CHAPTER 2

LITERATURE REVIEW

Metacognitive strategies are a component of metacognition. This chapter will provide some related literature on metacognition, metacognitive strategies, strategies within metacognitive strategies, role of metacognitive strategies in reading, the reading process, schema theory: top down and bottom up, comprehension of texts by EFL readers, the effect of L1 on L2, research on types of metacognitive strategies used, research on training of metacognitive strategies, and role of think-aloud.

2.1 Definition of Metacognition

Various researchers define metacognition in a number of ways. Nelson (1992:1) defines metacognition as cognition about one's own cognitions. Anderson (2002 cited in Santana, n.d:126) defines metacognition as "the ability to think about your thinking-to make your thinking visible." Livingston (1997) defines metacognition as "higher order thinking which involves active control over the cognitive processes engaged in learning" or one's 'knowledge' about one's 'cognitive processes' (Matlin, 2002: 175) or the process of "thinking about thinking" (http://tip.psychology.org/ meta.html).

Beyer (1987:24) states that "Some researchers describe metacognition as the highest, most sophisticated level of thinking. Many conceive of it as the executive function of the mind that functions by which individuals manage and control how they go about using their minds." Flavell (1976: 232) describes metacognition as follows:

> "Metacognition refers to one's knowledge concerning one's own cognitive processes and products or anything related to them… For example, I am engaging in metacognition…if I notice that I am having more trouble learning A than B; if it strikes me that I should double check C before accepting it as a fact…Metacognition refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes…usually in the service of some concrete goal or objective."

Flavell believes that repeated use of metacognition may become automatic for learners. Likewise, Marzano, Brandt, Hughes, Jones, Presseisen, Rankin, and Suhor (1988: 9) also believe that metacognition makes one aware of one's thoughts especially when one is performing a particular task "and then using this awareness to control what one is doing." It requires one to stand outside one's own head and "be aware of how one is going about his/her own thinking so that he/she can better complete what it is they are trying to accomplish" (Beyer, 1987: 24).

Livingston (1997) states that people are involved in metacognitive activities daily. "Activities such as planning how to approach a given learning task, monitoring comprehension, and evaluating progress toward the completion of a task are metacognitive in nature" (Livingston 1997, Introduction section, para.1).

Thus, metacognition relates to thinking deeply about one's thoughts while performing cognitive processes and active control over the cognitive processes.

2.1.1 Components of Metacognition

According to Flavell (1979), metacognition consists of metacognitive knowledge and metacognitive experiences. Firstly, ***metacognitive knowledge*** is the knowledge that can be used to control cognitive processes and is divided into three categories (Flavell, 1979): knowledge of person variables, task variables, and strategy variables. The knowledge of person involves general knowledge about how one learns and processes information or in other words knowledge of one's own learning processes. For instance, one knows that one can study better in a quiet library than at home where one would probably watch T.V. or face many distractions. Second, knowledge of task variables refers to knowledge about the nature of the task, for example, one may need more time to comprehend a science text as compared to a novel. Finally, knowledge of strategy variables refers to knowledge of both cognitive and metacognitive strategies as well as knowledge about when and where to use such strategies appropriately. Therefore, metacognitive knowledge refers to the knowledge of person, task and strategy variables.

Secondly, "***metacognitive experiences*** involve the use of metacognitive strategies" (Brown, 1987). Nelson (1992:1) states that metacognitive experiences refer to the ongoing monitoring of one's own cognition and the ongoing control of one's own cognition. According to Nelson, metacognitive experiences are the actions of monitoring and controlling which are the processes of metacognitive strategies. So metacognitive strategies are the action of metacognitive experiences.

However, since metacognition is a construct, even though Flavell divides it into two components ***(metacognitive knowledge and metacognitive experiences***), some

educators such as Beyer (1987:192), Matlin (2002:175), Dror (2007: 1), and Santana (n.d:128) still use metacognition as a general term covering metacognitive knowledge and metacognitive experience or metacognitive strategies. That is they do not divide it as Flavell does. So when they use the term metacognition, they might refer to metacognitive knowledge and metacognitive experience or metacognitive strategies. The researcher found that when discussing about reading, some researchers such as Singhal (2001: Introduction, para.3), Yang (2002: Introduction, para.3), and Anderson (2002) describe metacognition as metacognitive strategies.

In this study, the researcher focused on only one component of metacognition-metacognitve experiences, the use of metacognitive strategies. More specifically, the researcher examined the types of metacognitive strategies used by Thai EFL learners when trying to understand an English text.

2.1.2 Elements of Metacognitive Strategies

"Metacognitive strategies are sequential processes that one uses to control cognitive activities, and to ensure that a cognitive goal (e.g., understanding a text) has been met" (Livingston, 1997, Metacognitive Regulation section, para. 1). O'Malley et al. (1985b: 560) identify the processes in the case of language learning by saying "metacognitive strategies involve thinking about the learning process, planning for learning, monitoring of comprehension or production while it is taking place, and self-evaluation of learning after the language activity is completed." However, educators still do not agree on the elements that constitute metacognitive strategies (see Table 2.1).

Table 2.1: The Elements of Metacognitive Strategies

Educators	Elements of metacognitive strategies	Description/Strategies
Livingston (1997)	1. Planning, 2. Monitoring 3. Checking	Livingston (1997) did not describe the details of these elements.
Anderson (2002)	1. Preparing and planning for learning	Thinking of one's goal and how one can reach that goal
	2. Selecting and using learning strategies	Making a decision for using of particular strategies in a given context for a specific purpose
	3. Monitoring strategy use	Checking whether the strategy used can help one lead to one's own goal or not
	4. Orchestrating various strategies	Using a combination of the strategies in order to succeed at achieving one's learning goal
	5. Evaluating strategy use and learning	After doing the four processes, evaluating one's strategy use during the learning section whether one reaches his/her goals or not
Marzano et al. (1988: 14-15)	1. Evaluation	Assessing one's current knowledge state which occurs both at the beginning and ending points of a task
	2. Planning	Selecting strategies to fulfill specific goals
	3. Regulation	Checking one's progress toward the goals and subgoals identified in order to check how close to the identified goals one is
Beyer (1987:193)	1. Planning	Stating a goal, selecting operations to perform, sequencing operations, identifying potential obstacles/errors, identifying ways to recover from obstacles/errors, predicting results desired and/or anticipated
	2. Monitoring	Keeping the goal in mind, keeping one's place in a sequence, knowing when a subgoal has been achieved, deciding when to go on to the next operation, spotting errors and knowing how to recover from errors/ overcome obstacles
	3. Assessing	Assessing goal achievement, judging accuracy and adequacy of the results, evaluating appropriateness of procedures used, assessing handling of obstacles/errors, judging efficiency of the plan and its execution

