanced Chinese students to process a text were syllable-morpheme decoding strategies, and contextual meaning was least used. In her study, she found that Chinese students often resorted to a dictionary when encountering an unfamiliar word, instead of guessing its meaning from the context.

Based on Field’s view, Chern (1993) stressed that helping Chinese students develop the ability to infer the meaning of unknown words from the context should be a priority in the English reading class. On the other hand, Haynes (1984) argued that
ESL readers could be good guessers when the context provided them with immediate clues. However, he pointed out that the difficulty of guessing might increase if the context clues were insufficient or global, or students themselves were lacking in vocabulary knowledge. Consequently, teaching students how to guess word meanings may lead to improved word recognition and text understanding. As Coady (1993) pointed out, teaching explicit techniques for guessing words in context enhanced reading comprehension and vocabulary learning. Huckin & Bloch (1993) also emphasized that second-language learners should learn strategies for guessing word-meanings in context if they hoped to promote their ability of reading comprehension and vocabulary building.