Chapter II

Literature Review

The research for this paper is concerned with metacognitive reading strategies. The literature review includes the following.

1. Reading Theories and Approaches

  1.1 Schema Theory

  1.2 The Top-down and Bottom-up Approaches

  1.3 Critical Thinking and Critical Reading

2. Related Research

  2.1 Important Metacognitive Models

  2.2 Research Concerning Metacognitive Reading Strategies

  2.3 The Role of Metacognition in Reading

  2.4 Challenges and Limitations of Metacognition

1. Reading Theories and Approaches

The research starts with an analysis of reading theories and approaches as well as reading processes, and then reviews some related research on cognition and metacognition in reading. These studies served as a foundation for identifying the research questions and deciding on the

research methodology. They show how research on cognition and metacognition has provided new insight into the role of metacognitive awareness during reading.

To begin, reading theories were adopted from traditional behaviorism. According to Nuttall (1996), reading was considered as a process of decoding, deciphering, identifying, articulating, pronouncing, understanding and responding to a text. Psychology then introduced cognitive and metacognitve theories, and began to examine cognitive and metacognitive strategies and their influence on reading efficiency.

Broadly speaking, reading is an interaction between the reader and the text. In the reading process, the reader can not talk with the writer directly; but a good reader can identify and understand the ideas, facts, arguments and feelings of the writer because the text acts as a vehicle between reader and writer. If the meaning of a text is not accessible to the reader, the reader cannot obtain the information that the writer intends to convey. Communication cannot be achieved (Nuttall, 1996). Reading is a complex process. It requires prior knowledge, linguistic knowledge (phonology, syntax, semantics), the ability to decipher (phoneme awareness, knowledge of the alphabetic principle), lexical knowledge, and integrating competence including comprehension, application, analysis, synthesis and evaluation etc. (Gough, 1985).
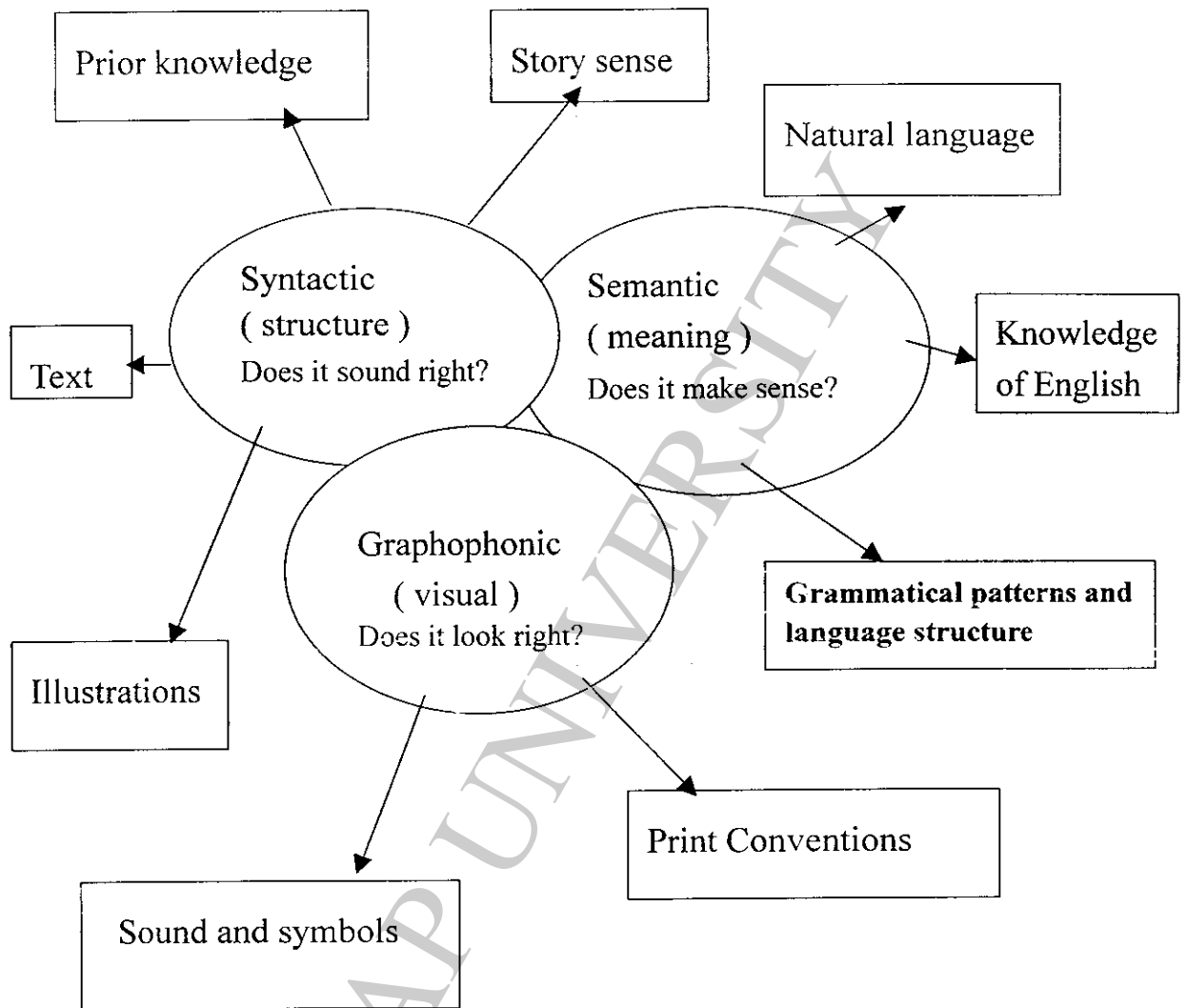
The most important thing for successful reading is that the reader

