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Acquiring Literacy Skills in ESL: Singaporean Children's Use of Reading Strategies in Learning to Read

Abstract

Singapore has adopted English for education, social functions and governance since independence in 1965. As the medium of instruction in the education system, English has been highly regarded as a crucial linguistic and economic capital in children's academic and social life. However, the fact is that the majority of students still learn English as a second language (ESL). How these students ESL, especially ESL reading, for academic success, has become a concern for us. Against such a background, this paper reports on part of a larger study that investigated the reading strategies used by primary school pupils. The participants were 18 primary 4 to 6 pupils from three schools. Data were collected from top and bottom proficiency pupils at each of the three grades in each school, who read two texts at each level. Grounded in an information-processing theory and based on successful experiences of scholars using think-aloud, we asked the pupils to read and report what they were thinking while reading. The think-aloud protocols were recorded, transcribed verbatim, coded, and analyzed. Patterns of reading strategies by proficiency and grade level were presented, where differences in strategy use were exemplified with specific case studies. Implications for strategy-based instruction were also discussed.

Acquiring Literacy Skills in ESL: Singaporean Children's Use of Reading Strategies

Introduction

Acquiring literacy in English is a challenging task for many native-speaker children (Morrow et al., 2003; Pressley & El-Dinary, 1997; Snow et al., 1998). The challenge is aggravated when children have to struggle for academic success in English as an "adopted" language, of which Singapore is typically a case, where government-designated bilingualism is the norm (Gopinathan et al., 2003; Pakir, 2004). All school children are required to learn English and mother tongues of their respective ethnic groups. Also, the level of difficulty increases when children approach literacy in different capacities with different foci – be they "code-breakers", "meaning-makers", "text-users" or "text analysts" (Luke & Freebody, 1997).

As an island nation-state, Singapore gained independence in 1965 but has retained the colonialist language as a legacy for government and major societal functions (Pakir, 2004) albeit the societal multilingual and multicultural nature if examined according to the definitions offered by scholars in the field (e.g., Edwards, 2004; Hornberger, 2004). Accordingly, English has been designated as the medium of instruction in all levels of educational establishments, and its paramount importance has never been neglected by parents or society at large. The lion's share that English takes in defining the academic and social life of Singaporean school children is undeniably tremendous given the great linguistic and economic capital to which Singapore society has attributed English. Notwithstanding all this, due to variability in the amount of language input and in the use of English in the domains of family and society, in actuality, many children learn English as a second language (ESL). Therefore, learners might have different repertoires of strategies in learning to read in ESL.

Research on learning strategies has been with educators, educational psychologists and language acquisition researchers for decades (see Oxford et al., 2004; Ruddell & Unau, 2004; Smith, 2004; Weinstein, 2001). Research on learning strategies used by second language learners, in particular, is a further extension and an application of studies on general learning strategies (Chamot, 2005). This new development in the fields of language studies and language-in-education has been regarded as being capable of revealing very important information about how language learners manage learning, what mental processes, resources and efforts they make available in order to become competent and fluent in a particular

second language in the four traditionally defined skill areas – reading, listening, speaking, reading and writing (Cohen, 2003; Oxford, 1996; Rubin, 2001). Since the early 1970s (Rubin, 1975, 1981; Stern, 1975) much progress has been made in this direction and significant pedagogical implications have been suggested in relation to adult language learners (Chamot, 2005; Cohen & Weaver, 1997; Grabe, 2004; Zhang, 2003). However, one of the limitations of this research so far is that the participants are either young adults or mature learners. A gap left unattended is our limited knowledge about how children deploy strategies as demonstration of their deliberate efforts in language learning. This lack of documentation will not be able to offer the information teachers need in order to enhance these children's language learning outcomes. Unfortunately, apart from a few studies published recently (e.g., Chamot & El-Binary, 1999; Cummins, 2003), research on this area is limited.

Anchored in a theoretical framework where learning to read was regarded mainly as a series of cognitive processes (Anderson, 2005; O'Malley & Chamot, 1990), the present study was conducted in Singapore, where the medium of instruction is English and children's reading development faces challenges (Gopinathan et al., 2003; Richard-Liow, 1999; Pakir, 2004). It was hoped that this study would fill up the gap mentioned above. We intended to examine primary school children's reading strategies in light of language processing mechanisms. Due to space constraint we zeroed in on 18 fourth- to sixth- graders to examine their differences in reading strategy use while learning to read in English.