Table 2.1: The Elements of Metacognitive Strategies (continued)

Educators	Elements of metacognitive strategies	Description/strategies
Chamot et al (1999:11)	1. Planning	Setting goals according to the aims of the task and thinking about strategies that are appropriate to the task in order to reach the goals
	2. Monitoring	Checking whether one uses the appropriate strategies in the learning task and monitoring their comprehension as well as their production to determine if they are making sense
	3. Problem-solving	Choosing a particular strategy when facing difficulty whilst working on the task
	4. Evaluating	Evaluating whether one has reached her/his goals and how much the strategies have helped
Santana (n.d.: 130)	1. Plan 2. Monitor 3. Evaluate	Santana did not describe the details of these elements.
O'Malley et al. (1985b: 560)	1. Planning for learning 2. Monitoring of comprehension 3. Self –evaluation of learning	O'Malley et al. did not describe the details of these elements.
Schunk (2000)	1. Planning	Analyze goals, identify relevant and useful learning strategies, deciding and implementing on strategies, planning strategic moves, making preview/overview, scanning information in text, and predicting content of text.
	2. Comprehension Monitoring	Monitoring one's strategy use, double-checking on one's comprehension, relating one's background knowledge, relating one's academic knowledge, and attending selectively to important/familiar terms to facilitate comprehension.
	3. Problem-solving	Infer from contextual clues, make logical and intelligent guesses, integrate information into a summary, seek clarification from teacher and question peers and cooperate with them.
	4. Evaluating/modifying	Evaluate the effectiveness of strategy, identify most useful features of strategy, reflect on context within which strategy successfully implemented, modify strategy based on task demands, evaluate on strategy best combination, assess suitable conditions (when) to use strategies, and evaluate ways to re-implement unsuccessful strategic moves.

In Table 2.1, the elements of metacognitive strategies proposed by various educators have been summarized.

Beyer (1987), Marzano et al. (1988), Livingston (1997), Chamot et al. (1999), Schunk (2000), Anderson (2002) and Santana (n.d) include planning as an element of metacognitive strategies. **Planning** relates to setting a goal and determining how to approach that goal as well as selecting strategies to fulfill specific goals. This emphasizes the importance of knowing the strategies to be used for any specific task and how/when to use them.

O'Malley et al. (1985b), Beyer (1987), Marzano et al. (1988), Chamot et al. (1999), Schunk (2000), Anderson (2002), and Santana (n.d.) include monitoring as a part of the metacognitive strategies. **Monitoring** involves checking one's progress toward the goals and subgoals identified. This is to check how close to the identified goals the learner is and when to move on to the next step of doing the task. Marzano et al. used the term 'regulation' to describe this process.

Anderson (2002) includes using a combination of the strategies in order to succeed in one's learning goal as part of the metacognitive strategies. Anderson uses the term **orchestrating** to describe this process.

Evaluating or assessing means making judgment of the learning achievement and appropriateness of strategies used. Beyer (1987), Chamot et al. (1999), Schunk (2000), and Anderson (2002) include evaluation as another element of metacognitive strategies. They describe that after one completes a learning task, one should assess whether one has reached her/his goals and to what extent the strategies have helped. Marzano et al. (1988) state that this process of assessing our current knowledge stage can occurs both at the beginning and ending points of a task.

Chamot et al. (1999) and Schunk (2000) include **problem-solving** as a part of metacognitive strategies. This process relates to choosing a particular strategy to overcome a problem when facing difficulty whilst working on the task.

Schunk (2000) proposes four main elements of metacognitive strategies which are similar to Chamot et al.'s metacognitive model but he uses the term 'macro metacognitive strategies' for these main elements and the term 'micro strategies' for the sub-strategies of each element.

According to the literature presented above, the major elements of metacognitive strategies are planning, monitoring, and evaluating. However when one monitors one's own action and finds some problems, one always attempts to solve that problem. Thus, problem-solving is included as another element of the metacognitive strategies.

In this study, the researcher used the metacognitive model propagated by Chamot et al. (1999) and Schunk's (2000) macro and micro metacognitive strategies as the framework because they cover all major elements of metacognitive strategies and have a problem-solving element.

2.1.2.1 The Recursive Model of Metacognitive Strategies

Beyer (1987: 192) notes that metacognitive strategies may appear in sequence but 'in practice they are not strictly linear but recursive.' Chamot et al. (1999: 12) also agree that the metacognitive processes "may be used as necessary depending on the demands of the task and the interaction between the task and the learner." They provide the following example (see Figure 2.1 for the recursive model of metacognitive

strategies). When a student reads a book in the target language, he ***plans*** his goals in reading or what he wants to get out from the story and may predict the story based on his prior knowledge of the topic. Then he ***monitors*** whether what he reads is making sense. However, after reading for a while, he may return to the planning process based on the new information in the story and revises some of his plans. He may change his goals or his predictions. He goes on reading and may decide to stop and ***evaluate*** himself after completing the first part of reading. If he feels he does not understand some important ideas, he may need to go to the ***problem-solving*** process. In other words, he uses each process as much as he needs to do so depending on the task, although not necessarily in sequence.