has various approaches, processes, skills and strategies to use when difficulties are encountered.

According to Clay (1993), there are three information systems involved in the reading processes. She describes these as semantic meaning, syntactic structure and graphophonic visualization. For example, when we read the sentence, "She came home with a **bouquet** of flowers." First, we know that " a girl or woman came home, rather than a boy or a man. A picture of a girl or a woman comes into our mind as soon as our eyes contact the print. Third, we guess "she" brought a bunch of flowers with her when she came home although we are not sure what kind of flowers. Fourth, we gain further information behind the lines through the context clues. We can make a judgment from the situation (brought a bunch of flowers with her) that she was either happy or sad. The flowers may mean that she needs comfort or wants to celebrate something.

The goal of reading is to construct meaning by using information sources. The reader breaks through to meaning by utilizing cueing systems that act as information sources, in reference to phonics, grammar, and meaning. The goal for the student is to access all three information sources while reading. These ideas are addressed in the following diagram (See Figure 1.1 The Three Reading Cueing Systems).

Figure 1.1: The Three Reading Cueing Systems

Prior knowledge

Story sense

Natural language

Syntactic
(structure)
Does it sound right?

Semantic
(meaning)
Does it make sense?

Knowledge
of English

Text

Graphophonic
(visual)
Does it look right?

Grammatical patterns and
language structure

Illustrations

Print Conventions

Sound and symbols

When all three cueing systems are in balance,

a reader is employing good reader strategies.

In the last decades, many reading theories and approaches such as

schema theory (Anderson & Pearson, 1984; Anderson, 1994), critical

thinking, critical reading (Goodman, 1977), the top-down and bottom-up

approaches (Nuttall, 1996) have been introduced into reading classes by educational researchers and language teachers. The theories and approaches are addressed in the following.

1.1 Schema Theory

Schema theory describes the process by which readers combine their own prior knowledge or background knowledge with the information in a text to comprehend that text. It emphasizes the readers' ability to connect what they are reading with what they already know, which can help them have better understanding as well as to form new concepts and ideas for further reference (Anderson & Pearson, 1984). Schema depends on experience that is already stored in memory. It plays an important role in reading. It helps the reader interpret new information by using old information. For example, if readers encounter a title "At the Bus Station", he or she will imagine a picture of a bus station that was stored in their memory. The picture may include people buying tickets, waiting for getting on or getting off the bus, a very noisy place etc. If a reader uses his or her schema in the reading process, he or she may have a more vivid experience of the text while reading, and may understand it more easily because experiences help to stimulate the imagination. Imagination helps the reader form an image from the printed text.

1.2 The Top-down and Bottom-up Approaches

The top-down approach is to use schema to construct an over view " an eagle's eye view of the landscape from a great height and understand the nature of the whole terrain" (Nuttall, 1996, p.17). In the pre-reading phase, it means that readers draw on their own intelligence and experiences and make predictions before reading, such as scanning the title of a text, looking at the pictures in a text, skimming the topic sentences, the first and last paragraphs, which helps readers adopt "an eagle's eye view" when they start to read. Thus a reader will consider a new text as a whole and relate it to their knowledge and experience before reading. The goal of reading is constructing meaning in response to text rather than the mastery of letters, sound relationship and words. So readers can comprehend a selection even though they do not recognize every single word. This may help the reader predict the general ideas in the text. It also helps them better understand when they start to read.

In contrast to the top-down approach, the bottom-up approach is to build up meaning from the written words on the page i.e. recognizing letters and words, and then working out sentence structure (Nuttall, 1996). In fact, this is the core of reading. In the reading phase, the reader may integrate schema, the top-down approach and other linguistic competence to grasp the meaning of the text. For example, a reader will identify letter features, link these features to recognize letters, combine letters to

recognize spelling patterns, link spelling patterns to recognize words, then proceed to the sentence, the paragraph and construct the text by distinguishing which parts refer to which participants, settings, or ideas.