Review of Literature

The Nature of Reading Comprehension

The complexity of reading as a problem-solving process is well documented (Grabe, 2004; Pressly & Afflerbach, 1995; Ruddell & Urnau, 2004; Stanovich, 2000; van Dijk, 1983; Whitney et al., 1991). Depending on the positions writers take, reading can be regarded as a process where the centrality of meaning is almost axiomatic (Goodman, 1996; Smith, 2004) or as a process where the primacy of decoding is emphasized (Adams, 2004; Rosowsky, 2001; Whitney et al., 1991). The former is known as taking a "top-down" approach and the latter "bottom-up". Both processes are very important in learning how to read. In the same way successful listening comprehension is built upon "massively parallel, interactive processing" (Lynch 2002, p. 39) of phonetic, phonological, prosodic, lexical, syntactic, semantic, pragmatic, and background information, reading comprehension shares much similarity (Grabe, 2004; Gu et al., 2005). In other words, it is context-sensitive and entails the

simultaneous integration of information from multiple sources in the working memory or short-term memory (STM), or working memory (WM), and long-term memory (LTM). However, unlike listening comprehension, which is relatively chaotic in its early stages before enough input is pooled together to form coherent mental representations (Kintsch, 1998), reading comprehension occurs in such a way that readers are allowed to have chances to read the printed text again if they wish to do so by virtue of the relative stability and retrievability of the printed text being processed. The revisit by the reader can be accomplished either during the time when the written input is still in the STM, or already stored in the LTM.

According to Anderson's (1983, 2005) information processing theory, comprehension can be distinguished into three key processes: perceptual processing, parsing, and utilization. Perceptual processing screens the visual input from the printed text and directs attentional resources to verbal information selectively. Real meaning-making happens at the parsing stage when information being attended to is encoded for meaningful representation. Utilization involves the reader in drawing upon existing knowledge from the LTM to enhance the meaning and to store it for later use. These three stages are interrelated and flow into each other in a dynamic and complex manner during any reading event. Obviously, reading comprehension processes may create problems for both expert and novice readers in their processing of print. The use of strategies for tackling these problems in reading comprehension well distinguishes successful from unsuccessful readers (Aebbersold & Field, 1997; Anderson, 1991, 2003; Grabe, 2004; Gu et al., 2005; Jiménez et al., 1996; Zhang, 2001, 2002a).

Research on Reading Strategies

Given the prolonged interest in reading, both as product and process, among psychologists and educators in general, suffice it to say that research on reading strategies as cognitive processes is relatively sufficient, particularly in tandem with readers whose first language is English (see e.g., Adam, 2004; Pressley & Afflerbach, 1995; Richard-Liow, 1999; Ruddell et al., 2004, for comprehensive reviews of this research). Pressley and Afflerbach (1995) define reading strategies as readers' deliberate and effortful mental or physical problem-solving moves in approaching a text for comprehension. As part of the larger field of language learning strategies, second language learning strategy researchers touched upon reading strategies right from the outset, but extensive investigations into such reading strategies only started approximately two decades ago.

In a classic study which paved the way for most reading strategy research in SLA, Hosenfeld (1977) compared 20 successful and 20 unsuccessful ninth-grade students' use of reading strategies in learning to read French as a foreign language. Specifically, Hosenfeld examined their cognitive behaviors in processing written texts. Before conducting her study, she classified readers based on a test of L1 reading. Forty native speakers of English were grouped into high and low-proficiency groups according to the scores they had earned on the MLA-Cooperative Test of Reading Proficiency, a standard test of native language reading. Then she interviewed the participants on how they read a text along side their reading by asking them to think-aloud.

The participants were asked to tell her in their first language whatever came to their mind while processing each sentence in the text. She concluded that the successful readers kept the meaning of the passage in mind while reading, skipped unimportant words, read in "broad phrases," relied on context to determine word meaning, and was confident in themselves as readers. Poor readers, on the other hand, translated sentences and lost the general meaning of the passage, rarely skipped words, looked up unknown words in a glossary, and had a poor self-concept as readers. These results clearly showed the strategies students used to process the text, but the relationship between the strategies used and the comprehension of specific paragraphs or to the text as a whole was not clear.