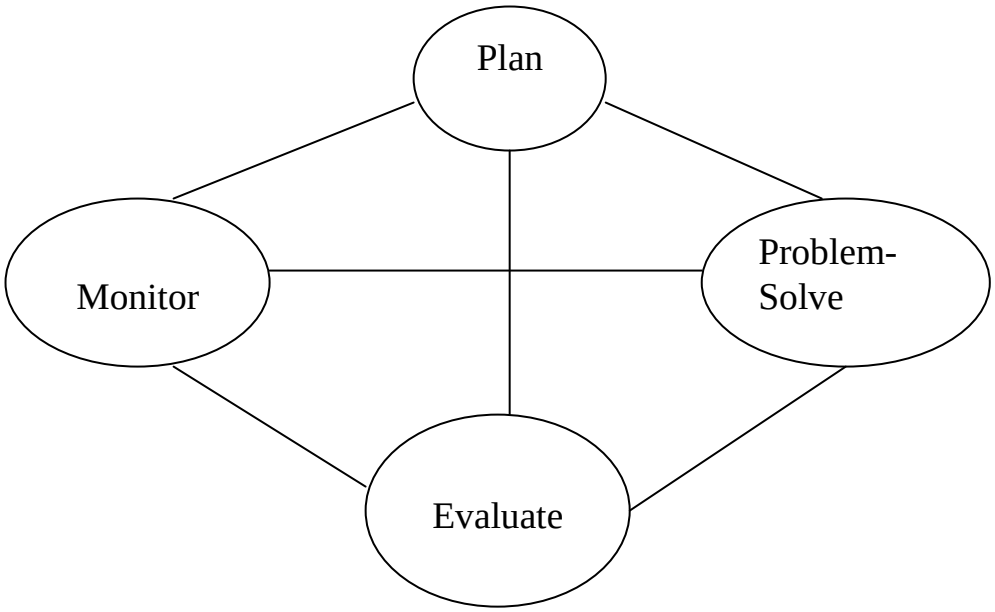

Figure 2.1 The recursive model of metacognitive strategies

Source: Adapted from Chamot et al. (1999: 13)

2.1.3 Strategies within Metacognitive Strategies

There is a common ground on which researchers in reading agree i.e. that metacognitive strategies in general relate to planning, monitoring, and assessing. However, the present study included problem-solving as another part of metacognitive strategies. This enables one to plan, to monitor, to solve problems and to evaluate one's own reading processes. But, what exactly do readers do when they use such metacognitive strategies in the reading processes? Chamot et al. (1999: 11) have specifically identified what is involved in the major metacognitive strategies which can also be used in reading.

Chamot et al. (1999: 11) propose strategies under each element of the recursive model as follows:-

a) Planning Strategies

These strategies help learners develop their thoughts and think before doing the learning task and in this way help learners become self-regulated**.** Good learners think in advance how they can get through the learning task. They will set goals according to the aims of the task. Then, they will think about strategies that are appropriate to the task in order to reach their goals (Chamot et al., 1999:14, 18). The planning strategies consist of six sub-strategies (see Table 2.2).

Table 2.2: Planning Strategies

Strategies	Meaning
1. Set goals	Show understanding of the task and decide what you can get from it/ identify your aims
2. Directed attention	Decide to ignore distractions/ just concentrate on one particular task. This is the first step in taking control of your learning and increasing your level of concentration.
3. Activate background knowledge	Think about and use what you already know to help you do the task. This helps you get familiar/ready for the task
4. Predict	Think of any related information that would be encountered. This gives you direction for doing the task
5. Organizational Planning	Plan how you can reach your goal and content sequence. When organizing and thinking beforehand, you will be ready to do the task.
6. Self-management	Arrange the conditions that help you learn in order to perform well.

Source: Adapted from Chamot et al. (1999: 18-20)

More specifically to reading, learners set goals to comprehend the given reading; decide to concentrate on that reading text; and think about how they can complete the reading task. They will predict what the story is and try to think about relevant schema to the story they are going to read so that they would be prepared for that reading.

b) Monitoring Strategies

After formulating the plan, learners must check whether they use the appropriate strategies in the learning task. They monitor their comprehension as well as their production to determine if they are making sense. Good learners will encourage themselves by thinking of their strategies when they get confused whilst working on the

learning task. They will interact with others in order to complete the task (Chamot et al., 1999:20-21). There are nine sub-strategies in monitoring strategies (see Table 2.3).

Table 2.3: Monitoring Strategies

Strategies	Meaning
1. Ask if it makes sense	Check your understanding by asking yourself whether you comprehend it or not. This helps you to keep track of progress and identify the problem.
2. Selectively attend	Focus on key words, phrases, and ideas in order to concentrate only on the particular task and ignore distractions.
3. Deduction/ Induction	Apply the rule of the language so that you can produce the language accurately.
4. Personalize/ Contextualize	Relate information to personal experiences so that it is more meaningful and more memorable.
5. Take notes	Jot down key words and concepts so that you can remember and understand better.
6. Use imagery	Create an image to represent information.
7. Manipulate/ Act out	Handle tangible objects, conduct role play, and pantomime in order to remember information.
8. Talk yourself through it (self-talk)	Make positive statements to encourage yourself and to reduce your anxiety.
9. Cooperate	Work with classmates to complete, give/receive feedback so that you can do better on the task.

Source: Adapted from Chamot et al. (1999: 21-24)

While reading the story, readers may question if the meaning of the lexical item they have guessed is correct. They may focus on key words or phrases to help them understand the gist of the story. If they do not understand some lexical items, good readers will encourage themselves such as by making positive statements to reduce their anxiety.

c) Problem-Solving Strategies

Good learners when facing difficulty will choose a particular strategy from the problem-solving process whilst working on the task. They will guess or use any resource to help them complete the task (Chamot et al., 1999: 25). There are four sub-strategies in the problem-solving strategies (see Table 2.4).

Table 2.4: Problem-Solving Strategies

Strategies	Meaning
1. Inference	Guess unfamiliar words from contextual clues which will help you solve the problem quickly.
2. Substitute	Use a synonym or descriptive phrase for unknown words.
3. Ask questions to clarify	Ask others for explanation and examples.
4. Use resources	Use dictionaries, textbooks, computer program, CD-ROMs, and the internet when no one can help you at the moment.

Source : Adapted from Chamot et al. (1999 : 25-26)

When readers realize that they cannot understand what they are reading, they try to find ways or use strategies to overcome that problem. These ways or strategies include guessing based on schema, using context clues, using a synonym for unknown words, consulting others, or looking it up in the dictionary.

d) Evaluating Strategies

After completing the tasks, good learners must evaluate whether they have reached their goals and how much the strategies have helped. If they find something wrong, they will think of how to improve it for the next task (Chamot et al., 1999: 27). There are five sub-strategies in the evaluating strategies (see Table 2.5).