Distinguishing surface structure and notional structure requires critical thinking and critical reading. If the readers intend to obtain as much information as possible from the text, the use of cognitive and meta-cognitive strategies, including memorizing, predicting, monitoring, coordinating and reality checking are critical (Hosenfeld, 1977) to help them connect new information to old ideas. Thinking strategies must be employed to deliberately plan, monitor, and evaluate the thinking processes (Smith, 1971). All of these require integrating knowledge, skills and strategies, as well as language competence.

1.3 Critical Thinking and Critical Reading

Critical thinking is "the careful, deliberate determination of whether we should accept, reject or suspend judgment about a claim, and the degree of confidence with which we accept or reject it" (Moore & Parker, 1994). Critical thinking is the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned and goal directed. This kind of thinking involved solving problems, formulating inferences, calculating likelihood, and making decisions. Critical thinking also involves

evaluating the thinking process. The reasoning that went into a conclusion leads us to the kinds of factors considered in making a decision. It is sometimes called directed thinking because it focuses on a desired outcome (Halpern, 1996). The purpose of critical thinking is, to achieve understanding, evaluate points of view, and solve problems. All three areas involve asking questions. A critical thinker may ask pertinent questions by connecting old information with new ideas, distinguishing between facts and opinions or personal feelings, judgments and inferences, inductive and deductive arguments. It also involves the objective and the subjective, recognizing the structure of arguments, and defining, analyzing, and devising solutions for problems and issues. All of this helps the thinker arrive at reasonable and informed conclusions.

Critical reading means reading with a conscious effort to see both sides of an issue, draw valid conclusions, and detect bias. It involves making judgments which have to do with the author's intent or purpose; with the accuracy, logic, reliability and authenticity of writing, and with the literary forms, components, and devices identified through literary analysis. It also involves using logical and rhetorical skills. Harris and Hodges (1981) summarize the goals of critical reading as follows:

1). Recognizing an author's purpose. This involves inferring the authors' basis for choice of content and language.

2). Understanding tone and persuasive elements. This involves

classifying the nature of language choices.

3). Recognizing bias. This involves classifying the nature of an authors' pattern of choice of content and language.

In order to achieve these goals, successful readers often integrate reading theories, approaches, skills and strategies and evaluate the text while they are reading. This enables them to become part of the writer's audience so they can read the assigned text with an open and active mind. For example, when readers read a text, they are willing to spend time reflecting on the ideas presented in their reading assignments, evaluate and solve problems while reading rather than merely compiling a set of facts to be memorized. Critical readers are eager to express their thoughts on a topic. They may ask themselves questions such as what is the topic of the text? What is it that the author wants us to know or believe about this topic?

Critical reading provokes critical thinking. When readers look for topic sentences, or summarize the main ideas, they use the information acquired in these activities to step into the text and to try and figure out what the writer's attitude, goals, and personal viewpoint are. This provokes active reading, language practice and a great deal of language input because words and sentences act as a vehicle between reader and writer. This activity results in better understanding of the story and better retention of the vocabulary, grammar and sentences. It promotes students'

reading comprehension, language learning and motivation as well.

At this point, we can see that critical thinking promotes critical reading and critical reading facilitates critical thinking. Their relationship is symbiotic. It is not always easy to tell critical thinking from critical reading, nor to distinguish the boundary between them. If students are good at critical thinking and critical reading, they will benefit in their further reading.

Reading is a complex process. It not only involves cognition but also metacognition, the ability to orchestrate one's own reading. Good readers think about how their learning styles interact with the text. Then change reading strategies to meet the needs of understanding the text. In reading, cognition and metacognition are both important. They will be discussed in the following section.

2. Related Research

2.1 Important Metacognitive Models

Some metacognitive models have been introduced in the second language learning studies since the 1970s. Some of them are addressed in the following.

Flavell's Metacognitive Model

Flavell (1979) states that metacognition includes: the cognitive goals, metacognitive knowledge, metacognitive experiences and cognitive