A study by Block (1986) compared the reading comprehension strategies used by nine native English speaking and ESL students who were enrolled in a remedial university-level reading course. Her results echoed what was found in Hosenfeld's study, i.e., student attention to "general comprehension" and "local linguistic" focuses distinguished good from poor readers. All the participants were designated as non-proficient readers because they failed a college reading proficiency test prior to the study. The subjects read two expository passages selected from an introductory psychology textbook, and were asked to do think-aloud while reading by reporting what was going on in their mind after each sentence. They then answered twenty multiple choice comprehension questions. They were allowed to consult the passages while answering the comprehension questions. Block's coding scheme consisted of two types of reading strategies: general strategies and local strategies. General strategies included the following: anticipate content, recognize text structure, integrate information, question information, distinguish main ideas, interpret the text, use general knowledge and associations to background, comment on behavior or process, monitor comprehension, correct behavior, focus on textual meaning as a whole, and react to the text. Local strategies included: paraphrase, reread, question meaning of a clause or sentence, question meaning of a word, and solve a vocabulary problem.

Block found that readers' language backgrounds (native speakers of Chinese, Spanish and English) did not account for their use of particular strategies. Of the nine ESL students in the study, higher-scoring readers on the retellings and the multiple choice questions integrated new information in the text with old information, distinguished main ideas from details, referred to their background, and focused on the textual meaning as a whole, all of which Block classified as "general strategies." In contrast, the readers with low comprehension scores did not show such a performance pattern. Their reading behavior showed that they were more concerned with local information in the text.

Neil Anderson (1991) investigated the effects of L2 readers' individual differences in strategy use on two types of reading tasks: academic texts and standardized reading comprehension tests. The participants were 28 Spanish-speaking adult English learners enrolled in university-level English-as-a-second-language (ESL) courses. Anderson first assessed participant's reading comprehension skills with a typical standardized test. He administered two different forms of the Descriptive Test of Language Skills - Reading Comprehension Test (DTLS) to the participants; he asked them to complete two to four multiple-choice comprehension questions of each of the passages on the test which consisted of fifteen reading passages. Three types of reading skills were tested: understanding main ideas, understanding direct statements, and drawing inferences. On another day, he asked all the participants to complete the second form of the DTLS.

A think-aloud protocol procedure was administered with the second form with the participants who verbalized their use of reading strategies. In addition, he also asked the participants to read two passages from the Textbook Reading Profile (TRP), which consisted of academic reading passages taken from freshmen-level text books, and they answered multiple choice comprehension questions for each passage. He categorized the strategies elicited into the following: supervising, supporting, paraphrasing, establishing coherence, and test-taking. His qualitative and quantitative findings indicated that for both the standardized reading comprehension test and the textbook reading participants who used more strategies tended to comprehend better.

Working within John Anderson's (1983) theoretical framework (see also Anderson, 2005), O'Malley, Chamot and Küpper (1989) examined 10 high school listeners, five effective and three ineffective, and discovered that the effective listeners were able to monitor and direct their attention on task, whereas the ineffective listeners were easily distracted by unknown words or phrases and were unaware of their inattention. In the parsing stage, the effective listeners listened to larger chunks and mainly used top-down processing, resorting to bottom-up processing only when needed. The ineffective listeners were using the word-by-

word, bottom-up decoding strategy exclusively. During the utilization stage, the effective listeners tended to relate new information to their existing world knowledge and/or personal knowledge, and critically evaluated the usefulness of the information, while the ineffective listeners had fewer elaborations, and did not make any connections between the new information and their own lives.

Focusing on the reading strategies used by bilingual readers, Jiménez, García and Pearson (1996) investigated 14 sixth and seventh grade Latina/o bilingual students' reading knowledge and strategic processes with a focus on the participants' culturally and linguistically diverse backgrounds. Eight Latina/o students were successful readers in English, three Latina/o students were marginally successful English readers, and three monolingual Anglo students were successful English readers. They used think-aloud as a major means for data collection in order to get information about their bilingual participants' use of cognitive and metacognitive strategies. They found that cultural and linguistic familiarity with the text played a significant role in reflecting a qualitatively different experience for these readers.

Reading expertise and explicit L1–L2 vocabulary knowledge affected reading comprehension when the bilingual participants were more focused upon strategies that helped them deal with unknown vocabulary. The less proficient bilingual reader reported that her knowledge of English reading facilitated her reading in Spanish, whereas the more proficient reader felt there was a reciprocal relationship between the two languages in assisting her comprehension of L1 and L2 texts. The monolingual reader, free from vocabulary and prior knowledge demands, was able to concentrate on the interpretation and comprehension of the text as a whole.

