Theoretical and Pedagogical Issues in ESL/EFL Teaching of Strategic Reading

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ABSTRACT

This paper discusses the theoretical and pedagogical issues in second language reading comprehension and instruction. The primary aim of this paper is to provide a solid overview of second language strategic reading in the context of English as a second (ESL) or foreign language (EFL). The theoretical issues discussed include research on the nature of automatic versus strategic reading, metacognition or strategic competence and human information processing. The pedagogical issues include a discussion of previous research on strategic reading instruction and a proposal of three models of strategic reading instruction that promote strategic reading competence and learning strategies.

INTRODUCTION

Second language (L2) reading comprehension is known as highly complex, dynamic, multicomponential and multi-dimensional because it involves multiple interactions among reader factors (e.g., first language literacy (L1) literacy, L1 background, language proficiency, background knowledge, knowledge of genre and pragmatics, metalinguistic knowledge, motivation, metacognition, and strategy use) and contextual factors (e.g., text topic and content, text type and genre, text readability, verbal and non-verbal

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communication; see Alderson, 2000, for comprehensive discussion). In the current views of L2 reading, it is believed that much of what the readers do is the same as when they read in their L1. However, L2 reading could be slower and less successful than L1 (Anderson, 1999; Cohen, 1994), depending on factors such as the levels of readers' language proficiency, types of text, text difficulty and task demands. Grabe (1999) summarizes the differences between L1 and L2 reading as follows: (1) the ranges and size of vocabulary knowledge for L1 and L2 reading; (2) the type of response L2 readers may have to difficult authentic text resources; (3) the levels of awareness of language; (4) the reading rates and fluency of reading; (5) the cultural knowledge of L2 and the extent of differences from L1; and (6) the role of the L2 thresholds for reading.

Given all this, teaching English as a second or foreign language (ESL/EFL) can be highly demanding and requires teachers' understanding of not only the nature of reading and teaching methodology, but also the nature of learners and the context in which teaching of reading takes place. EFL is generally used to refer to situations in which English is neither generally used for communication, nor used as the medium of instruction (e.g., China, Korea, Japan and Thailand). ESL is commonly used to refer to situations in which English is an official language for communication (e.g., United Kingdom, United States of America, Canada and Australia). Given the two different environments of learning, language input, interaction and output could be different.

Despite advancement in L2 reading research, applications of theories for classroom teaching practice are not readily available for many ESL/EFL teachers. This paper hence aims to provide some theoretical and practical suggestions for ESL/EFL teachers in teaching strategic reading. This paper first outlines research on processes involved in L2 reading. Second, it discusses the roles of metacognition or strategic competence as a regulatory mechanism influencing strategic reading. Third, it attempts to relate reading processes and metacognition or strategic competence to a human information processing framework. Finally, it conceptualizes current research on the teaching of strategic reading and offers three models of strategic reading instruction.

PROCESSES INVOLVED IN L2 READING

Reading involves an interactive combination of *bottom-up* (i.e., the readers perceive input progressing from the lowest level of reading [e.g., interpretation of symbols] to the higher levels processes [e.g., assigning of meanings to words]) and *top-down* (i.e., the readers generate *hypotheses*, and use prior knowledge and experience to form inferences) (Hudson, 1988; Stanovich, 1980). *Bottom-up reading* is a linear process from graphic symbols to meaning responses. Readers check words individually, sound them out phonetically, move forward to the structure and meaning of larger syntactic units, such

as sentences. That is, they perceive input progressing from the lowest level of reading, i.e., interpretation of symbols, to the higher levels of assigning overall meaning. Based on Eskey (2005), bottom-up processes are composed of a broad array of various complex skills, such as word recognition, spelling, morpho-phonemic processing and morpho-syntactic parsing. *Top-down reading* is a hypothesis-driven process. For example, readers predict what will come next, test their predictions and adjust or confirm them. They use background knowledge to create inferences and decode symbols only when necessary for comprehension. In L2 reading, both processes are regarded as equally important. The extent to which top-down or bottom-up reading process is involved more or less in a particular reading context depends on the nature of the reading text, the readers' reading purposes, their language proficiency, their attitudes toward reading, their interests in reading a particular text, and their available background knowledge associated with the text they read (see Alderson, 2000; Koda, 2005, for detailed discussion).

It should be noted that there are two levels of interactiveness in reading (Grabe, 1991). The first is that the readers interact with the text as an attempt to construct meaning using both the knowledge from the text and the background knowledge they have about the text. The second is that interactiveness involves multiple simultaneous component skills which range from automatic to strategic. The present paper is related to this level of processing interactions. When individuals are reading, their reading processes would range from automatic to conscious processing (Alderson, 2000; Kinstch, 1998; Pressley & Afflerbach, 1995). Optimal reading performance requires both automatic and control processes.

Automatic Processing

Lower-level processing includes automatic recognition of word meanings, syntactic structures and parts of speech. Automatic reading processing suggests that individuals may read with a minimum of awareness. This processing occurs when readers can decode print without really thinking about it. It has been argued that part of success in L2 use depends on the level of automaticity (Segalowitz, 2003). Anderson (1999) and Day and Bamford (1998) argue that L2 readers need to be able to execute word recognition automatically and effortlessly, so that they can adequately use cognitive resources to comprehend text. This lower-level processing then forms the next level of reading processes, such as identifying main ideas, paraphrasing, summarizing, predicting and using prior knowledge. Success in these higher-level reading processes largely depends on automatic word recognition skills (Eskey, 1988).

One of the optimal goals of L2 reading instruction is hence to help learners develop their reading skills to automatic levels because the more automatized the readers' processing is, the more efficient reading will be (Alderson, 2000). The reason for this is

related to the nature of human information processing (as further discussed below). When readers have automatized their word-decoding skills, they accordingly have more mental capacity (i.e., more room in their working memory (WM) which functions as a mental workspace), to devote to understanding the gist and important details presented in the text (Gagné, Yekovich & Yekovich, 1993; Kintsch, 1998).

The L2 reading literature suggests that a condition for automatic reading to occur successfully is the development of automatic lexical and grammatical recognition. According to Carter (2001), knowing a word involves its spoken and written context of use, its patterns with words of related meaning as well as its collocational partners, and its syntactic and pragmatic and discourse patterns. Nation (2000) argues that in order to develop automatic word recognition, learners need to firstly focus on learning high-frequency words (80% of running words). Furthermore, in order to read independently, readers need to know around 95-98% of the running words. Nation (2005) further pointed out that acquisition of new vocabulary occurs under the following condition: interest, deliberate attention and generative use of a word in a new context. Hinkel (2006) suggests that rather than teaching learners individual words, teaching word families (see the website below) is more effective to assist ESL/EFL learners' vocabulary learning.

Koda (1999) and Birch (2002) asserted that when orthographies of L1 and L2 are different, L2 reading processes will be slow and positive transfer from L1 to L2 reading does not occur. Wallace (2001) suggests that there is a strong relationship between phonemic awareness, automatic word processing and reading achievement. Hence, L2 readers need to attain fluent L2 word recognition before they can read accurately and fluently. Given the need to know such a large amount of vocabulary for reading to be successful, ESL/EFL teachers should not only accommodate vocabulary learning in a reading classroom, but inform L2 readers that this is a condition for reading success. The following are useful online resources for teaching vocabulary (www.swan.ac.uk/cals/calsres/varga; www.texture.ca; www.comp.lanc.au.uk/ucrel/bncfreq/flists.html).

Like developing automatic word recognition, explicit teaching of grammar or syntactic structures may be integrated in the ESL/EFL reading syllabus. Based on Ellis (2006), teaching of grammar involves any instructional technique that draws learners' attention to some specific grammatical form in such a way that it helps them understand the language metalinguistically or process it in comprehension and/or production, so that they can internalize it in their linguistic system. Since conscious attention to language form, such as attention and noticing (Schmidt, 2001), is a necessary condition for language learning to take place, applications of the task-based teaching approach that emphasizes '*focus on form*' (Doughty, 2003; Long, 2000) in teaching reading should facilitate the development of automatic syntactic recognition. It should be noted that in

applying the *focus on form* approach, teachers should be aware that grammar teaching should coincide with the learners' readiness to move to the next developmental stage. Grammar feedback during the teaching of reading (e.g., through **boldfacing**, *italicizing*, underlining or CAPITALIZING) is possible to assist learners to attain high levels of automatic recognition of syntactic structures (see Burgess & Etherington, 2002).