Table 2.5: Evaluating Strategies

Strategies	Meaning
1. Verify predictions and guesses	Check whether your guesses are correct so that you will know how well you have related your experiences to new information.
2. Summarize	Create a mental, oral or written summary of information so that you will know how well you understood the text.
3. Check goals	Decide whether you have already met your goal.
4. Evaluate yourself	Check how well you understood or performed so that you can identify your strengths and weaknesses so as to do better next time.
5. Evaluate your strategies	Judge how well you applied the strategies to the task so that you can choose the most appropriate ones in the future.

Source: Adapted from Chamot et al. (1999: 27- 29)

After reading part of the story or finishing the story, readers can check whether their understanding is correct. They may summarize the story to assess how well they understood and verify whether their use of strategies helped them complete the reading material.

Chamot et al.'s (1999) metacognitive strategies and Schunk's (2000) macro and micro metacognitive strategies are selected as the framework for this study. In this study, elements of Chamot et al's model, i.e. planning, monitoring, problem-solving, and evaluating, and Schunk's macro metacognitive strategies, i.e. planning, comprehension monitoring, problem solving and evaluating/modifying, are labeled as macro metacognitive reading strategies (Macro MRS). And sub strategies under each element of Chamot et al.'s model and Schunk's micro strategies are labeled as micro metacognitive reading strategies (Micro MRS). The details of these strategies were summarized by the researcher and are shown in Table 2.6.

Table 2.6: Metacognitive Reading Strategies

Macro Metacognitive Reading Strategies (Macro MRS)	**Micro Metacognitive Reading Strategies** (Micro MRS)
Planning	1. Set goals/ analyze goals 2. Directed attention 3. Activate background knowledge 4. Predict 5. Organizational planning 6. Self-management 7. Identify relevant and useful learning strategies 8. Deciding and implementing strategies 9. Planning strategic moves 10. Making preview/overview 11. Scanning information in text
Monitoring	1. Ask if it makes sense 2. Selectively attend 3. Deduction/ Induction 4. Personalize/ Contextualize 5. Take notes 6. Use imagery 7. Manipulate/ Act out 8. Talk yourself through it (self-talk) 9. Cooperate 10.Monitoring one's strategy use 11.Double-checking on one's comprehension 12.Relating to one's background knowledge 13.Relating to one's academic knowledge
Problem-solving	1. Infer 2. Substitute 3. Ask questions to clarify 4. Use resources 5. Make logical and intelligent guesses 6. Integrate information into a summary
Evaluating	1. Verify predictions and guesses 2. Summarize 3. Check goals 4. Evaluate yourself 5. Evaluate your strategies 6. Identify most useful features of strategy 7. Reflect on context within which strategy was successfully implemented 8. Evaluate on strategy best combination 9. Assess suitable conditions (when) to use strategies 10.Evaluate ways to re-implement unsuccessful strategic moves

Conducting this study using Chamot et al.'s (1999) metacognitive model of strategic learning and Schunk's (2000) macro and micro metacognitive strategies will give new perspective on Thai learners' reading strategies.

2.1.4 Role of Metacognitive Strategies in Reading

Metacognition plays an important role in reading comprehension (Flavell, 1979; Cromley, n.d.). Graham (1997) states that metacognitive strategies help students improve their learning. These strategies guide the students to plan, control their thoughts, and evaluate their learning. Likewise, O'Malley, Chamot, Stewner-Manzanares, Kupper, and Russo (1985a: 24) point out that metacognitive processes are needed by language learners as "students without metacognitive approaches are essentially learners without direction and ability to review their progress, accomplishments, and future learning directions."

Carrell (1987: 239) states the importance of metacognitive strategies in reading:

> "(a) clarifying the purposes of reading, that is, understanding both the explicit and implicit task demands; (b) identifying the important aspects of a message; (c) focusing attention on the major content rather than trivia; (d) monitoring ongoing activities to determine whether comprehension is occurring; (e) engaging in self-questioning to determine whether goals are being achieved, and (f) taking corrective action when failures in comprehension are detected."

A good example of utilizing metacognitive strategies in reading is provided by Livingston (1997). "After reading a paragraph in a text, a reader may question himself/herself about the concepts discussed in the paragraph. His/her cognitive goal is to understand the text." Livingston explains that "self-questioning is a common metacognitive comprehension monitoring strategy. If the reader finds that s/he cannot answer his/her own questions, or that s/he does not understand the material discussed,

s/he must then determine what needs to be done to ensure that s/he meets the cognitive goal of understanding the text. The reader may decide to go back and re-read the paragraph with the goal of being able to answer the questions s/he had generated. If after re-reading through the text the reader can answer the questions and may determine that s/he understands the material." Livingston therefore concludes that "the metacognitive strategy of self-questioning is used to ensure that the cognitive goal of comprehension is met" (Livingston, 1997, Metacognitive Regulation, para.2).

The elements of metacognitive strategies in reading was also proposed by Singhal (2001:2). Singhal includes directed attention and self-evaluation, organization, setting goals and objectives, and in the context of reading, self-monitoring and correction of errors.

Different readers will apply different metacognitive strategies in comprehending a reading text (Perfetti, 1985). Perfetti (1985: 78) identifies three different sorts of metacognitive ability that can be described in terms of reading awareness:

> "(1) awareness of strategies to apply to text comprehension, e.g., allocation of processing resources;
> (2) awareness of structural levels in a text, i.e., knowing what is important;
> (3)awareness of local text inference demands, e.g., noticing when contradictory sentences are encountered."

Goh Hock Seng (2004:51) elaborates that readers engage in metacognition - "when they are aware of their thinking as they read and use that awareness to monitor their comprehension and to adjust their effort accordingly." Flavell asserts that students who do not perform as well as they should are lacking in metacognitive awareness about their capabilities and the demands of the situation (Flavell, 1979).