The sixth- and seventh-grade participants who were not successful English readers thought that they had to keep their Spanish and English reading separate or they would feel confused. These students seemed to hold a bottom-up view of reading where an emphasis on decoding and accurate English pronunciation was highlighted. In contrast, the successful English Language Learners had a unitary view of reading across the two languages—Spanish and English where the focus was on comprehension. They tapped on knowledge acquired while reading in one language to hypothesize and infer meanings while reading in the other language. In addition, they used similar types of high-level metacognitive and cognitive strategies across the two languages in their attempts at monitoring and repairing comprehension. However, it was unclear to what extent the differences in the less-successful and successful bilingual readers' views on reading in the two languages and approaches to reading were due to the type of instruction that the students had received. This echoes García

(2000), who wondered to what extent explicit instruction on cross-linguistic transfer strategies would help bilingual students to improve their English reading.

It is worth noting that Rosowsky's (2001) research focused on exploring bilingual readers' reading practices vis-à-vis decoding as a cultural practice and its effects on the reading process of bilingual pupils in the United Kingdom. She concluded that her subjects' use of predominantly decoding-oriented reading strategies was due to the fact that the culture where their earlier first language literacy education was conducted had a strong bearing on the reading practices in their second language. We will have the same curiosity in our investigation into Singaporean children's use of reading strategies in learning to read in ESL, without any intent of only zeroing in on the decoding factors.

Primary School Pupils' Use of Reading Strategies

Although research on adult or young adult learners' use of reading strategies is relatively substantial, as reviewed above, we found that, except for Jimenez et al.'s work that focused on identifying bilingual readers' use of reading strategies while reading in two languages, very few empirical studies on primary school pupils' use of second language learning strategies have been documented in the literature (see Cohen, 1998, for his distinction of language learning strategies and language use strategies). In first language contexts, extensive work has been done to investigate reading strategies so much so that efforts have been made to implement instructional procedures to enhance reading proficiency of children as young as second-graders (Cummins, 2003; Garcia, 2003; Palincsar & Brown, 1984; Pressley & El-Dinary, 1997). However, when it comes to young second language learners, there is a scarcity of such research. Gu et al. (2005) suggest that this could have been well be due to the difficulties one would encounter in eliciting strategies from young children whose second language is one with which they are not very familiar; hence getting information about their use of strategies in language learning is challenging; it could also be due to a common perception that children are metacognitively immature to talk about their own learning processes in their second language.

Our literature search has generated only six data-based reports on bilingual primary school children's use of second language learning strategies. Of these six studies, only Chesterfield and Chesterfield (1985) and Chamot and El-Dinary (1999) included lower primary pupils or younger learners. Jiménez et al. (1996) and Chamot and El-Dinary (1999) were the only few studies that made use of the think-aloud technique in data elicitation; the

others used questionnaires (Purdie & Oliver, 1999; Lan & Oxford, 2003), classroom observations (Sugeng 1997) or a combination of several data collection methods.

Although think-aloud was once criticized as a dubious research tool for the reason that by the time subjects were able to verbalize their thinking processes much of the data was already "contaminated," psychologists as well as educators interested in tapping on this tool for scaffolding reading comprehension processes have now reached a general consensus that as long as care is taken, sufficient data can be elicited through this procedure (see Ericsson, 2001, for a latest update; see also Ericsson & Simon, 1993; Pressley & Afflerbach, 1995; Smagorinsky, 2001, for critical reviews). In our study, we relied on this procedure based on the experiences gained from existing reading research that used this method (e.g., Anderson, 1991; Block, 1986; Cavalcanti, 1987; Cohen, 1998; Jiménez et al., 1996; O'Malley & Chamot, 1990; among others).

Relatively speaking, the number of scholars working in this direction is small. Chamot and her colleagues have gathered systematic and extensive experience working with young learners in second language learning strategy research. Based on this review, Gu et al. (2005) conducted a study on primary school pupils. Results indicated that pupils as young as primary 1 were able to verbalize their learning strategies and that high-proficiency pupils could be distinguished from their low-proficiency counterparts in terms of the strategies they used in language learning. Successful and unsuccessful learners differed in the way that they approached the language materials; i.e., strategic differences between the two groups were also found.

However, as García (2000) rightly points out, a problem that confronts educational personnel in the USA working with English language learners (ELL) is that little is documented on how researchers in the USA have specifically investigated the early reading development and instruction of ELL in either the native language or in English. This is also a problem with reference to Asia generally; it is especially true of Singapore where the medium of instruction is English but children are mainly ELL in the sense García (2000) defines the term. Given the unique linguistic and sociocultural situation in Singapore, in this study, we tried to answer the following two research questions:

1. What are the reading strategies that successful learners of English in Singapore use at the primary school level?
2. What are the strategy use differences between pupils of different grade levels and of different proficiency levels?