activities or strategies. Cognitive goals affect cognitive activities. Learners always regulate their cognitive strategies in order to achieve cognitive goals. Cognitive strategies are adopted to implement their goals by controlling metacognitive knowledge and experiences. The interaction between them can be seen in Figure 2.1.1.
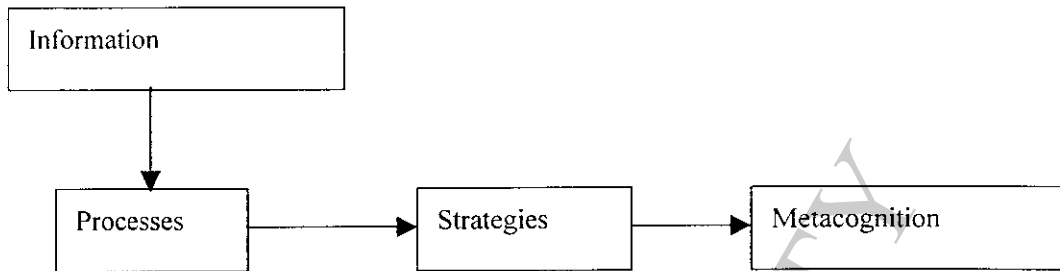
Figure 2.1.1: Flavell's Metacognitive Model
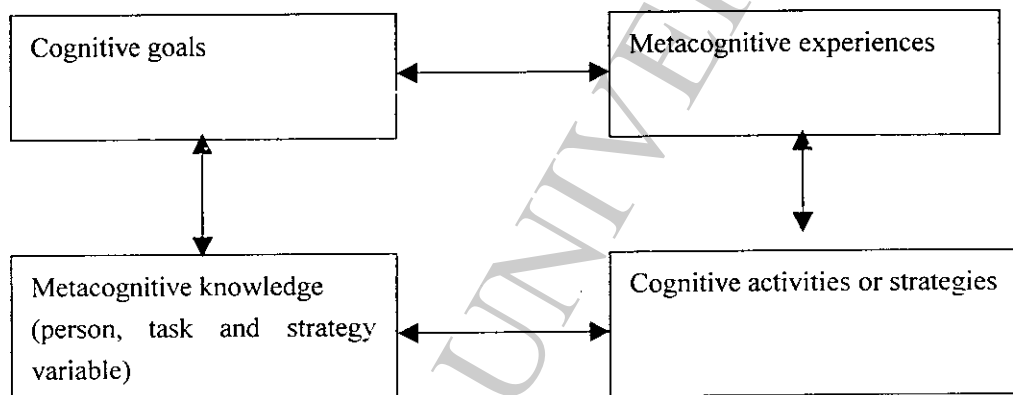
Lawson's Metacognitive Model

According to Lawson's view of the information gathering process (Lin, 1999), metacognitive ability is formed gradually in the process of dealing with information. The information gathering processes can be seen in Figure 2.1.2.
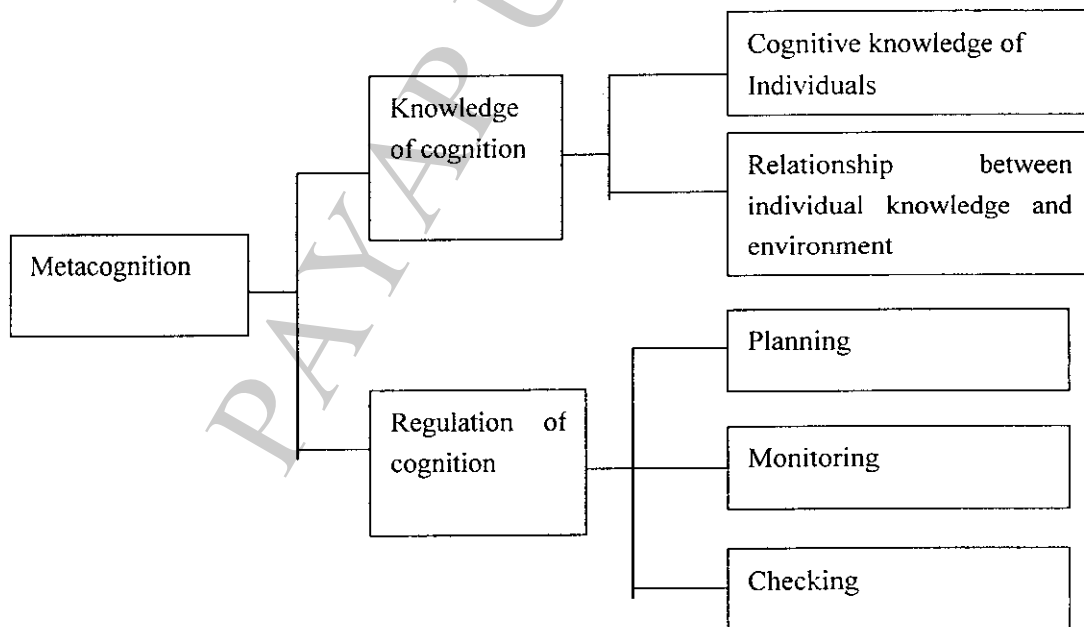
Figure 2.1.2: Lawson's Metacognitive Model

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┌──────────────────┐
│  Information     │
└──────────────────┘
         │
         ▼
┌──────────────┐      ┌──────────────┐      ┌──────────────────┐
│  Processes   │─────▶│  Strategies  │─────▶│  Metacognition   │
└──────────────┘      └──────────────┘      └──────────────────┘
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Brown's Metacognitive Model

According to Brown (1981), metacognition consists of two components. One is knowledge of cognition. The other is regulation of cognition. The relationship between them can be seen in Figure 2.1.3.