Learners "…with good reading comprehension tend to monitor their reading, often without being aware of it" (Cromley, n.d.: 189). For example, if one has ever read a paragraph and realizes that one does not understand something, one is engaging in metacognitive monitoring. Besides relating to level of understanding, if one has a cognitive goal to read a newspaper article for work and realizes that it is relevant to something at home, one is engaging in monitoring. On the other hand, learners with poor reading comprehension tend to use less monitoring strategies. They "fail to notice when they do not understand" as well as "use fewer strategies such as re-reading, summarizing, and generating questions and predictions, which are associated with monitoring."

Apart from using metacognitive monitoring, readers also use metacognitive problem-solving strategies. Cromley (n.d : 194) describes that when learners realize they do not understand what they read, they use a wide range of problem-solving strategies in order to overcome their lack of comprehension. These strategies "include rereading, asking help from others, using reference material such as a dictionary, reading an additional text… making a diagram, or reading ahead to try to make sense of the text." Cromley uses the term 'fix-up' strategies to describe such problem solving strategies.

In short metacognitive strategies "in reading include the awareness of and ability to detect contradictions in a text, knowledge of different strategies to use with different text types, and the ability to separate important from unimportant information" (Carrell, Gajdusek & Wise, 1998:101).

Therefore, if one wants to succeed in reading/learning, he/she should employ metacognitive strategies. In other words, a student who is aware of his own reading/learning processes and plans, monitors, solves problems and evaluates while learning will become a successful learner. Metacognitive strategies are therefore important to all readers/ learners.

2.2 The Reading Process

The following literature is about the reading process, more specifically about schema theory and top-down and bottom-up processes. As the main aim of the present study is to investigate the metacognitive strategies used when reading an English text, it is necessary to discuss the reading process as well.

Goodman and Burke (1972:5) define reading as a meaningful process between the language of the reader and the language of the author. In the reading process, the essential skill is to get meaning from a printed or written message (Carroll, 1970:29; Weaver, 1980:15; Goodman, 1967). Goodman (1967:33) suggests that cues are important in getting the meaning of the printed text because the reading process is a psycholinguistic guessing game which interacts between thought and language. Readers try to find meaning from the text in order to comprehend. Thus, efficient reading results from the skill in selecting the fewest / most necessary cues to produce guesses which are right the first time. Likewise, Weaver (1980: 15) suggests that meaning results not necessarily from the precise identification of every word in a sentence, but from the constant interplay between the mind of the reader and the language of the text.

Besides making sense of the written language, Smith (1994:2) argues that reading is meaningful and purposeful depending on the prior knowledge and expectations of readers as well as feelings. For Smith, reading can not be separated from the readers' purpose and from its consequences upon them.

Goodman (1967:33) describes reading as follows:

> " Reading is a selective process. It involves partial use of available minimal language cues selected from perceptual input on the basis of the reader's expectation. As this partial information is processed, tentative decisions are made to be confirmed, rejected, or refined as reading progresses."

Goodman and Burke (1972:95) explain that reading is a complex process which involves the three interactive systems between the reader, with his language patterns and experiences; the author, with his language patterns and experiences; and a written language, with a graphic or sound system, a grammatical system, and a meaning system.

Zintz (1972: 12 -13) supports Goodman's (1967) view on reading, that reading is a psychological process, and how one feels about himself, how one feels about others, and how others feel about him/her, all affect the reading process. Zintz also holds the view that reading is a perceptual process, where it utilizes perceptual clues; size, shape, combinations of letters and sounds, figure-ground relationships, relationships of the part to the whole; sequencing, ordering.

Carroll (1970: 27) states that the process of pattern perception is the most mysterious problem in psychology; however, one can learn to recognize words even though the words may be printed in different typefaces or written in different cursive styles and in different sizes. When one reads, most words are recognized rapidly depending on how much one is exposed to those words (ibid.). Although one may

recognize some words rapidly, the chances of misinterpretation of the word may still occur as the cues found in the lexical items are unclear and confusing. For example, lexical items such as ‘cob’, ‘rob’, ‘mob’, and ‘nob’ may look similar orthographically but they differ in terms of pronunciation and meanings even in the fast single exposure, one may get confused. Therefore, rapid word recognition depends upon large amounts of practice and exposure (Carroll, 1970: 28).

Goodman and Burke (1972:15) indicate that the effective reader is the one who can gain the greatest amount of information from the written material with the minimal use of the three available language cueing systems: the grammatical structure of the language, the relationship between sound and graphic symbols, and the semantic system.

In short, skills in reading include the first guesses accurately based on better sampling techniques, greater control over language structure, broadened experiences and increased conceptual development (Goodman, 1967:39). In other words, the more proficient readers who are able to make correct predictions need to do less confirming through the text (Fatimah, 2002:7).

It can be concluded that the reading process is to make meaning out of the printed text. So, readers have to have goals/aims when reading. In this way, then the reading will be considered meaningful to the readers as both their purposes and expectations have been satisfied. In order to make sense of the reading passage, experiences or prior knowledge must be taken into consideration. This leads us to a discussion of the schema theory.

2.2.1 Schema Theory

Schema theory is actually based on one's own background knowledge. This theory is influenced by Goodman (1967) who describes reading as a psycholinguistic guessing game. Coady (1979) therefore states that readers' background knowledge interacts with conceptual abilities and process strategies to produce comprehension in reading. Skill in reading is determined by the efficient interaction between linguistic knowledge and knowledge of the world (Clarke & Silberstein, 1977).

Schema theory can be identified in terms of background knowledge which is based on readers' previously acquired knowledge to retrieve the meaning from a text. Such knowledge can be knowledge of structures or world knowledge (Carrell & Eisterhold, 1988:76). Smith (1994:14) defines such schemas or schemata as the representations of more general patterns or regularities that occur in our experience.

Prior knowledge is seen as providing the framework that helps a reader assimilate new information (Mackinnon & Waller, 1981: 79). For example, prior knowledge provides guidelines for recognizing what is important about a given topic and allows appropriate inferential elaboration to be made about that text.

There are two important issues for the overall comprehension product: the application of appropriate schemata and the monitoring of comprehension processes (Perfetti, 1985:72). Rosli Talif and Ting (2001: 61) explain that the meaning of a text is shaped by what each reader brings to the experience and the reader always attaches meaning to the text rather than being a passive recipient of meaning embedded in a text by an author.