Method

Subjects

The subjects in this study came from three average neighborhood schools that were representative of Singapore primary schools. They were born in Singapore and had received kindergarten education in English and their respective mother tongues. They were chosen by the Head of English Department of each school in consultation with English language teachers in the school. These department heads were asked to select one pupil each from the top and the bottom groups of pupils at Grade Levels 4 to 6 according to their latest English examination results. When there were no exam results, teachers' continual assessment of pupil performance was the criterion. The department heads were also asked to select participants according to each pupil's representativeness and screen out obvious anomalies such as new immigrants and pupils with learning difficulties such as known dyslexia. Information on participant distribution is given in Table 1.

Table 1 Subject Information in the Study

School	Grade	High English Proficiency	Low English Proficiency	Total
School 1	P 4	1	1	2
	P 5	1	1	2
	P 6	1	1	2
School 2	P 4	1	1	2
	P 5	1	1	2
	P 6	1	1	2
School 3	P 4	1	1	2
	P 5	1	1	2
	P 6	1	1	2
Total		9	9	18

Materials

Considering the English language syllabus requirement in Singapore (MOE, 2001) and the general tendency in using narrative texts in the primary school English language textbooks, we decided to use the same text type with the subjects. Two narrative passages for each grade were used in data elicitation. The difficulty levels of each passage were rated independently by four teacher-researchers, one of whom was an experienced primary school teacher. In assessing the difficulty levels of the materials, we paid attention not only to linguistic aspects such as vocabulary density, syntactic complexity but also cultural familiarity. Final placement of each text was based on the mean ratings of these four teacher-researchers. In order to facilitate the subjects' verbalization of their mental processes, we divided the texts

into large semantic chunks indicated by red dots and double forward slashes at the end of the semantic units (Block, 1986; Cavalcanti, 1987; see also Ericsson & Simon, 1993). This kind of divisive technique served to signal the subjects where to stop reading in order to start verbalizing aloud what was going on in their minds. Our data were mainly from the think-aloud transcriptions thus generated. For the sake of clarity, we report our findings based on the same text read by the participants in each grade level. Information on the reading materials is shown in Table 2.

Table 2 Materials Used in the Study

School	Grade level	Difficulty Level of Texts and Number of Texts Used	
		Easy	Difficult
School 1	P 4	2	2
	P 5	2	2
	P 6	2	2
School 2	P 4	2	2
	P 5	2	2
	P 6	2	2
School 3	P 4	2	2
	P 5	2	2
	P 6	2	2
Total		6 texts in each school	6 texts in each school

Procedures

We adopted similar procedures successfully used by other researchers as reported in the literature (e.g., Cohen, 1998; Ericsson & Simon, 1993; Gu et al., 2005). However, in eliciting the data, we also conducted general interviews as warm-up sessions, which also served the purpose of obtaining relevant background information about the subjects' family language use patterns and the kind of private English tuition lessons they had at home, and of collecting the data on general strategy use which could not be obtained through task-based elicitation. Next, prior to the final think-aloud tasks, we conducted informant training for the purpose of familiarizing the participants with the thinking aloud procedure through a "guess-what's-inside" game. The game engaged pupils in such a way that they were asked to close their eyes and tell the researcher what they thought was inside a bag by touching and feeling the objects only. They were told to speak their minds out aloud and to guess what was inside the bag. We audio- and video- taped all procedures. Explicit consent from teachers, parents, and the participants had been obtained from all the parties who signed on the consent forms. All the data were transcribed verbatim for analysis to locate systematic patterns.

Analysis

We used NVivo, a software package for qualitative analysis, to process our data. In order to proceed with the analysis, we turned our transcribed audio- and video-files into text files and coded them according to a preliminary reading strategy coding scheme we had developed. We had worked out the coding scheme by reviewing and combining the coding schemes from previous studies on language learning strategies (e.g., O'Malley & Chamot, 1990; O'Malley et al., 1989) and especially with reference to those that focus on reading strategies (Aebbersold & Field, 1997; Anderson, 1991; Block, 1986; Cohen, 1998; Hosenfeld, 1977; Jiménez et al., 1996; Zhang, 2001, 2002a). The scheme was then modified and refined as coding went on. Coding was done independently by the three authors. Periodical calibration meetings were held to discuss the coding scheme and to resolve inconsistencies. After the coding was completed, we tallied the number of students who used each strategy by English language proficiency (high vs. low) and by grade (grades 4, 5, and 6) in order to uncover possible strategy-use patterns emerging from the data. Next, we scrutinized the coding and took a close-up look at strategy use by subjecting the data to *t*-test and *ANOVA* using the SPSS statistical package to see if there was any statistical significance between the comparisons made. In presenting the results, we used "I" to stand for interviewer and "P" for pupils. For easier reading and clarity, in the following section, we present quantitative results before typical cases on which we focused for illustration purposes are presented.