Figure 2.1.3: Brown's Metacognitive Model

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                          ┌──────────────┐       ┌──────────────────────────┐
                          │  Knowledge   │──────▶│ Cognitive knowledge of   │
                          │ of cognition │       │ Individuals              │
                          └──────────────┘       └──────────────────────────┘
         ┌─────────────┐        │               ┌──────────────────────────┐
         │ Metacognition│───────┤               │ Relationship    between  │
         └─────────────┘        │               │ individual knowledge and │
                                │               │ environment              │
                                │               └──────────────────────────┘
                          ┌──────────────┐       ┌──────────────────────────┐
                          │ Regulation of│──────▶│ Planning                 │
                          │ cognition    │       └──────────────────────────┘
                          └──────────────┘       ┌──────────────────────────┐
                                                 │ Monitoring               │
                                                 └──────────────────────────┘
                                                 ┌──────────────────────────┐
                                                 │ Checking                 │
                                                 └──────────────────────────┘
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Paris' Metacognitive Model

According to Paris (1983), metacognition includes two psychological activities: Self-assessment and self-monitoring reflection. The relationship between them can be seen in Figure 2.1.4.

Figure 2.1.4: Paris' Metacognitive Model
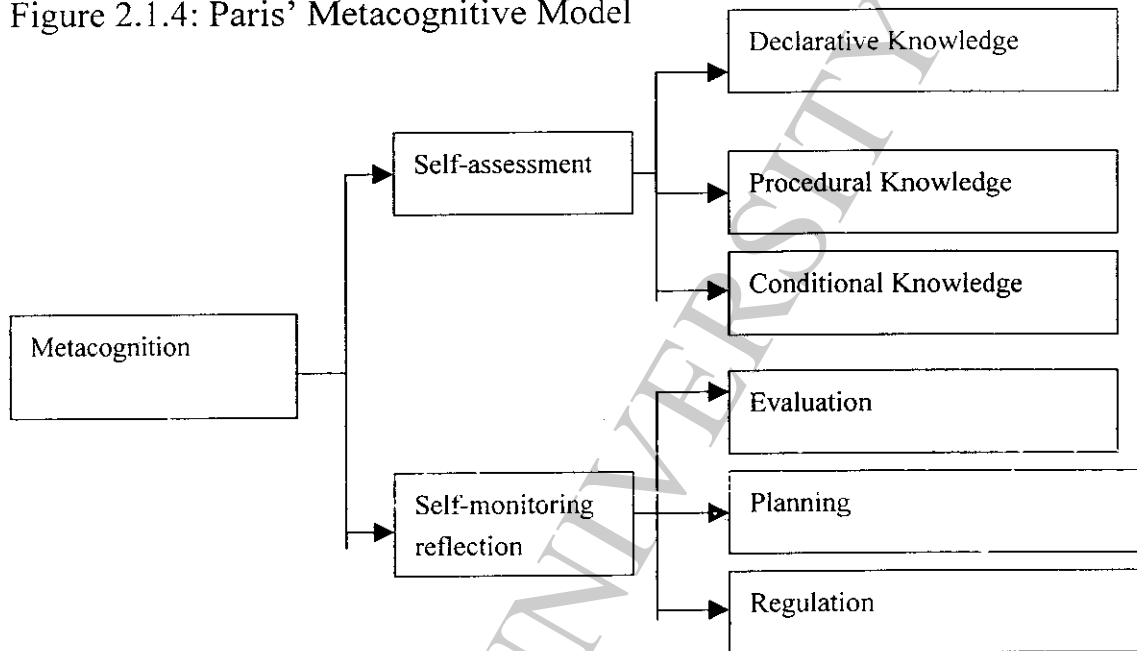
Borkowski's Metacognitive Model

Borkowski (Lin, 1999) proposes a new matacognitive model which emphasizes the importance of belief in cause and effect, the motivation for success, self-respect and self-possession, executive processes, general strategy, specific strategy knowledge, relational strategy knowledge and the application of strategy. The relationship between them can be seen in Figure 2.1.5.