Different schema will produce different comprehension ability. This is the starting point for the possibility that reading ability differences are a matter of differences in knowledge. The point of departure is that a knowledge (or schema)-based approach to ability must demonstrate that two individuals will show different comprehension as a result of differences in their knowledge (Perfetti, 1985:73).

Anderson, Reynolds, Schallert and Goetz (1976: 19) point out that a lack of knowledge about specific content can be a source of problems in comprehension; specifically, “it may turn out that many problems in reading comprehension are traceable to deficits in knowledge rather than deficits in linguistic skill narrowly conceived”.

2.2.1.1 Classification of Schemata

Though there are various terms for schema i.e. ‘ prior knowledge’, ‘background knowledge’, ‘experiences’, ‘knowledge of the world’, or ‘nonvisual information’, all the terms mean the same thing, schema. Schemata can be classified into two categories: formal schemata and content schemata (Carrell & Eisterhold, 1988:79).

Formal schemata is background knowledge of the formal, rhetorical organizational structures of different types of texts such as differences in genre, simple stories, scientific texts, poetry and etc.

Content schemata is background knowledge of the content area of the text such as a schema for simple stories like a setting, a beginning, a development and an ending.

Additionally, there is one more type of schema, **linguistic schema** which helps a reader identify unknown words from their collocation (Siti, 1995).

2.2.1.2 Top down and Bottom up

There are processes which involve the correspondence between the input information and the existing schema. Those processes are: bottom-up and top-down processes (Carrell & Eisterhold, 1988:76-77).

Top down is related to reader's known schema to what the reader sees, reads, hears and makes a guess at the meaning. "Top down processing occurs as the system makes general predictions based on higher level, general schemata and then search the input for data to fit into higher order schemata." (Carrel & Eisterhold, 1988:77) This is also known as "conceptually driven". It shows the reading process as an interaction between the reader and the text (Fatimah, 2002:9).

Bottom up occurs when readers find difficult words so they read more in order to obtain contextual cues. As described by Fatimah (2002:9), small parts or chunks of texts are absorbed and analysed and then added to the following parts until the reader sees meaning in the text. "Bottom up processing is evoked by the incoming data; the features of the data enter the system through the best fitting, bottom-level schemata" (Carrel & Eisterhold, 1988: 76). This is also known as "data-driven". Nadarajah (2004) asserts that the readers will resort to the use of bottom up processing technique if they fail to understand the holistic meaning of the text. Therefore, "the reader relies heavily on the print in the text to make meaning and tries to match his/her limited schema to the words to derive meaning" (Nadarajah, 2004: 56).

These two processes should occur at the same time (Rumelhart, 1980). Bottom up processing will ensure readers/ listeners about the input information which fits or does not fit their ongoing hypotheses about the content or structure of the text. Then, top-down processing will help the readers/listeners resolve ambiguities or alter possible interpretations of the incoming data. In other words, the incoming data is processed in a bottom-up mode and the conceptual predictions are made by a top-down mode.

Such a view of the reading strategy is also taken in this present study. The reader is seen as a cognitively active learner who reads strategically (Dole et al., 1991).

2.2.2 Comprehension of Texts by EFL Readers

What is comprehension in reading? Is it to understand every single meaning of lexical items in the written text or only the gist? When discussing the level of comprehension, it is still not "appropriately identified and explained" (Yu-Fen Yang, 2002, Introduction section, para.1). Scovel (1998:59 in Yu-Fen Yang, 2000) explains that "comprehension is not an absolute state where language users either fully comprehend or are left completely in the dark". Yu-Fen Yang (2002) argues that "comprehension better refers to readers' understanding of propositions… in the text." These "propositions include words, phrases, sentences, and paragraphs." Thus, when one "understands the meaning of a certain proposition, he/she is…involved in comprehension." Yu-Fen Yang points out that "readers' cognitive levels of comprehension can be graded based on these propositions." That is one reader may only engage in lexical comprehension, whereas another may engage in syntactic comprehension, "the level of which is obviously higher than the former" (Yu-Fen Yang, 2002, Introduction section, para. 1).

Goodman (1976) views a reader as a user of language, one who decodes meaning from written language. Goodman tried to understand the reading process by giving subjects stories to read aloud and found that things that readers did were 'linguistic things' (Goodman, 1973: 5). He claims that "Everything the reader does is assumed to be caused in this linguistic process. Unexpected events in oral reading thus reveal the way the reader is using the reading process itself." (Goodman, 1976:103) That is readers showed their natural competence as language users (Goodman, 1973). Goodman (1975) points out that any proficiency of the reader is variable depending on the reader's semantic background being brought to any given reading task. Regarding L2 reading ability, Fatimah (2002:10) points out that students who are not proficient in the second language would have difficulty reading in that language.

Recent research such as by de Bot, Paribakht, & Wesche (1997), Fraser (1999), Huckin & Coady (1999), and Paribakht & Wesche (1999) show that lexical inferencing or guessing the meaning of an unfamiliar word is the main strategy learners use in initial comprehension of unfamiliar words while reading. Also it can be the first stage in learning a new word. Paribakht (2005:703) describes that learner-related factors such as their own background, previous learning experience, size of vocabulary knowledge, attention to details in context, are examples of utilizing cues. Paribakht points out that comprehending a text does not mean only guessing meaning in the text but also involves mental activities which are related to cognitive processes that help learners to comprehend the text as well as develop vocabulary as a result of reading.

In short, the way the readers comprehend the text is dependent on a number of factors including individual background.

2.2.3 The Effect of L1 on L2

Translating or transferring from first language (L1) to the second language (L2) is one of the learning strategies or techniques employed by ESL or EFL learners in comprehending or decoding a reading text.

Paribakht (2005) investigated the relationship between first language (Farsi) lexicalization of the concepts represented by the second language (English) target words and learners' inferences while reading English texts by 20 Farsi-speaking university students of English as a foreign language (EFL). The students were trained in think-aloud procedures and were asked to read the text quickly for general comprehension and then to read it again and try to guess the meaning of the unfamiliar target words indicated in boldface. Then the Vocabulary Knowledge Scale was administered to measure any gains in the knowledge of the target words. The findings showed that "lexicalization in the L1 may be one of the factors influencing learners' differential success in L2 text comprehension and vocabulary development" (Paribakht, 2005: 702).