In summary, in order to develop word and syntactic recognition skills, a few conditions are needed in the reading classroom, which include: (1) opportunity for extensive reading so that learners have frequent exposure to vocabulary; (2) opportunity to focus on form relevant to particular reading; and (3) opportunity to employ memory strategies to store new vocabulary (e.g., repetition, rehearsal, learning by heart) and retrieval strategies to practise and revise existing vocabulary (e.g., word meaning recall, matching words with similar meaning), and metacognitive strategies for self-assessment and evaluation (as further discussed below). Strategic reading instruction cannot be successful if attention is not given to developing language learners' linguistic competence.

Strategic Processing

In most routine reading contexts, L2 readers are likely to encounter unfamiliar words, syntactic structures or topics that require them to consciously or intentionally evaluate and examine alternative sources or use context clues (e.g., Block, 1992; Carrell, Gajdusek & Wise, 1998). Therefore, when difficulty in reading arises, regulatory or control processes, as higher-level processing, such as assessing situations and monitoring current comprehension, are needed because such difficulty affects the effectiveness of reading. Although such control processes may slow down reading speed, they help readers increase the likelihood of reading achievement. According to Gagné, Yekovich and Yekovich (1993), the nature of strategies is related to the control processing component in their human information-processing model which guides and monitors information processing events.

Strategic processing is hence conscious, deliberate, intentional and goal-directed processing individuals employ when using the target language. Routinized or automatized processes of which individuals are not aware while using the language are not part of the strategic processing construct. There is consensus that strategic processing has a component of *awareness* and occurs within the working memory realm (stipulated within the *focal attention* or at least within *peripheral attention*; Macaro, 2006; Schmidt, 1995). What may distinguish skills and other processes from strategies is the level of *awareness and deliberation on the processes*, rather than the nature of reading processes per se (Alexander *et al*., 1998). Some L2 readers may paraphrase, underline, highlight or summarize the text without realizing they do, whereas others may be conscious and

purposeful in using such processes. Although the reading processes between the two groups are similar, the level of consciousness is different. The former may be reading the text skillfully, whereas the latter may be reading it strategically.

Bernhardt (2000) discusses the effects of the *linguistic threshold* on reading which may be a condition influencing consciousness in reading processes. In a context where a linguistic threshold is much beyond the readers' linguistic competence, it is likely that their processing would be conscious, slow but often unsuccessful (despite the fact that they are conscious and intentional, in solving reading difficulty). Furthermore, it can be argued that the same reader may be conscious or unconscious in the use of the same process in different contexts. In some reading contexts, the processes such as paraphrasing and summarizing may function as skills as no difficulty is experienced, whereas in other contexts, they function as strategies as difficulty is present and such behaviours are purposeful to assist comprehension.

The role of strategy use in reading comprehension has thus been a topic of discussion in the L2 reading literature. Block (1992: 320) suggests that L2 readers need to be ready to "stand back and observe themselves" when they read. Carrell, Gajdusek and Wise (1998) further pointed out that what matters may not be so much what strategies learners use, but rather the knowledge of when, how and why a strategy is to be used. Cognitive strategies (i.e., actual conscious behaviors that individuals use to process language to understand, learn or use in some context) and metacognitive strategies (i.e., conscious processes that regulate cognitive strategies and other processing) have been regarded as closely related.

L2 reading strategy research has revealed how strategic readers interact with a written text and how their strategic behavior is related to effective reading comprehension (e.g., Anderson, 1991; Barnett, 1988; Bernhardt, 1986; Block, 1992; Carrell, 1984, 1989, 1991; Salataci & Akyel, 2002). It has generally been found that successful L2 readers know how to use appropriate strategies to enhance text comprehension (Alderson, 2000; Chamot *et al.*, 1989; Yang, 2002). By contrast, poor readers generally lack effective metacognitive strategies (Alderson, 2000) and have little awareness on how to approach reading (Baker & Brown, 1984). They also have deficiencies in the use of metacognitive strategies to monitor their understanding of texts (Pitts, 1983). It should be noted that generalization of the findings in the nature of reading strategies remains difficult because of the nature of interactive L2 reading itself as well as the characteristics of reader participants, research instruments and settings such as ESL or EFL (Grabe, 1991).

METACOGNITION OR STRATEGIC COMPETENCE

Much previous L2 reading research discussed above mainly examined strategic behaviors L2 learners employed during reading or learning how to read. However, a number of researchers have not attempted to relate strategic behaviors to an unobservable cognitive mechanism underlying such behaviors. It can be argued that connections between observed behaviors and the unobservable underlining construct are essential because the goal of teaching and learning is to develop learners' cognitive traits or repertoires independent of contexts. In psychological research, a latent or unobservable cognitive construct relevant to regulation of the human mind is known as metacognition. In L2 research, a similar executive construct is often referred to as strategic competence. It can be argued that understanding the nature of metacognition and strategic competence is essential for strategic reading instruction to succeed.

The basic concept of metacognition or strategic competence is the notion of thinking about thinking. Metacognition is a mental processing mechanism that helps individuals complete cognitive tasks (Flavell, 1971). When individuals are actively monitoring their thinking and performance, they consequently regulate and orchestrate other cognitive processes to achieve cognitive goals. In the past decades, there has been consensus on the view that metacognition is composed of *two dual* components (Alexander, Schallert & Hare, 1991; Baker & Brown, 1984; Brown, 1987; Nelson, 1994): (1) *knowledge of cognition* (i.e., the accumulated autobiographical information about one's own cognitions) and (2) *regulation of cognition* (i.e., the ongoing monitoring and regulation of one's own cognitions).

Knowledge of cognition is an individual's awareness of his/her own nature and the nature of others as cognitive processors or thinkers, a task, its demands (i.e., declarative knowledge) and how to achieve these demands (i.e., procedural knowledge) under varying conditions (i.e., conditional knowledge) and strategies for use to accomplish the task. This knowledge is located in the long-term memory (LTM). According to Flavell (1992), metacognitive knowledge can be found in person, task and strategy variables. The person-metacognitive knowledge variable refers to knowledge about what individuals are like as cognitive organisms (i.e., as intra-individual, inter-individual and universal). For example, knowing that one is better at reading than speaking in English can be categorized as the intra-individual-person, metacognitive knowledge subcategory. Knowing that one is better at reading in English than his/her friends is an example of an inter-individual-person-metacognitive-knowledge subcategory. The task-metacognitive knowledge variables refer to the knowledge about the demands, effects and constraints of cognitive tasks (declarative knowledge). This category includes the knowledge that certain tasks dictate certain cognitive rules and require different kinds of processing on their part. The strategy-metacognitive knowledge variable is the knowledge of how to

proceed with a task and how to accomplish the goal (i.e., procedural and conditional knowledge). In reality, person, task and strategy variables interact closely in the course of processing, studying, storing and retrieving information.

Regulation of cognition, by contrast, is associated with the individuals' online information-processing system (to be discussed next). In Flavell's (1992) own term, regulation of cognition can be seen by means of *metacognitive experiences* which are underlined by the control mechanism that regulates the individuals's own cognition. Metacognitive experiences are defined as individuals' conscious realization or awareness of their own current, ongoing cognition. Metacognitive experiences accompany and pertain to any current intellectual enterprises (Flavell, 1992). For example, if learners suddenly had the anxious feeling that they did not understand something they read but there was a need to understand it, that feeling would be evidence of a metacognitive experience. Individuals are likely to have metacognitive experiences when they have a feeling that something is hard to perceive, comprehend, remember or solve. This experience, coupled with effort and motivation, leads to strategy use. Metacognitive experiences are likely to occur in a situation that stimulates a lot of careful, highly conscious thinking including when: (1) the situation requires them to be aware of their actions and potential consequences of their actions; (2) the cognitive task is somewhere between totally unfamiliar and totally familiar or individuals are in disequilibrium (i.e., lack of balance between knowing and not knowing); and (3) it is important to make correct responses or achieve desired outcomes.