Results

Grade Level and Strategy Use: Decoders and Comprehenders

As shown in Table 3, pupils of different grade levels used reading strategies differently. An overall pattern seems to be that the 6th graders used more strategies that were conducive to reading comprehension than the 4th graders. Being in the middle of the three levels, the 5th graders did not remarkably distinguish themselves from their juniors or seniors. One-way *ANOVA* procedures used for checking statistically significant differences did not produce strong evidence to suggest that the 5th graders were poorer than the 6th graders, nor were they better than the 4th grader peers in terms of their use of strategies. However, the 6th graders appeared to be the better users of strategies such as "inferencing" ($p < .039$), "using personal experiences" ($p < .043$), and "asking for help" ($p < .005$), a strategy in the socioaffective domain.

Table 3 Patterns of Reading Strategy Use by Grade Level

>>Insert Table 3 about here<<

Overall, the older learners' reported use of reading strategies outnumbered that of the younger learners, especially with high-proficiency learners in 6th graders. The strategies older learners used were more global in nature, i.e., the use of strategies was oriented towards meaning-making; while those used by younger learners were local, i.e., their attempts at reading were focused on isolated words or phrases or information. They were unable to come to grips with what ideas were expressed in the text. The number of reported use of strategies was also fewer than that of their high-proficiency schoolmates.

The use of metacognitive and cognitive strategies by the two groups indicates that, possibly due to proficiency levels, younger and older learners' initiation to deploy strategies in language learning differed. Our data seem to indicate that the higher the learners' proficiency levels were, the more able they were to report on their use of strategies. Other than repeating words, phrases or some isolated information, younger learners were less able to integrate or synthesize the written text. More importantly, even if the same type of strategy was reported using by the two groups, the degree of flexibility in its use to cater to the need of the contextual environment was different between younger and older learners. The contextual environment requires that a particular strategy, when appropriately and effectively used, facilitate or enhance comprehension; but unsurprisingly, younger learners did not seem to have understood the situation-specific nature of strategy use in real language processing tasks.

Differences between younger and older learners' reported use of reading strategies were also shown through their different degrees of attention to the reading tasks at hand. Younger learners' relatively shorter concentration span also seemed to have contributed to their lack of sustained effort to approach the reading tasks. The overall pattern suggests that they were the ones who would like to either give up or had no patience, ready to get rid of the tasks once and for all, without thinking much about whether or not comprehension really occurred to them. In order to avoid repetition, we present such data in the next section in relation to their proficiency levels.

We now turn to examine one of the typical cases to illustrate how learners' strategy use was qualitatively different by grade level. Adam, a low-proficiency 4th grader, is a good case in point. His use of reading strategies was limited and the types of strategies he used were also different when compared with his older schoolmates. Instead of predicting or summarizing the content, he started decoding the text from the very beginning. Seldom did he

make inferences of the text content based on linguistic or real world knowledge, and if he did, he made wild guesses. The difficulty in his reading resulted from his lack of lexical knowledge many times, and because of this, his reading focused on decoding only. Comprehension monitoring and evaluation of the reading material did not surface in his reading process at all.

Mrs. Olson lived in Fargo, North Dakota. On one of her birthdays, her children bought her a precious ring. It was a beautiful ring with six gemstones – one stone from each of her children. Mrs. Olson loved the present. A few months later, when Mrs. Olson was washing clothes, the ring slipped off her finger and went down the drain. She searched for it in vain and was heartbroken.

P: Mrs Ong love in Forget ... ay this.

I: What do you want to do? Just tell me what you want to do, ok?

P: Mm...

I: Ya. What are you thinking? Important thing tell me what you are thinking. What you want to do?

P: Skip.

I: Ok.

P: No one for her birthday, her children bought

I: Mm hm.

P: her a present

I: Ok.

P: Uh and this one (points to paper)

I: Ring.

P: ring.