Layton (1979: 309) explains that students who read foreign texts must use the clues contained in printed materials to translate the messages into their own language. This view is also supported by Paribakht (2005:730) whose study indicates that learners in L2 will mentally paraphrase unfamiliar words' meaning in their L1 and will at least partially comprehend its meaning. Paribakht also found that readers used linguistic knowledge based on their own native language and on the second language including features of the word itself and the surrounding sentence and text and used nonlinguistic knowledge based on reader's world knowledge, including knowledge of the specific topic of a text.

David's study (2002) also supports the idea that L1 readers will revert to their own mother tongue while reading for comprehension in L2/FL. "L1 could be more easily used to activate relevant schemata as compared to L2, to point out contextual clues, to discover/rediscover meanings, etc." (David, 2002: 41). To improve the reading process in the L2 classroom, David (2007) suggests that when teaching reading to beginners, the use of L1 in activating students' background knowledge is better than L2.

In this study, the researcher uses the term 'national language' to refer to the Thai language as most of the subjects use the Malay dialect as their mother tongue (MT) (see Chapter 3), so L1 would not be the suitable term for the Thai language. Therefore, the use of the national language (Thai) in FL (English) reading may also occur in the case of the Thai university students. When they read an English text, they may transfer from Thai or their MT to English or vice versa for comprehension.

To sum up, these views of the reading processes together with the reading techniques employed by the readers such as guessing (Goodman, 1967) or inferencing, applying background knowledge or relevant experiences to the reading text (Carrell & Eisterhold, 1988; Smith, 1994), as well as translating from L2/FL to L1/National language (David, 2007; Paribakht, 2005), are all related to the metacognitive reading strategies. Hence, they all involve mental activities as well as cognitive processes. Consequently, thinking-aloud protocol is chosen as a tool in this study (see Chapter 3) because it can describe how one processes language. Metacognitive reading strategies used by Thai university learners when reading will be revealed by the think-aloud protocol (see section 2.3).

2.2.4 Research on Types of Metacognitive Strategies used

Some researchers have studied the types of metacognitive strategies used by Thai EFL learners. For example, Saiwaroon Chumpavan (2000) in investigating the use of metacognitive strategies of two EFL Thai students in English academic reading at Illinois State University found that the subjects planned, monitored and remediated their reading comprehension while reading. Chumpavan used interviews, observation via think-aloud sessions and journal entries for collecting data. The findings revealed that the subjects used metacognitive strategies such as activating prior knowledge and experience, grammatical knowledge, self-questioning and summarizing to facilitate their academic reading comprehension. The findings also showed that the subjects did not use translating strategy in their reading process because it was time consuming.

Another study correlated strategies used with the students' levels of proficiency. Orranuch Aegpongpaow (2008) investigated metacognitive strategies used by Thai students in English academic reading. The subjects were 20 third-year university students from Srinakharinwirot University, Thailand. They were divided into two groups- high English reading proficiency and low English reading proficiency. Open-ended interviews, observations through think-aloud sessions, and writing journals were used for collecting data. The findings showed that the subjects had awareness and control of their metacognitive strategies in their reading process. These subjects used metacognitive reading strategies to plan, monitor, and remediate their comprehension such as scanning the text, paying attention to the main points, and focusing on the key words. The findings also revealed that the high reading proficient subjects used metacognitive strategies more often than the low level group. In addition, both high and low reading proficient groups knew various effective reading strategies but the group

with low English proficiency could not apply them to enhance their reading comprehension.

Although these two studies have investigated the metacognitive reading strategies used by Thai EFL learners, the settings are different: one in the U.S.A and one in central Thailand. But as earlier mentioned (see Chapter 1) no studies have been conducted to investigate the types of metacognitive strategies used in southern Thailand. Since cultural differences and ethnicity affect learning strategies used by learners (see Chapter 1, section 1.2), the present study therefore will focus on Thai EFL learners in the south of Thailand.

2.2.5 Research on Training of Metacognitive Strategies

Several studies have been conducted which focus on training/ instructing students to use metacognitive strategies in reading. For example, in investigating on the effect of metacognitive reading strategies training on the reading performance of 95 third grade bilingual Spanish dominant students, Miriam Muniz-Swicegood (1994) found that the training in metacognitive Spanish reading strategies helped improve reading performance and the transfer of metacognitive strategies across languages (from Spanish to English). The subjects were assigned to a control and an experimental group. The findings revealed that there was a positive change in the use of self-generated questions in the experimental group. The experimental group used the metacomprehension strategies in the form of self-generated questioning to a greater extent than the control group.

Likewise, Zohreh Eslami Rasekh and Reza Ranjbary (2003) attempting to shed some light on the effect of metacognitive strategy training on the development of lexical knowledge of EFL students found that explicit training instruction of metacognitive strategies has a positive impact on the lexical knowledge development of EFL students. Their subjects were Iranian EFL students in the Tehran Institute of Technology who were at intermediate language proficiency level and assigned to a control and an experimental group. The findings revealed that the experimental group of students showed greater positive performance on the vocabulary test compared to the control group who did not receive such training. Anderson (2002) points out that using metacognitive strategies in learning will ignite one's thinking which later leads to a higher level of learning with better performance.

Nik Suriana Nik Yusoff (2001) investigated the role of explicit metacognition strategy training in second language reading comprehension, particularly in the EAP (English for Academic Purpose) classes of 85 Malay EAP students at the International Islamic University, Malaysia. The subjects were grouped into skilled and less skilled readers (proficiency level) and into Business/Technical students and Humanities students (academic background). The results showed that the subjects' proficiency levels influence the choice of metacognitive strategies. In term of frequency, the skilled readers in general and within Business/Technical programs used more metacognitive strategies than less skilled subjects. However, within the Humanities programs, the skilled and less skilled readers used the same number of metacognitive strategies. In terms of type, the skilled readers were found to consistently use all the metacognitive processes of planning, monitoring, and assessing; the less skilled readers were found to consistently use only the planning and monitoring strategies. In addition, the findings also supported the use of explicit metacognitive strategy training in the L2 classroom,

particularly in the EAP classroom. Such training had significantly improved the less skilled readers' reading comprehension and also had a positive impact on the learners' (both skilled and less skilled) perceptions and attitudes towards the learning of the English language in the EAP classroom.