All these situations require individuals to plan beforehand and evaluate afterwards because decisions and actions can be at once weighty and risky. Within the subset of metacognitive regulation is *strategic processing* in response to concurrent perceived difficulties or problems that may prevent successful performance or desired goals. In association with strategies here, there are two types of goals: cognitive and metacognitive goals. For example, if learners are interested in understanding issues in global warming, but do not really know much about it, they then study several articles about global warming. At this stage, they are likely to be using cognitive strategies, aimed at the straightforward cognitive goals of simply improving their knowledge. However, if they wonder whether they have properly understood the issues and therefore ask themselves about various aspects of global warming and note how well they are able to answer or explain them, they are likely to be using metacognitive strategies, aimed at the metacognitive goals of assessing their knowledge.

In L2 reading research, two lines of L2 strategy research are: (1) research that examines a general tendency or knowledge of an individual reader to use certain kinds of reading strategies free from a particular context, and (2) research that examines the actual strategy use in a particular reading context. Phakiti (2003) classified the former as 'trait

strategy use' because this is stable metacognitive knowledge and the latter as 'state strategy use' because it is unstable and occurs during online regulation. If theory of metacognition discussed above is used to locate the types of L2 reading strategy research, it can be argued that generally perceived reading strategy use is related to knowledge of cognition, whereas actual perceived strategy use in a specific context is related to regulation of cognition. Phakiti (in press) found that both kinds of strategy use are highly related and work together during information processing and contribute differently to reading comprehension performance. Generally perceived strategy use is related to knowledge of cognition in one's own tendency to use certain kinds of strategies and hence is indirect to actual reading performance via actual strategy use in that particular context.

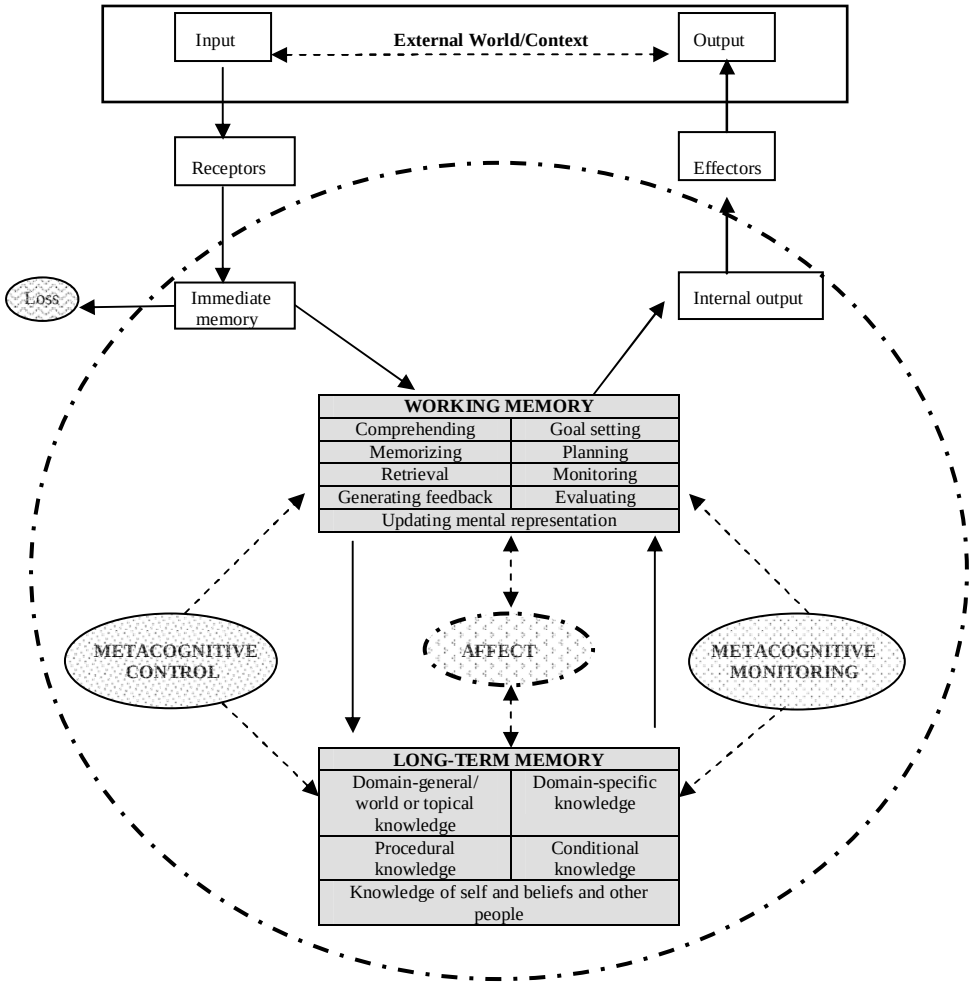
The next section discusses how individuals process reading text in their information processing and what factors are involved in this processing.

HUMAN-INFORMATION PROCESSING THEORY

Theories of human information processing have been proposed by many scholars (e.g., Anderson, 2000; Gagné, Yekovich & Yekovich, 1993; Kintsch, 1998; Skehan, 1998). Since thinking cannot be seen, psychologists and researchers use metaphors and models to describe and explain it. For the purpose of this paper, a model of information processing is proposed. Although many aspects in the model are not treated comprehensively here, this model is useful for our thinking about a location of strategic processing and metacognition or strategic competence in the human mind.

Figure 1 presents a model of information processing that can be used to describe how individuals process information from the external world. As depicted in Figure 1, input or information (see Gass, 2003, for extensive discussion of input and interaction in language learning) from the environment (e.g., light for print, sound for speech, or pressure for touch) enters the structural system through human *receptors* that are sensitive to that particular form of energy (e.g., eyes, ears, nose). From the receptors, the nerve impulse goes to the central nervous system in which it is registered in what Gagné, Yekovich and Yekovich (1993) call *immediate memory*. This amount of time is long enough for the *selective perception* processes to determine what information should be kept active in the working memory (WM) for further processing. Information that is unattained is lost to the system (i.e., loss).

Figure 1 Human information processing



Working Memory (WM)

The attended information then moves along to WM (which corresponds roughly to *awareness)*, where many processes work together to assimilate information into LTM. Based on Gagné, Yekovich and Yekovich (1993), WM is limited not only in terms of duration, but also capacity. Consequently, it is difficult for an individual to perform several mental tasks at once. However, people can do more than one mental task at the same time once other metal processes relevant to a given task become *automatic*. For example, as discussed earlier, L2 readers can recognize word meanings and syntactic structures automatically without really thinking about them. Because they have automatized word-decoding, they have more mental capacity in their WM to devote to understanding what they are reading. This may be the reason why high-ability learners perform tasks more successfully than low-ability learners. Processes that occur in WM include online cognitive processing such as comprehending, storing, retrieving and generating feedback, and metacognitive processing such as goal-setting, planning, monitoring, assessing, evaluating and updating mental representation. It should be noted that, as discussed earlier about processes in L2 reading, what distinguishes strategies from other processes is the level of awareness in the processing. Therefore, comprehending processes such as identifying main ideas can be seen as strategies when the individuals are conscious and purposeful in their use. If individuals do not realize that they are using them during the information processing, such processes are common processes rather than strategies.

Based on Figure 1, WM interacts with many other components such as LTM, affect (or feeling), metacognitive monitoring and metacognitive control. Metacognitive monitoring and controling (as metacognition or strategic competence) perform an executive function to mediate WM with LTM and affect. During information processing, metacognitive monitoring and controlling constantly (but not all the time) regulate information processing events. These mechanisms result in behaviours, such as goal setting, planning how to achieve goals, assessing the current situation, monitoring goal attainment, and checking and evaluating current performance in WM. It should be noted that monitoring and controlling processes that have become automatic and are deployed automatically are not qualified as strategies and are no longer metacognitive because they are part of automatic processing and do not regulate the processing events.