Figure 2.1.5: Borkowski's Metacognitive Model
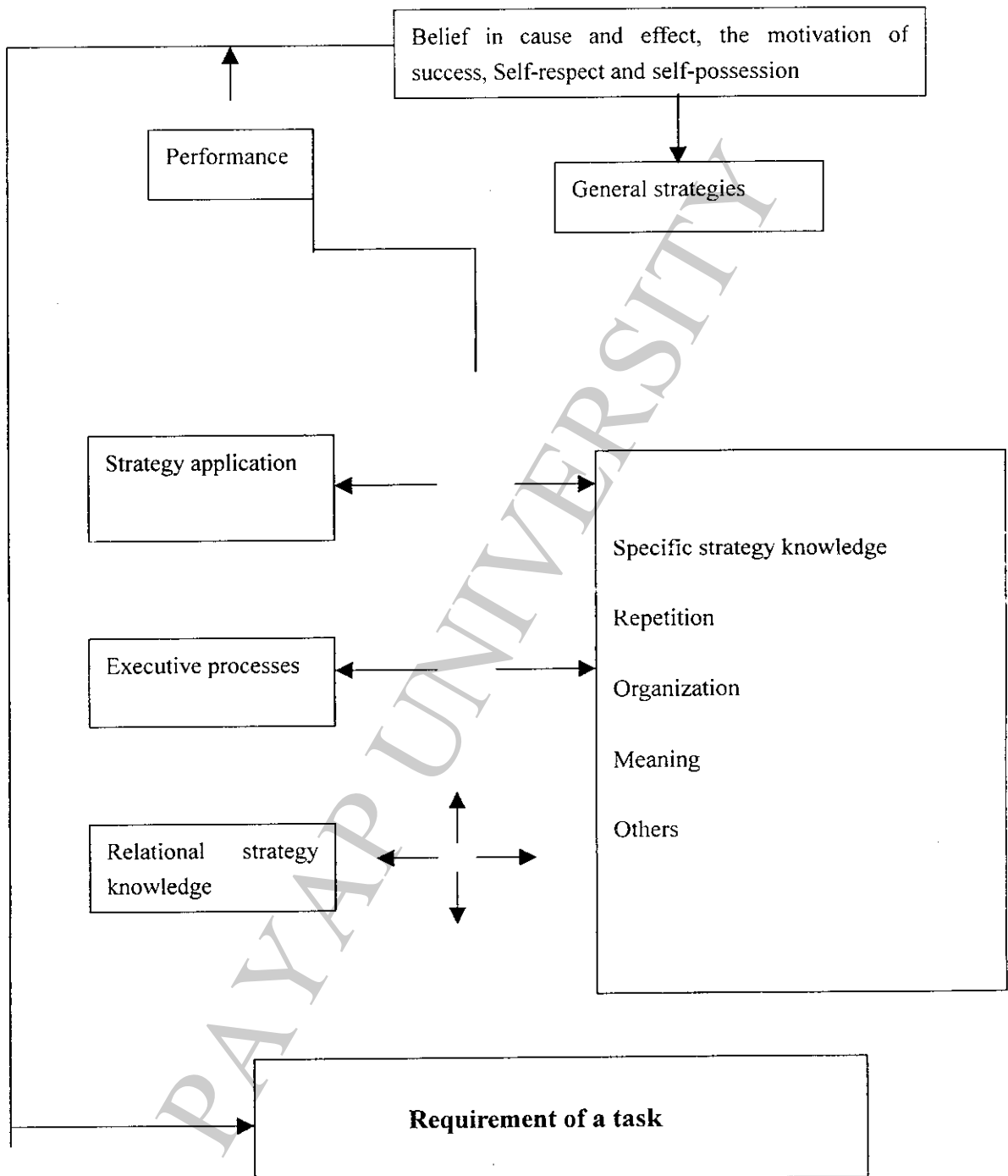
The metacognitive models mentioned above have shown that metacognition is very important in learning and reading. It integrates

cognitive goals, with knowledge, experiences and actions or strategies. It is critical in the process of information gathering and executing plans. Metacognitive processes are psychological activities involving self-assessment and self-monitoring reflection.

2.2 Research Concerning Metacognitive Reading Strategies

Since the early seventies, some research in the area of reading has concentrated on strategies that facilitate better reading. The use of various strategies has been found to be effective in improving students' reading comprehension (Baker and Brown, 1984; Brown and Baker, 1983). Some researchers have also investigated the reading strategies of successful and unsuccessful second language learners.

Kluwe (1982) and Schoenfeld (1987) found four categories of metacognition in reading. They are cognitive monitoring, regulations of one's own thinking process (Kluwe, 1982, p. 210), regulation of the selection of strategies and theoretical aspects of metacognition in educational application (Hacker, 1998). These studies focus on how metacognitive processes can facilitate learning.

In the 1980s and 1990s researchers in cognitive psychology joined the researchers in developmental psychology and educational psychology to produce more sophisticated methodologies for researching and assessing metacognition (Nelson, 1998).

Blakey (2003) presents three basic metacognitive strategies which readers must use in chronological order. They are: connecting new information to former knowledge, selecting thinking strategies deliberately, and planning, monitoring, and evaluating the thinking processes.