The study of metacognitive strategy instruction also features in a study in East Malaysia. Philip and Hua (2006) studied metacognitive strategy instruction for reading. The sample was made up of 45 undergraduates of a three-year Bachelor in Business Administration study program at UiTM Sarawak Campus and was assigned into high proficient (HP) and low proficient (LP) groups. The study was divided into three phases. In phase 1, "the teacher explicitly models learning strategies to learners through direct explanation" (Philip & Hua, 2006: 13). The subjects attended to the instruction process with questions, clarification and confirmation of understanding. In phase 2, the subjects used the strategies in learning while the teacher motivated them for their success in strategy use through verbal praises and provided re-explanation of strategies when needed by the subjects. In phase 3, the subjects were motivated by the teacher in using the strategy. The data were collected by asking the subjects to immediately recall in writing "with the assistance of the graphic organizers they constructed during the task" (Philip & Hua, 2006: 15) (retrospective written recall protocols). The findings revealed that both high and low proficient groups benefited reasonably well from the metacognitive strategy instruction. In addition, the HP group in the text-processing process indicated a strong sense of metacognitive awareness, demonstrated strategic behaviors, showed characteristics of metacognitively sophisticated readers as well as autonomous strategic readers. On the other hand, the LP group did not show a strong sense of metacognitive awareness and reflected characteristics of poor readers. However, they did indicate their awareness of strategy use, a sense of such awareness

that might help develop them to be strategic readers given more opportunities to practice.

Another researcher used explicit strategy instruction in her study of students in central Thailand. Kamonpan Boonkit (2006) investigated the reading strategies used by undergraduate Thai EFL learners in reading English in academic contexts at Silpakorn University, Thailand. The subjects were 106 second-year students. Kamonpan used questionnaires based on the six strategy categories classified by Oxford (1990) to determine the reading strategies used by the subjects. The results showed that metacognitive, cognitive and compensation strategies were frequently used. Kamonpan also used explicit instruction using certain types of strategies in a classroom with 22 subjects. 10 of them were interviewed in order to investigate their use of effective strategies. The findings revealed that the popularity of reading strategies covered two major areas: trying to understand or guessing the meaning of vocabulary, and reading for the main ideas. Such findings also confirmed that the strategy used by the subjects included metacognitive, cognitive and compensation strategies. Kamonpan like the other researchers also found that the explicit strategy instruction helped improve the subjects' reading performance in the final exam.

Apart from explicit training of metacognitive strategy use, extensive reading is another strategy used by language teachers. Huy (2005) studied the effects of extensive reading on the subjects' perceptions about their reading ability and use of metacognitive strategies via questionnaires and semi-structure interviews. The subjects were 6 Vietnamese students from the Saigon Institute of Information Technology in Saigon, Vietnam. The results showed that extensive reading played a vital role in facilitating the subjects' reading ability and increased their motivation in reading. The findings from

questionnaires and interviews revealed that extensive reading gave more opportunities for the students to practice and to choose effective cognitive and metacognitive strategies to enhance their reading achievement. In addition, it was found that both cognitive and metacognitive strategies helped increase the subjects' extensive reading ability.

These findings suggest the usefulness of metacognitive learning instruction especially in an EFL context. "Teachers can help learners use different metacognitive strategies to facilitate their vocabulary learning" (Rasekh & Ranjbary, 2003: 12) or in other words attempting to teach students to use learning strategies have produced good results (Rubin & Thompson, 1994).

In addition, it is clear that metacognitive strategies play an important role in reading, more specifically the teaching of these strategies helps improve FL/SL learners' reading performance.

2.3 Role of Think-aloud

The following literature is about the think-aloud protocol (TAP). As the main aim of the present study is to investigate the metacognitive strategies used while reading an English text, it is necessary to discuss the issue of think-aloud protocol which is the research tool used in this study.

Think aloud plays an important role as a research method to investigate readers' thoughts or cognitive processes whilst reading the texts. This can help the researcher

identify what learners do when they face difficult words or how they complete their reading tasks.

Normally, studying learning processes is difficult as it cannot be observed. One of the methodologies to examine what goes on in a reader's mind or to understand their difficulties and the strategies they use is "Thinking aloud protocol". Learners are asked to read aloud and think-aloud. Chamot et al (1999:68) state that the think-aloud protocol can reveal how one processes language. In terms of reading, when learners are confronted with difficult words or texts, they have to verbalize their thoughts on how they decode such words (Goodman &. Burke, 1972; Goh, 2004). This permits the researcher to understand the strategies used by EFL readers.

Chamot et al. (1999:68) define think-aloud as a technique where one verbalizes his/her thought processes while working on a task. They explain that this technique has a high degree of validity because it is in real time and learners would not forget their thoughts when reading and working on tasks.

2.3.1 Procedure

When reading the task aloud, learners can read part of it and then stop and report what they were thinking while reading. They can also report their thoughts before starting and after finishing the task (Chamot et al., 1999). Several studies on reading by using think- aloud as a methodology have been conducted. For example, Joyce Bell (2007) studied the reading practice of postgraduate Thai students in an Australian university. One of her instruments was the pair think-aloud protocols which allowed her to uncover the reading processes of the target subjects. Marilyn Abbott (2006) also used

the verbal report to collect data from Arabic and Mandarin learners who speak English as a second language (ESL), in order to identify the reading strategies used to answer 32 reading questions. Abbott found this procedure extremely valuable in eliciting the reading strategies used by the subjects.

In the present study, the researcher uses the think-aloud protocol as a research tool because it helps reveal learners' thinking processes and use of strategies while reading.

2.4 Summary

This chapter has discussed the general meaning of metacognition and metacognitive strategies, and the reading process. Findings from some relevant studies have been discussed. The think-aloud protocol has also been explained. The following chapter will discuss the methodology used in this study.