Long-term Memory (LTM)

LTM is a more or less permanent location of individuals' long-term knowledge. The duration of LTM is rather stable over time and information in LTM can be offline given that it is not necessary for use in a particular context. A simple metaphor for this is your mobile phone. In the phone book section, it permanently stores a number of telephone

numbers and is ready for use. The memory of telephone numbers is similar to human LTM. When you telephone a particular person by pressing the name of that person, the telephone number is being activated in a working platform which is similar to WM. Knowledge in LTM includes domain general knowledge (such as world knowledge or topical knowledge), domain-specific knowledge (e.g., mathematical knowledge, science, languages, sports), procedural knowledge (knowing how to do certain things or use certain processes), conditional knowledge (knowing when and why to do certain things) and self-knowledge or self-beliefs (i.e., knowledge about one's nature, such as self-efficacy and culture).

Affect

Affect is related to an individual's feeling during the information processing. Some affects can be long-term or stable (i.e., trait affect such as motivation and attitude), whereas others can be temporary and changing (i.e., state affect such as happiness, emotion and anxiety in a particular situation). Based on a self-regulated model (e.g., Carver, 1996), human thinking has the functional characteristics of a *feedback control system* in which individuals establish goals and standards for themselves and use them as an affective reference in monitoring, adjusting and guiding their present behaviour. Such affect, positive or not, influences information processing in WM by framing the concurrent problem or difficulty in a way that processing strategies emanate out of the ongoing self-regulatory interaction among the level of consciousness, emotion, volition, the self-conception and the context (e.g., Schwarz, 1990; Schumann, 1998). Corno (1993) and Kanfer and Ackerman (1996) suggested that emotion- and motivation- regulation strategies play a crucial role as they act like a broad, meta-motivational strategy encompassing active attentional selectivity and parsimony of information processing.

Parallel Distributed Processing

According to theories of information processing models (e.g., Anderson, 2000; McClelland & Rumelhart, 1987; Rumelhart, 1990), the information system performs one action after another very rapidly and does a lot of things simultaneously as a powerful computer does. In the human information processing theory, it is postulated that human information system is *parallel distributed*, rather than serial. In regard to the relationship between automatic and strategic processing, there is a constant back-and-forth relationship between automatic and strategic processing. That is, one moment individuals may be asking themselves if they have enough information to achieve the goal. The next they may just use the language without any directed attention or evaluation. The relationship of cognitive, metacognitive and affective strategies remains highly complex because at any moment in their language use, the learners may be engaged in a *synchronic situation-related variation* between cognitive strategies,

metacognitive strategies and affective strategies. One moment they are actually retrieving and checking their prior knowledge; the next they are asking themselves whether they have enough knowledge or information to answer a comprehension question. This process may be even much more complex because learners are not dealing with one strategy at a time, but rather with a sequence of strategies for one task and a cluster of other strategies for other tasks. It should be noted that the same process may be a strategy for some individuals, but an unconscious process for others. Hence, in viewing strategy use, it would appear that some individuals may report not to use a particular strategy when in fact that strategy may be embedded in an unconscious, automatic processing.

The reason why and how the human mind system actually works as it does, is little known. In neuropsychology (e.g., Rumelhart, 1990), the human brain has been found to be made up of complex connections of neurons that form neural networks (i.e., nodes which activate one another, build new connections among one another) to perform various functions for information processing and thinking. Advancement in the parallel distributed processing (PDP) model helps remind us that human information processing is not simple and orderly, but rather complex since a lot of things happen at the same time.

Products of the Processes

Eventually, after the information has been processed in WM and LTM, it is then readied as output or observable performance outcome via the appropriate effectors (e.g., all muscles and glands) to execute the information processing. For cognitive tasks, the major effectors are the arms and hands for writing or typing and the voice apparatus for speaking. When the response involves language production, the message must be generated in a grammatically acceptable form. However, in L2 learning environments, language production may be grammatically unacceptable due to the incomplete and fragmented language ability (interlanguage). Input such as texts, tasks and activities from the external world must enter the information system so that reading occurs and comprehension can be pushed as output back to the external environment, which is ready to serve as new input. Success in using strategies may depend on certain conditions which include (Anderson, 2005): (1) when the strategy relates well to the L2 task at hand; (2) when the strategy is linked well with other strategies and processes relevant to the given task; and (3) when the strategy coordinates well with the learner's learning style.

INSIGHTS FROM STUDIES ON L2 STRATEGIC READING INSTRUCTION

There have been a few studies on L2 strategic reading instruction that examine the effectiveness of strategy instruction techniques. Hamp-Lyons (1985) and Kern (1989) found that students who had strategy training did better in reading than those who did not have strategy training. Carrell, Pharis and Liberto (1989) and Pappa, Zafiropoulou and Metallidou (2003) found that learners who had training on using semantic mapping and metacognitive strategies outperformed those without such training. Ikeda and Takeuchi (2003) pointed out that bottom-up processing strategies were effective for lower-proficiency levels, whereas top-down processing strategies were effective for higher-proficiency levels. In Chamot and Keatley's (2003) study of teaching reading strategies, ESL teachers found it easier to teach reading strategies, such as sounding out, selective attention, summarizing, cooperation, predicting, brainstorming of prior knowledge and making inferences, using L1. Chamot and Keatley (2003) also found that students who had opportunities to verbalize their thinking processes in their native language during L2 reading showed better comprehension than those unable to describe their thinking. Seng and Hashim (2006) found that the use of L1 in L2 reading not only facilitated resolutions of word-related and idea-related difficulties, but also helped learners reduce affective barriers (e.g., anxiety) and gain more confidence in ESL reading comprehension. Grenfell and Harris (1999) found that students could use their L1 to plan and evaluate their work, whereas they could use the target language when they utilized strategy checklists, description of strategies and strategy activities. Macaro (2001) pointed out that for beginning to low intermediate levels, it is not quite possible to avoid the use of L1 during the strategy instruction. Hence, in EFL contexts, depending on the level of learners' language proficiency, the use of L1 as a medium of instruction may be an effective means to help learners improve reading proficiency because the focus here is not on developing speaking abilities.

Carrell (1998) argued that effective reading strategy training needs to include two key metacognitive factors: (1) knowledge of cognition (i.e., students are aware of what strategies they are currently using as they read in general) and (2) regulation of cognition (i.e., students are aware of selection of current strategies appropriate for successful comprehension). Farrell (2001) found that reading strategy training in ESL/EFL contexts were worthwhile, even in a mixed-ability class because students can develop some metacognitive awareness of their reading processes. Taylor, Stevens and Asher (2006), found in their meta-analysis that teaching of reading strategy has an impact on improvement of L2 reading.

Strategy training research has provided insights into factors affecting success in reading strategy training and demonstrated that strategic reading can be explicitly

taught. Since L2 learning behaviors can be implicit and/or explicit (DeKeyser, 2003), incidental and/or intentional (Hulstjin, 2003), and conscious and/or automatic (as discussed above), effective ESL/EFL reading instruction should include teaching of strategic reading. The nexus of this instruction is to draw language learners' attention to processes of their reading as their object of thoughts. Effective strategic reading instruction should provide opportunities for all learners to reflect on their thinking during reading, so that corrective and performance feedback (to be discussed below) can be given to them. Chamot (2005) pointed out that optimal reading strategy training requires not only teachers' efforts to find out what reading strategies their students use for different tasks, but their promptness to discuss with their students the reasons why they think the strategies they employ are effective. The next sections present three models for strategic reading instruction.

MODEL A: DEVELOPING KNOWLEDGE AND REGULATION OF READING STRATEGY USE SIMULTANEOUSLY

The distinction of knowledge of cognition and regulation of cognition and generally perceived strategy use and actual perceived strategy use in a specific context has implications for strategic reading instruction. In order to develop learners' strategic repertoire, teachers must focus on developing both knowledge of learners' general strategy use free from context and actual strategy use in a specific reading situation. Knowledge about cognition in the use of reading strategies is related to how an individual perceives he or she uses or does not use a strategy in ESL/EFL reading in general and to what extent he or she uses it. Regulation of cognition in the use of reading strategies is related to actual execution of an online strategy during reading. It can be argued that actual reading practices which encompass regulation of cognition will form or modify knowledge of cognition and likewise, knowledge of cognition will direct the way the individual employs a strategy.