I: Mm, explain to me.

P: Mm...Mrs Ong know uh want to give her a present...ring.

I: Mm.

P: It was a birthday ah?

I: Good. It was a beautiful ring.

P: ring...beautiful ring which

I: Mm hm

P: six uh...six what huh?

I: Gemstones.

P: gemstone-one stone from each of her children.

I: Yes, explain.

P: Uh...the...the one one want to ay...her...she want to give all body one ring.

I: Mm hm.

P: Mrs. Ong loved the presents.

I: Good.

P: After...ay.

- I: What's the meaning Mrs. Ong loved the present?
 P: He love the ring.
 I: Uh ok. who gave her the ring?
 P: Chil...the children
 I: How do you know? Very good, how do you know?
 P: There.
 I: Uh, can you underline for me? Remember? Uh.
 P: Mm...
 I: Mm hm. Underline.
 P: (underlines on paper) This one.
 I: Mm, ok.]
 P: Uh after...mother...mother
 I: Mm hm.
 P: Like when Mrs Ong was which clothes, the ring spend ah?
 I: slipped
 P: slipped off her uh...
 I: finger
 P: finger and went down the mmm...(looks at I)
 I: What do you want me to do? You must tell me what you want me to do.
 P: This one.
 I: Ok. Drain.

— Adam, Primary 4, Low-proficiency learner

Evidently, Adam's think-aloud protocols are permeated with miscues in reading, which further contributed to her incomprehension. For example, instead of "lives in Fargo", he misread it as "love forget". Although the interviewer prompted him with clues, he was not able to proceed with smooth reading, even at the level of decoding. As a result, his understanding of the text was extremely limited.

Proficiency Levels and Reading Strategy Use

Table 4 presents strategy use tendencies, where comparisons of the frequencies of strategy use are presented in relation to learners' English proficiency. The data we present are also mentioned in relation to the grade-level of these learners. The data were further submitted to *t*-test in order to further illustrate any statistical difference between the two groups. As can be seen in Table 4, high-proficiency learners showed their preferences for using metacognitive strategies more frequently than low-proficiency learners. These were typically shown in "self-initiation" ($t = 3.744, p < .005$), "planning" ($t = 2.661, p < .005$), and "monitoring" ($t =$

4.402, $p < .005$). High-proficiency learners also distinguished themselves from their low-proficiency counterparts in their use of three cognitive strategies. While the low-proficiency learners used "decoding" predominantly more frequently ($t = -4.362$, $p < .001$), they did not show their strengths in the use of other two meaning-oriented strategies, "inferencing" and "prediction". Different from "decoding", the latter two strategies mainly functioned as comprehension facilitators along the way for the high-proficiency learners. The low-proficiency learners obviously lost out in these two, suggesting that their comprehension was more at the local level, focusing on word recognition most of the time.

Table 4 Patterns of Reading Strategy Use by Proficiency Level

>>Insert Table 4 about here<<

Our analysis of the think-aloud protocols revealed a general pattern that more or less corresponds to the pattern reported above. Although both groups tried to maintain on-task behavior by asking the researcher to continue with the reading task, the difference appeared to be quite remarkable. While the high-proficiency group tended to rely effectively on real world knowledge or linguistic knowledge to guess at word meanings or make inferences about what they had read, the low-proficiency group appeared to have some difficulty in doing so, or possibly they were not aware at all that their prior experiences or knowledge base could have been activated. We know that decoding is an important reading skill which readers of any age group need to acquire for smooth and fluent reading and that it can pave the way for readers to become successful comprehenders (Adams, 2004; Garcia, 2000; Luke & Freebody, 1997; Pressley & Afflerbach, 1995). However, if a reader decodes the written text throughout the reading process, the whole reading experience might be a painful one, mainly due to the slow speed that does not usually give the reader any strong feeling of satisfaction or entertainment expected. Because of this the high-proficiency group anticipated text flow more frequently but the poor-proficiency group directed their attention to details of what they thought was going to happen. Both asked for help when they had a problem in reading, but again the difference was reflected in the nature of the problems they encountered that triggered their questions.

For example, the high-proficiency group did considerably more self-initiation, paid more attention to specific aspects of language input or situational details, understood better the conditions for successful completion of the task, monitored comprehension more regularly, made more predictions, and tried to appreciate the text more than the low-proficiency group did. The low-proficiency group, on the other hand, had problems

identifying a problem; ignored, postponed, or gave up a point they failed to understand; repeated a word, phrase, or chunked verbatim; generally used bottom-up decoding very often; engaged in wild guesses and generally did not predict when they should have done so.