Devine (1984) describes metacognition as a high level thinking which involves active control over the cognitive processes of learning. It includes the concepts of metacognitive knowledge, and metacognitive experiences or regulations. The former refers to "the part of one's acquired world knowledge that has to do with cognitive matters" (Garner, 1987, p.21). Garner (1987) subdivided metacognition into three distinct types: person variables, task variables and strategy variables.

According to Peters (2000), metacognition refers to the ability of learners to be aware of and monitor their learning processes. Although related, cognition and metacognition differ: cognitive strategies are those needed to perform a task whereas metacognitive strategies are necessary to understand how it was performed (Rivers 2001; Schraw 1998). Metacognitive strategies are generally divided into two types: self-assessment (the ability to assess one's own cognition) and self-management (the ability to manage one's further cognitive development) (Rivers 2001). This metacognitive awareness provides readers with strategies and resources when they meet problems in

comprehension.

These trends in the research on metacognition can be grouped around two types of metacognitive strategies: Self-assessment and self-management. Self-assessment deals with the ability of learners to assess their knowledge and abilities. Research indicates that learners who are skilled in metacognitive self-assessment or aware of their abilities are better planners and perform better than those who are unaware (Rivers 2001; Schraw and Dennison 1994). Mokhtari and Sheorey (2002) also developed an instrument for assessing metacognitive awareness in reading strategies. In their study they have identified three categories of metacognitive strategies that readers use in reading. They are Global Reading Strategies, Problem Solving Reading Strategies and Support Reading Strategies. They claim that the use of such instruments can help learners to incorporate strategies that will improve their metacognition.

The other type of metacognitive strategy is self-management. It is related to the area of strategies. The role of instructors in enhancing learner cognition is stressed in much of the material on self-management. Teachers who are aware of their own metacognitive functioning tend to play a more significant role in helping learners develop skills in metacognition (Sternberg 1998). Suggestions for instructors can be found in several sources including Cromley (2000); Field (1999); Saunders, Batson, and Saunders (2000); and Schraw (1998). Helping adult learners

improve their self-management skills through the use of specific techniques is the subject of many articles. Daley (2002), for example, describes how she used concept mapping to help adult learners become more aware of and understand their learning processes. Paris (1984) used self-regulated learning strategies to help readers improve their metacognition so that they could read more effectively.

2.3 The Role of Metacognition in Reading

The emergence of metacognitive theory began in the 1970s. John Flavell's pioneering work helped to give form to the concept and provided an impetus for further study (Hacker, 1998, p.2). The belief that metacognitive awareness has an effect on reading and reading comprehension is not new but in the past decades, research has greatly enhanced our understanding of not only cognitive process, but also metacognitive strategies involved in reading. These are understood as: "planning, checking and evaluating" (Baker & Brown, 1984, p.354), and "self-regulated reading" (Paris, 1984.). Paris claimed that any attempt to comprehend must involve comprehension monitoring and metacognitive self-regulated reading (p. 619). This monitoring system works more effectively when readers have metacognitve awareness (Anderson, 1994). Good readers who are metacognitively aware will have knowledge of what is effective reading, and what makes reading difficult. They will

also have knowledge about what reading strategies are available, how they function, when they should be applied and why they help comprehension (Paris, 1984).

Research also shows that effective readers who are metacognitively aware constantly check to make sure new information is consistent with what has already been learned (Anderson, 1994). Often this monitoring process and the construction of meaning occur unconsciously until the reader detects a difficulty in understanding. When this happens, readers slow down and enter a deliberate, controlled state that involves a variety of active processing strategies (Palincsar, 1984, p. 118).

According to Goodman (1967, 1977), reading is a psycholinguistic guessing game. When readers encounter a failure in comprehension and encounter words that they don't know, they will select the newest, most productive cues to produce guesses (p.138). While these guesses are being made the reader will attempt to relate or connect the new information with schema that already exists. Meaningful reading takes place when already-known ideas subsume or anchor the new information found in the text with the schema that has already been created by the reader (Anderson, 1994, p. 258). In order to do this effectively, the reader has to be aware of which aspects of his or her knowledge are relevant. If readers are not metacognitively aware of what knowledge they have, then they will not effectively connect this new information with the old and so

will fail to comprehend the text. It is during this monitoring that greater metacognitive awareness can aid comprehension.

Equally, important is the development of an internal monitoring system (Almasi, 1995, p. 317). Metacognition facilitates self-regulated reading (Paris, 1984), and this monitoring system occurs more effectively when readers have metacognitive awareness (Anderson, 1984). During comprehension monitoring, good readers who are metacognitively aware will check to make sure new information that is found while they are reading is consistent with the information they already have (Anderson, 1994). If the new information is not consistent with what the reader is expecting, he or she will either reject the new information or modify the old (Anderson, 1984). If readers have not developed metacognitive awareness of the reading process and are unable to regulate their own comprehension or understanding, then amending their interpretation becomes difficult and reading comprehension can suffer (Almasi, 1995, p. 317).