Previous reading strategy research and reading strategy instruction studies did not pay much attention to both metacognitive components (see Carrell, 1998). Hence, in this paper, Model A of strategic reading instruction aims to enhance both knowledge of cognition and regulation of cognition. Appendix A provides a list of L2 reading strategies (cognitive, metacognitive and affective reading strategies) that can be interpreted in the human information processing theory as discussed above. The strategy list is useful for teachers and learners to keep in mind what can be involved in ESL/EFL reading and task completion.

Goals of Model A

This strategic reading model aims to increase learners' awareness or realization of not only their tendency to use certain strategies in general reading contexts, but also their actual use of them in a real reading context. This model will help develop both knowledge of cognition and regulation of cognition.

Procedures

- Administer a general knowledge of reading strategy use questionnaire (as discussed below) at the beginning of the first session to see the general tendency of learners' perceived strategy use. Based on Chamot (2005), this will allow the teachers to gain insights into cognitive factors involved in learners' choices of using certain strategies. Ideally, in order to observe changes in learners' general perception in their reading strategy use, this instrument can be administered about once a month. The data across occasions can be compared for trend analysis.
- Follow Winograd and Hare's (1988) advice for effective reading strategy training: (1) describe the strategy the learners are going to learn; (2) explain why the strategy is important and remind them about the benefits of strategy use in reading; (3) demonstrate how to use the strategy effectively by modelling strategic reading behaviours with reading tasks/activities; (4) point out to learners when and where a particular strategy is suitable for use; and (5) teach them how to evaluate their successful use of the strategy.
- Administer a context-based, reading strategy use questionnaire (as discussed below) at the end of a reading session to see the degree to which learners employ certain reading strategies. The information from this questionnaire can be used to compare with that from the task-free reading strategy use questionnaire in order to raise learners' realization that knowledge of general strategy use can be different from actual strategy use in a specific context.
- Teachers and learners keep track of both general strategy use free from context and actual strategy use in a particular context. This can be achieved through a graph of strategy use frequency as proposed in Purpura (1999).

Instruments

- **General knowledge of reading strategy use questionnaire** is written and described using the *Simple Present* tense which reflects the knowledge of individuals' strategy use free from specific time and contexts, for example, "I (never, rarely, often, usually, or always) *double-check* my understanding when I *read*." See Purpura (1999) and Mokhtari and Sheorey (2002) for this kind of

measure. See Tseng, Dörnyei and Schmitt (2006) for alternative Likert scales. The characteristics of this strategic processing can be described as 'context-free, event-independent and rather stable.' Limitations of this measure include: (1) there are problems in retrieving, constructing and evaluating one's general behaviors, which may limit the validity of what they report; (2) there are unavoidable effects of specific contexts on reporting such general behaviors (i.e., individuals cannot think of their behaviors without referring them to a particular context); and (3) it does not guarantee that the degree to which learners believe they use a strategy in a hypothetical context will reflect its actual use in a specific real context.

- **Perceived reading strategy use questionnaire** in a particular context is written using the *Simple Past* tense which suggests that the use of the strategy is specifically related to a particular past context only, for example, "I (never, rarely, often, usually, or always) *double-checked* my understanding during this reading activity." The characteristics of this strategic processing can be described as 'situation-specific or event-referenced, fluctuating and unstable.' Limitations of this measure include: (1) there is a possible effect of post-self analysis or post hoc effect (i.e., reconstruction of working memory stored in the short-term memory); and (2) it does not allow inferences beyond a particular situation (e.g., the extent to which they will do the same thing in other similar contexts as assessed by the trait strategy use questionnaire).

MODEL B: ERROR DETECTION READING INSTRUCTION

This model, like Model C, is related to the monitoring and evaluation of reading comprehension. This strategic reading instruction program is known as an 'error detection' reading program. This program has been used in English as L1 reading instruction (Zabrucky & Commander, 1993).

Goal of Model B

This strategic reading program aims to examine learners' ability to recognize comprehension failures and how they use cognitive and metacognitive strategies to resolve comprehension failures (such as by re-reading, using prior knowledge and evaluating sentences or sections containing errors). The reason behind this reading program is that if learners evaluate their reading, errors should be noticed and comprehension failures must then be resolved. The significance of this program is that differences between good and poor readers in monitoring and evaluation of reading can be identified and used to raise learners' awareness of their reading behaviours.

Procedures

- In this program, lexical, syntactic and/or semantic errors are placed in texts that learners read.
- Either informed or uninformed about the errors, learners are asked to report anything that does not make sense in the text.
- Learners are asked to identify where they think something is wrong and reflect on what they attempted to do when they could not understand the text.
- Teachers provide feedback on their error identifications and the quality of their strategy use.

Instruments

- Modified reading texts based on learners' proficiency levels: Texts should not be too short or too long. Texts containing from 250 to 700 are suitable as this length is enough for ideas to develop and fits in a 50-minute class. Topics should be within the interest of learners or match the teaching objectives or contexts.
- A question to ask learners to indicate if the text makes sense to them and why. In some situations, comprehension failures may not be from the result of lack of evaluation or monitoring, but rather from a lack of automatic word and syntactic recognition skills. If that is the case (based on their reasoning), vocabulary and grammar teaching (as discussed earlier in the article) may be incorporated in this instruction (after the activity).
- Questions that can be used to encourage learners to think while reading include: what is the main argument of this text?; what are causes of confusion?; and what are possible solutions for this confusion?

MODEL C: CALIBRATION READING INSTRUCTION

This reading program is called 'calibration reading program." *Calibration* denotes the perfect relationship between confidence in performance and actual performance. Learners are said to be *calibrated* when their confidence matches their actual performance. When their confidence is higher than their comprehension, they are said to be *overconfident*, whereas when their confidence is lower than their comprehension, they are said to be *underconfident*. Overconfidence and underconfidence are the two forms of miscalibration and in order to improve reading ability, miscalibration must be corrected by feedback.

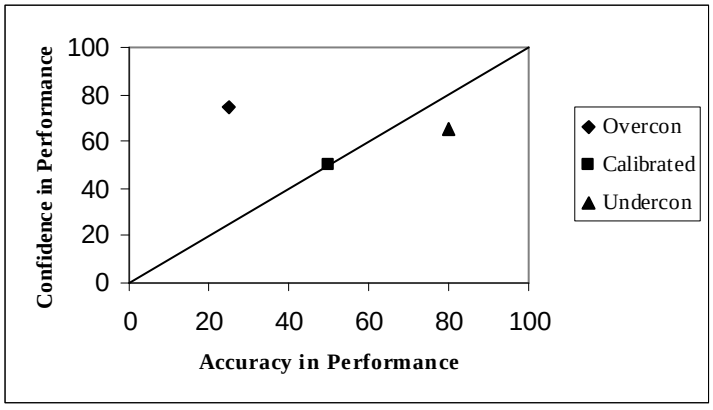
In order to understand learners' calibration, they are asked to read a text or several texts and complete a reading task and right after they complete it, they are asked to

assess their confidence in the correctness of their performance. Their confidence can be expressed in percentages. This type of confidence expression implies relative accuracy of performance confidence (i.e., *relative calibration*) rather than *absolute calibration* (absolute relationship between the predicted performance and actual performance). A continuous range of confidence can be 0%, 25%, 50%, 75%, 95% and 100%. Performance in comprehension can be determined by the correctness of reading comprehension, so performance can be 0% or 100% for a multiple-choice question or 0%, 25%, 50%, 75%, 95% or 100% for open-ended questions. Calibration can be studied by (1) computing correlation coefficients between confidence and performance (Nelson, 1984), or (2) subtracting the confidence from the actual performance in percentage.

Goal of Model C

This strategic reading model aims to improve learners' accuracy in evaluating their reading comprehension. Improvement in reading can be achieved via teachers' feedback on learners' confidence (see Phakiti, 2005, for extensive discussion of research on calibration). Figure 2 presents a calibration diagram that provides information about a tendency in confidence rating by an L2 learner in three different tasks. To explain the diagrams, the 45° line (called a unity line) represents performance. If the confidence is on the 45° line, the learner is well calibrated. If a confidence indicator is above the 45° line, the learner is overconfident, and if it is below the 45° line, the learner is underconfident.

Figure 2 Calibration diagram



In an ESL/EFL learning context, overconfident learners would believe that their reading comprehension and ability is already very good, and hence would be unmotivated to attempt to improve it. Their overconfidence may derive in part from the tendency to neglect contradictory evidence. If this is detected during the course of learning, their calibration in reading may be improved by making such evidence more

explicit. Underconfident ESL/EFL learners would likely spend too much time on reading and tasks that they should not have difficulty achieving, and therefore fail to move forward to comprehend texts or learn new language features. Their underconfidence may be explained by the lack of the ability to access, generate, or use feedback (as discussed below) to assist their decisions to move on. Research (see. Phakiti, 2005) found that individuals tend to be overconfident in difficult tasks and underconfident in easy tasks. If this is often the case, a calibration training is essential to finetune L2 learners performance perception.

Procedure

- Learners read English texts and complete comprehension tasks such as answering comprehension questions.
- For each question or task, immediately after they choose or provide the answer, they are asked to indicate their confidence in the correctness of the answer in percentage. This confidence is called a *single-case* confidence.
- After completing a series of reading and reading task completion, they are asked to indicate their overall confidence in their reading task performance. This confidence is called a *relative-frequency* confidence.
- A calibration score can be computed using the following formula: Calibration = Confidence minus Performance. If their calibration score is 0, they are said to be calibrated; if their calibration score is higher than 0, they are overconfidence (e.g., +75% indicates extreme overconfidence); and if their calibration score is lower than 0, they are underconfident (e.g., -100% indicates extreme underconfidence). For research purposes, when the number of participants is large, correlation coefficients can be calculated to see the general relationship between confidence and performance.

Instruments

- Reading texts and comprehension tasks such as multiple-choice comprehension questions or open-ended questions.
- Answer sheet with confidence rating scale, for example, in a multiple choice reading task:

No	Answer				Confidence (%)				
	a	b	c	d	0	25	50	75	100
1.				X					X
2.									
3.									

It should be noted that in this instruction, characteristics of the language syllabus, teaching methodology, and materials and assessment methods need to be considered. Confidence is not necessarily divided as 0%, 25%, 50%, 75%, and 100%, but must be adjusted depending on the nature of language tasks. Note that confidence is only approximate. This scale can discriminate levels of confidence. Since people cannot discriminate 10% from 11% confidence, for example, teachers must beware of providing confidence scales that learners cannot distinguish between.

- A record of calibration graphs as reminders of their calibration development. Research in this area suggests that along with noticing one's calibration, reasons against or for their confidence are essential for improving learners' calibration. The following are prompts that assist learners to reflect on their thinking about their confidence:

    1. Provide all the possible reasons that you can find favoring and/or opposing each of the answers. Such reasons may include facts that you know, things that you vaguely remember, assumptions that make you believe that one answer is likely to be correct or incorrect, gut feelings, associations, and the like.
    2. Write down in the space provided one reason that supports your decision. Please write the best reason you can think of that either speaks for or provides evidence for the alternative/content you have chosen, or speaks against or points against the alternative/content you rejected.

With this kind of practice, learners may be able to learn to accurately assess how well they perform or learn a language task. In high-stakes situations such as mid-term or final examinations or assignments, high validity of confidence is important because confidence is in turn feedback per se. If confidence is low, strategic readers will know that some special actions may be needed to improve their reading performance and to accomplish the task more successfully.

IMPORTANCE OF FEEDBACK

In all the three strategic reading instruction models, feedback plays a significant role not only in assisting desirable reading performance but also in helping fintune learners' strategic reading comprehension. Feedback in a language classroom should improve learners' quality of self-monitoring, assessment, evaluation and strategy use. According to Butler and Winne (1995) and Stone (2000), feedback can dramatically influence shifts in strategic reading. A primary role of feedback from teachers is to improve learners' reading performance, raise their awareness of concurrent strategy use and its effectiveness and boost and finetune learners' confidence in their reading assessment.

Teachers' feedback will help learners generate reasonable *internal feedback* (i.e., internally self-generated feedback within an individual during task engagement) during reading and task engagement. Internal feedback includes judgments of success in the task in regards to the desired goals, judgments of the relative productivity of various cognitive processes such as strategies along with expected rates of progress, and positive or negative feelings associated with productivity.

External feedback includes outcome feedback (such as indication of right or wrong answers) and cognitive feedback (such as valid reasons for good or bad performance). *Performance feedback*, as cognitive feedback, involves providing information about the accuracy of one's judgment in general, such as that the learner is overconfident, underconfident, or calibrated. *Environmental feedback* involves providing information about the sorts of tasks or the nature of specific language features that learners need to learn or accomplish. Therefore, feedback can be expected to have a significant effect on self-assessment during reading engagements, whereas outcome feedback tends to impact confidence in overall achievement. When external feedback enhances internal feedback, readers engage in better self-monitoring, self-testing, and metacognitive judgments. Without feedback, learners can fail to adjust their information processing as task difficulty arises, and they may then be overconfident in their performance. Hence, strategic reading instruction should emphasize development of learners' ability to generate accurate feedback.

CONCLUSION

Metacognition or strategic competence which influences strategic reading is an essential component of L2 reading comprehension. Understanding this theoretical construct is a prerequisite to any effective teaching of ESL/EFL reading. One aim of future research is to examine factors that facilitate or hinder effective metacognition and self-regulation during reading. Particularly low-ability learners and poor readers are in greater need of strategic reading instruction than are high-ability and good readers. Another aim of future research is to design and evaluate the effects of strategic reading programs on the development of L2 learners' strategic reading competence. Foci of strategic reading instruction program evaluation may include an examination of moderating variables, such as existing use of strategies prior to instruction, levels of English proficiency, age of learners, L1 backgrounds, quality of pretest and posttest measures and the length of instruction (total hours per one treatment and total time of overall instruction). The TESOL fields are in post-method transit when it is realized that there is no one best teaching method that works for all contexts (Kumaravadivelu, 2006). Rather than hoping that a strategic reading instruction model that works best to assist L2 learners in developing ESL/EFL reading abilities in one setting will work for other learners in other

contexts (i.e., replicability), teaching of strategic reading should be sensitive to local exigencies where practicing teachers develop their own theory of practice and at the same time, are aware of the multiplicity of learner identities and the particular vitality of complex macrostructures, such as those of a social, cultural, political and historical natures (Kumaravadivelu, 2006).

Based on my considerable experience in teaching of EFL reading, it is often the case that learners fail to develop their own personally valued future goals that bear a relationship to classroom instruction. Perhaps such failure is explained by the lack of learners' knowledge about what may be possible in the future as the outcome of experiencing formal instruction, their doubts about their own ability to achieve desired learning outcomes, and the insensitivity of ESL/EFL teachers to their individual students' beliefs, needs and learning styles.

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REFERENCES

Alderson, J.C. (2000). *Assessing reading*. Cambridge: Cambridge University Press.

Alexander, P.A., Graham, S. & Harris, K.R. (1998). A perspective on strategy research: Progress and prospects. *Educational Psychology Review*, 10, 129-153.

Alexander, P.A., Schallert, D.L., & Hare, V.C. (1991). Coming to term: How researchers in learning and literacy skills talk about knowledge. *Review of Educational Psychology*, 61, 315-343.

Anderson, J.R. (2000). *Learning and memory: An integrated approach* (2nd ed.). New York: John Wiley & Sons.

Anderson, N.J. (1991). Individual differences in strategy use in second language reading and testing. *The Modern Language Journal*, 75, 460-472.

Anderson, N.J. (1999). *Exploring second language reading: Issues and strategies*. Boston, MA.: Heinle & Heinle.

Anderson, N. J. (2005). L2 learning strategies. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* (pp.757–71). Mahwah, NJ: Lawrence Erlbaum.

Baker, L. & Brown, A.L. (1984). Metacognitive skills and reading. In P.D. Pearson (Ed.), *Handbook of reading research* (pp.353-394). New York: Longman.

Barnett, M.A. (1988). Reading through context: How real and perceived strategy use affects L2 comprehension. *Modern Language Journal*, 72, 150-162.