Clearly, metacognition combines various thinking and reflective processes. It plays a large role in reading comprehension. Anderson (1994) summarizes five primary components in the following.

1). <u>Preparing and planning for learning</u>. During the pre-reading phase, metacognition is used to actively reflect on the use of prior knowledge as a basis for forming predictions and questions about what is

to be read. Metacognition directs cognitive activity in clarifying the purpose for reading and selecting effective reading strategies.

2). <u>Selecting and using learning strategies</u>. During the reading phase, students' metacognitive strategies direct the monitoring of reading comprehension, constructing mental notes and images about important information, posing and attempting to answer questions, revising predictions, assessing attitudes toward the task and making adjustments to increase understanding.

3). <u>Monitoring strategy use</u>. In the post-reading phase, metacognition triggers reflection on the reading material and the recall of key ideas and details to summarize the text. Appropriate strategies may be selected if reflection identifies gaps in understanding.

4). <u>Orchestrating various strategies</u>. When students are struggling in reading, they need the ability to coordinate, organize, and make associations among the various strategies available in order to avoid a breakdown.

5). <u>Evaluating strategy use and learning.</u> Reading is not a linear process but rather a cyclic process. It is important to encourage readers to think about and evaluate what reading strategies are successful or unsuccessful. This helps readers develop independence in reading based on personal insight. It also builds flexible and confident problem solving, and encourages self-efficiency and pride.

Metacognition plays a crucial role in reading. It involves not only planning for learning, selecting and using a wide range of strategies but also orchestrating various strategies in order to solve reading problems. Only readers who are aware of these metacognitive strategies while reading, can they use flexible problem solving and comprehend the text efficiently.

2.4 Challenges and Limitations of Metacognition

Paris (1983) states that the importance of metacognition and strategic reading is evident in the tactics readers use to monitor comprehension. However, relying on metacognitive awareness to improve reading comprehension has its challenges and limitations (Paris, 1984), because a number of factors can influence the reader's ability to self-monitor and comprehend texts. Paris (1990) summarizes five factors that might interfere with a person's ability to effectively monitor and understand a text. They are:

1). The reader's age,

2). Learner characteristics,

3). Lack of general background knowledge,

4). Lack of knowledge about the reading process and reading strategies.

5). The nature of the reading material.

Research suggests that knowledge of cognition is stable, and late developing and that the age of a person can have an effect on a person's metacognitive awareness and ability to monitor and control reading (Hacker, 1998, p. 167).

A second set of factors that might limit a reader's ability to comprehend and control his or her own construction of meaning has been described by Otero (1998) as learner characteristics. These characteristics might include the learners' conceptions and self-perceptions of their own ability, their motivation and orientation, and their verbal skill and ability to generate inferences (Otero, 1998). If readers approach reading with low expectations for success, they might experience anxiety and an unwillingness to persevere when they encounter difficulties in their reading (Paris, 1984).

A third factor that limits a reader's ability to comprehend and control his or her own construction of meaning is a lack of background knowledge needed to interpret a text. Readers will struggle to comprehend a text if they have limited knowledge of the content of the book. They will also struggle if they do not have knowledge of the specific linguistic features that are needed in order to make sense of the words and sentences found on a page. And if readers are lacking appropriate cultural knowledge, this will limit their background knowledge, and they will be missing the appropriate schema that is

needed in order to link new information with the old, and comprehension will be difficult (Baker & Brown, 1984).

A fourth factor that might limit a reader's ability to comprehend and control his or her own construction of meaning is a lack of knowledge of the reading process and of reading strategies (Paris, 1984, p. 616). Readers need an awareness of the conventions of print and the nature of reading (Paris, 1984, p. 616). If students have a lack of knowledge about reading strategies and if they cannot apply them while reading, then they will struggle to monitor their own reading and understanding of a text.

A fifth factor that might make reading comprehension difficult, even if the reader is metacogntively aware and skilled at self-monitoring, is the nature of the material (Otero, 1998). If the author does not provide enough clues and does not make relationships clear, then the reader will have difficulty understanding regardless of whether or not he or she has realized that a comprehension failure has occurred (Baker & Brown, 1984). If this happens, a reader might have difficulty comprehending a text regardless of the metacognitive strategies that he or she possesses.

Effective reading is affected by many factors. The more we understand these factors, the better able we are to successfully complete and master reading tasks.

In conclusion, understanding some reading theories, approaches, processes as well as cognitive and metacognitive reading strategies while

reading is very important and useful. These models help readers to have new insight into how the reading is going, and to figure out what thinking process is most effective, and how to monitor, evaluate and self-regulate strategies in order to read efficiently. Furthermore, understanding the challenges and limitations of metacognition helps instructors select appropriate pedagogical models in reading instruction and to improve the quality of language teaching.