Bernhardt, E.B. (1986). Three approaches to reading comprehension in intermediate German. *Modern Language Journal*, 67, 111-115.

Bernhardt, E.B. (2000). Second language reading as a case study of reading scholarship in the 20th century. In M. Kamil, P. Mosenthal, P.D. Pearson, & R. Barr (Eds.), *Handbook of reading research*, Volume III (pp.791-811). Hillsdale NJ: Lawrence Erlbaum.

Birch, B. (2002). *English L2 reading: Getting to the bottom*. Mahwah, NJ: Lawrence Erlbaum.

Block, E.L. (1992). See how they read: Comprehension monitoring of L1 and L2 readers. *TESOL Quarterly*, 26, 319-343.

Brown, A.L. (1987). Metacognitive, executive control, self regulation and mysterious mechanisms. In F. Weinert, & R. Klume (Eds.), *Metacognition, motivation and understanding* (pp.65-117). Hillsdale, NJ: Lawrence Erlbaum.

Burgess, J. & Etherington, S. (2002). Focus on grammatical form: Explicit or implicit? *System*, 30, 433-458.

Butler, D. L. & Winne, P. H. (1995). Feedback and self-regulated learning: A theoretical synthesis. *Review of Educational Research, 65*, 245–281.

Carrell, P.L. (1984). Personality and individual writing processes. *College Composition and Communications*, 35, 285-300.

Carrell, P.L. (1989). Metacognitive awareness and second language reading. *Modern Language Journal*, 73, 121-149.

Carrell, P.L. (1991). Second language reading: Reading ability or language proficiency. *Applied Linguistics*, 12, 159-179.

Carrell, P.L. (1998). Can reading strategies be successfully taught? *Annual Review of Applied Linguistics,* 21, 1-20.

Carrell, P.L., Gajdusek, L., & Wise, T. (1998). Metacognition and EFL/ESL reading. *Instructional Science*, 26, 97-112.

Carrell, P.L., Pharis, B.G., & Liberto, J.C. (1989). Metacognitive strategy training for ESL reading. *TESOL Quarterly*, 23, 647-678.

Carter, R. (2001). Vocabulary. In R. Carter, & D. Nunan (Eds.), *The Cambridge guide to teaching English to speakers of other languages* (pp.42-47). Cambridge: Cambridge University Press.

Carver, C.S. (1996). Cognitive interference and the structure of behavior. In I.G. Sarason, G.R. Pierce, & B.R. Sarason (Eds.), *Cognitive interference: Theories, methods, and findings* (pp.25-45). Mahwah, NJ: Lawrence Erlbaum.

Chamot, A.U. (2005). Language learning strategy instruction: Current issues and research. *Annual Review of Applied Linguistics*, 25, 112-130.

Chamot, A.U. & Keatley, C.W. (2003). Learning strategies of adolescent low-literacy Hispanic ESL students. Paper presented at the 2003 Annual Meeting of the American Educational Research Association, Chicago, IL.

Chamot, A.U., Kupper, L., & Interstate Research Associates, VA. (1989). Learning strategies in foreign language instruction. *Foreign Language Annals*, 22, 13-24.

Cohen, A.D. (1994). *Assessing language ability in the classroom* (2nd ed.). Boston, MA: Heinle & Heinle.

Corno, L. (1993). The best-laid plans: Modern conceptions of volition and educational research. *Educational Researcher*, 22, 14-22.

Day, R.R. & Bamford, J. (1998). *Extensive reading in the second language classroom*. New York: Cambridge University Press.

DeKeyser, R. (2003). Implicit and explicit learning. In C. Doughty & M. Long (Eds.), *Handbook of second language acquisition* (pp.313-348). Malden, MA: Blackwell Publishing.

Doughty, C.J. (2003). Instructed SLA: Constraints, compensation, and enhancement. In C.J. Doughty & M.H. Long, *Handbook of second language acquisition* (pp.256-310). Malden, MA: Blackwell.

Ellis, R. (2006). Current issues in the teaching of grammar: An SLA perspective. *TESOL Quarterly*, 40, 83-107.

Eskey, D. (1988). Holding in the bottom: An interactive approach to the language problems of second language readers. In P. Carrell, J. Devine, & D. Eskey (Eds.), *Interactive approaches to second language reading* (pp.93-100). New York: Cambridge University Press.

Eskey, D. (2005). Reading in a second language. In E. Hinkle (Ed.), *Handbook of research on second language teaching and learning* (pp. 563-580). Mahwah, NJ: Lawrence Erlbaum.

Farrell, T.S.C. (2001). Teaching reading strategies: 'It takes time!' *Reading in a Foreign Language*, 13, 631-646.

Flavell, J.H. (1971). First discussant's comments: What is memory development the development of? *Human Development*, 14, 272-278.

Flavell, J.H. (1992). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. In T.O. Nelson (Ed.), *Metacognition: Core reading* (pp.3-8). Boston: Allyn & Bacon.

Gagné, E.D., Yekovich, C.W., & Yekovich, F.R. (1993*). The cognitive psychology of schooling learning*. New York, NY: HarperCollins College Publishers.

Gass, S. (2003). Input and interaction. In C.J. Doughty & M.H. Long, *Handbook of second language acquisition* (pp.224-255). Malden, MA: Blackwell.

Grabe, W. (1991). Current developments in second language reading research. *TESOL Quarterly*, 25, 375-406.

Grabe, W. (1999). Developments in reading research and their implications for computer-adaptive reading assessment. In M. Chalhoub-Deville (Ed.), *Issues in computer-adaptive testing of reading proficiency* (pp.11-48). Cambridge: Cambridge University Press.

Grenfell, M. & Harris, V. (1999). *Modern languages and learning strategies: In theory and practice*. London: Routledge.

Hamp-Lyons, L. (1985). Two approaches to teaching reading: A classroom based study. *Reading in a Foreign Language*, 3, 363-373.

Hinkel, E. (2006). Current perspectives on teaching the four skills. *TESOL Quarterly*, 40, 109-131.

Hudson, T. (1988). The effects of induce schemata on the "short circuit" in L2 reading: Non-decoding factors in L2 reading performance. *Language Learning*, 32, 1-31.

Hulstjin, J. (2003) Incidental and intentional learning. In C. Doughty & M. Long (Eds.), *Handbook of second language acquisition* (pp. 349-381). Malden, MA: Blackwell Publishing.

Ikeda, M. & Takeuchi, O. (2003). Can strategy instruction help EFL learners to improve their reading ability?: An empirical study. *JACET Bulletin*, 37, 49-60.

Kanfer, R. & Ackerman, P.L. (1996). A self-regulatory skills perspective to reducing cognitive interference. In I.G. Sarason, G.R. Pierce, & B.R. Sarason (Eds.), *Cognitive*

interference: Theories, methods, and findings (pp.153-171). Mahwah, NJ: Lawrence Erlbaum Associates.

Kern, R.G. (1989). Second language reading instruction: Its effects on comprehension and word inference ability. *Modern Language Journal*, 73, 135-149.

Kintsch, W. (1998). *Comprehension: A paradigm for cognition*. Cambridge: Cambridge University Press.

Koda, K. (1999). Development of L2 intraword orthographic sensitivity and decoding skills. *Modern Language Journal*, 83, 51-64.

Koda, K. (2005). *Insights into second language reading*: *A cross-linguistic approach*. Cambridge: Cambridge University Press.

Kumaravadivelu, B. (2006). TESOL methods: Changing tracks, challenging trends. *TESOL Quarterly*, 40, 59-81.

Long, M. (2000). Focus on form in task-based language teaching. In R.D. Lambert & E. Shohamy (Eds.), *Language policy and pedagogy: Essays in honor of A. Ronald Walton* (pp. 179-192). Philadephia: Benjamins.

Macaro, E. (2001). *Learning strategies in foreign and second language classrooms*. London: Continuum.

Macaro, E. (2006). Strategies for language learning and for language use: Revising the theoretical framework. *Modern Language Journal*, 90, 320-337.

McClelland, J.L. & Rumelhart, D.E. (1987). *Explorations in parallel distributed processing: A handbook of models programs*. Cambridge, MA: MIT Press.

Mokhtari, K. & Sheorey, R. (2002). Measuring ESL students' awareness of reading strategies. *Journal of Developmental Education*, 25, 2-10.

Nation, P. (2000). *Learning vocabulary in another language*. Cambridge: Cambridge University Press.

Nation, P. (2005). Teaching and learning vocabulary. In E. Hinkel (Ed.), *Handbook of research on second language teaching and learning* (pp.581-596). Mahwah, NJ: Lawrence Erlbaum.

Nelson, T.O. (1984). A comparison of current measures of the accuracy of feeling-of-knowing predictions. *Psychological Bulletin*, 95, 109-133.

Nelson, T.O. (1994). Why investigate metacognition? In J. Metcalfe & A. Shimamura (Eds.), *Metacognition: Knowing about knowing* (pp.1-26). Cambridge, MA: A Bradford Book.

Pappa, E., Zafiropoulou, M., & Metallidou, P. (2003). Intervention on strategy use and on motivation of Greek pupils' reading comprehension in English classes. *Perceptual and Motor Skills*, 96, 773-786.

Phakiti, A. (2003). A closer look at the relationship of cognitive and metacognitive strategy use to EFL reading comprehension test performance. *Language Testing*, 20, 26-56.

Phakiti, A. (2005). An empirical investigation into the nature of and factors affecting test takers' calibration within the context of an English Placement Test. *Spaan Fellow Working papers in Second or Foreign Language Assessment*, 3, 27-71.

Phakiti, A. (in press). Construct validation of Bachman and Palmer's (1996) strategic competence model over time in EFL reading tests. *Language Testing*.

Pitts, M. M. (1983). Comprehension monitoring: Definition and practice. *Journal of Reading*, 26, 516-523.

Pressley, M. & Afflerbach, P. (1995). *Verbal Protocols of Reading: The Nature of Constructively Responsive Reading*. Hillsdale, NJ: Lawrence Erlbaum.

Purpura, J.E. (1999). *Learner strategy use and performance on language tests: A structural equation modeling approach*. Cambridge: Cambridge University Press.

Rumelhart, D.E. (1990). *Brain style computation: Learning and generalization: An introduction to neural and electronic networks*. San Diego, CA: Academic Press.

Salataci, R. & Akyel, A. (2002). Possible effects of strategy instruction on L1 and L2 reading. *Reading in a Foreign Language*, 14, 1-17.

Schmidt, R. (1995). Consciousness and foreign language learning: A tutorial on the role of attention and awareness in learning. In R. Schmidt (Ed.), *Attention and awareness in foreign language learning* (pp.1-63). Honolulu: University of Hawai'i Press.

Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp.3-32). Cambridge: Cambridge University Press.

Schumann, J.H. (1998). *The neurobiology of affect in language*. Language Learning Monograph Series. Michigan: Blackwell Publishers.

Schwarz, N. (1990). Feeling as information: Informational and motivational functions of affective states. In R.M. Sorrentino & E.T. Higgens (Eds.), *Handbook of motivation and cognition: Foundation of social behavior: Vol. 2* (pp.527-561). New York: Guilford Press.

Segalowitz, N. (2003). Automaticity and second language development. In C. Doughty & M. Long (Eds.), *Handbook of second language acquisition* (pp.382-408). Oxford: Blackwell.

Seng, G. H. & Hashim, F. (2006). Use of L1 in L2 reading comprehension among tertiary ESL learners. *Reading in a Foreign Language*, 18, 29-54.

Skehan, P. (1998). *A cognitive approach to language learning*. Oxford: Oxford University Press.

Stanovich, K. E. (1980). Toward an interactive-compensatory model of individual differences in the development of reading fluency. *Reading Research Quarterly*, 16, 32-71.

Stone, N. J. (2000). Exploring the relationship between calibration and self-regulated learning. *Educational Psychology Review,* 12, 437–475.

Taylor, A., Stevens, J.R., & Asher, J.W. (2006). The effects of explicit reading strategy training on L2 reading comprehension: A meta-analysis. In J.M. Norris & L. Ortega, *Synthesizing research on language learning and teaching* (pp.213-244). Amsterdam: John Benjamins Publishing.

Tseng W., Dörnyei, Z., & Schmitt, N. (2006). A new approach to assessing strategic learning: The case of self-regulation in vocabulary acquisition. *Applied Linguistics*, 27, 78-102.

Wallace, C. (2001). Reading. In R. Carter & D. Nunan (Eds.), *The Cambridge guide to teaching English to speakers of other languages* (pp.21-28). Cambridge: Cambridge University Press.

Winograd, P. & Hare, V.C. (1988). Direct instruction of reading comprehension strategies: The nature of teacher explanation. In C.E. Weinstein, E.T. Goetz, & P.A. Alexander (Eds.), *Learning and study strategies: Issues in assessment instruction and evaluation* (pp.121-139). San Diego: Academic Press.

Yang, Y. (2002). Reassessing readers' comprehension monitoring. *Reading in a Foreign Language*, 14, 18-42.

Zabrucky, K. & Moore, D. (1993). Rereading to understand: The role of text coherence and reader proficiency. *Contemporary Educational Psychology*, 18, 442-454.

Appendix A: Taxonomy of cognitive, metacognitive and affective strategies

Cognitive strategies	They are composed of ***comprehending*** (for understanding the text), ***memory*** (for transforming information into a form that can be stored in memory for use) and ***retrieval*** (for recalling information either from current or long-term memory) strategies.
Metacognitive strategies	They are composed of ***planning*** (for actions and goal attainment), ***monitoring*** (for checking ongoing comprehension or performance) and ***evaluating*** (for evaluation of past and current actions or performance) strategies.
Affective strategies	They are composed of ***motivation-control*** (how to persuade oneself to read successfully), ***volition-control*** (how to invest efforts or willingness to complete reading or learn how to read) and ***anxiety-coping*** (how to deal with anxiety arising from reading) strategies.

The following are plausible individual cognitive, metacognitive and affective processes involved in L2 reading that can be interpreted within a human information processing model.

Cognitive strategies	
Comprehending strategies	• Identifying main ideas, author's attitudes/tones • Summarizing main information • Analysing author's purposes • Predicting • Translating message into native language • Guessing meaning of unknown words using context clues • Using a dictionary • Clarify indirect meaning • Distinguishing facts from opinions • Making inferences based on the available information • Connecting important ideas in text
Memory strategies	• Making use of available typographical features such as bold face, italics, pictures, tables or figures in text • Rereading • Note taking, underlining main ideas or highlighting important information • Recognizing previous read words or information • Paraphrasing or simplifying information to remember

Retrieval strategies	• Using prior knowledge or experience relevant to the topic • Relating new information in text with previously read text • Using grammar rules to understand meanings • Applying knowledge of word stems, prefixes or suffixes to guess meaning of unknown words • Recalling reading purposes/task obligation
Metacognitive strategies	
Planning strategies	• Setting reading purposes or goals • Keeping reading purposes or goals in mind • Figuring out what needs to be accomplished • Identifying reading task expectations • Planning steps or actions before reading • Overviewing texts or reading tasks before reading
Monitoring strategies	• Checking if comprehension occurs • Checking comprehension when coming across new information • Controlling concentration or attention during reading • Noticing when confusion occurs • Double-checking comprehension when encountering ambiguous information
Evaluating strategies	• Assessing levels of text difficulty and reading demands • Engaging self-questioning while reading • Evaluating accuracy in reading such as via task completion performance
Affective strategies	
Motivation-control strategies	• Attempting to do one's best to read text • Thinking about future achievement from reading • Persuading oneself to read • Reminding oneself the importance of being able to read in English
Volition control strategies	• Investing extra effort to read text • Telling oneself not to give up reading despite reading difficulty or lack of motivation • Telling oneself that hard work is worthwhile and compensates for the lack of knowledge or ability required by the reading
Anxiety-coping strategies	• Telling oneself to relax when feeling tense from reading pressure or difficulty • Convincing oneself that anxiety is only temporary

	• Telling oneself that stress is normal for everyone • Telling oneself that mistakes are the means to improve learning • Letting go of worries about past reading performance and trying one's best with the current reading • Stopping reading for a moment when feeling stressed or confused