Although it can be said that a pattern of differences between younger and older learners (4th graders and 6th graders) emerged, that pattern was not markedly typical as the one that was predominantly clear by proficiency levels. Understandably, even though they were in the same class, high-proficiency and low-proficiency pupils differed in the strategies they used to understand the texts. Although high-proficiency primary 4 pupils' performance was good, the situation was particularly true of older pupils who were already in primary 6. When the easier text was read by both groups, there was some use of strategies such as "predicting general content", "making inferences using linguistic and general knowledge", and "monitoring or evaluating comprehension" by the high-proficiency group. "Planning" also occurred prior to the reading tasks in some cases.

When Keith, a primary 4, high-proficiency pupil, for example, was trying to understand a passage about Mrs. Olson's experience of having, losing and finally finding a precious ring, he was not only trying to understand the text literally but also reconstructing, interpreting, summarizing and making inferences based on linguistic as well as real world or schema knowledge cues to approach the text. As a result, he could retell and even give a title to the story.

I: Hm mm

P: Erm, she live in Fargo, at North Dakota.

I: Yes.

P: On... ring. I think she was lucky because on one of birthdays her children bought her a precious ring.

I: OK

P: It ... children. It is a beautiful ring with six gemstone and one was from each of her children

I: Hm mm

P: Mrs... present. She liked it a lot.

I: OK

P: A few... drain. I guess she was unlucky when you was washing clothes, the ring slip off her finger and went down the drain.

I: Hmm mm

P: She... heartbroken! She was very sad

I: Hm mm

P: Fifteen...house. They spotted something, ee. I think they, the two workers found Mrs. Olson ring.

I: How did you know?

P: I guess.

I: OK.

P: They... up. They found something shiny and they pick it up.

I: Yes?

P: It ... ring. And so it is the lost ring.

I: Yes.

P: The workers...Mrs. Olson. They went to all the houses in the block before they found Mrs. Olson. She... ring. She was lucky because the workers return her the ring.

I: Ya. Can you retell the story?

P: Wait.

I: What are you looking at?

P: I read first.

I: You read first. OK... You may retell.

P: Mrs. Olson lived in Fargo, North Dakota. On one of her birthdays, her children bought her a precious ring. It was a beautiful ring. It has six gemstone and each from her children? One day when she was washing her clothes, the ring fall out from...slip out from her hand and finger and fell into a drain and after fifteen years later, two workers was cleaning Mrs. Olsen house, near Mrs. Olson house. And they found something shiny and pick it up. It was the lost ring. They went to all the houses before finding Mrs. Olson. And when they return, and they return the ring to Mrs. Olson, she was very happy. And she was the happiest person in Fargo.

I: Do you find this passage difficult?

P: Not really.

I: Do you like it?

P: Yes.

I: Mm, will you suggest a title?

P: Erm, the lost ring.

I: the lost ring, why? Ha ha

P: Ah...

I: Why is it the lost ring?

P: Because she lost her ring.

I: Oh ya? Ok. That is good.

— Keith, Primary 4, High-proficiency Learner

When we examine the following excerpt taken from the think-aloud protocols of Tim, a high-proficiency primary 6 pupil, we notice that comprehension was of primary importance to him. Like Keith, he first focused on constructing meaning the moment he started approaching the text. The researcher's probe was intended to find out whether he was making predictions based on some specific words or phrases he had read or any kind of prior knowledge he had. As expected, he was able to make inferences using context or co-text as a help. He was able to stay on the task, which was different from the other scenario where the low-proficiency students either repeated isolated pieces of information from the reading text, or if they got caught in the reading process, they simply gave up. Tim seemed to have the ability to monitor

his comprehension and in order to understand the texts better he reviewed the text and summarized the main points.

I was in the operating theatre. My heart was beating at an extremely fast pace. My hands were trembling. Drops of perspiration rolled down my forehead. Quickly, I used my sleeve to wipe the perspiration away.

I: Now I want you to go on to the next one which is the passage that you're going to read. Read it slowly ah. At the end of each slash, you stop and you tell me what you think. Ya? Voice your thoughts. Keep talking ya. You may start when you are ready.

P: Ok...I...theatre. So the author is...ah...going to...operation theatre and to see someone.

I: Continue, please.

P: The author is going into an operation theatre... go on an operation himself or herself or accompanying someone to go in an operation.

I: Good.

P: Ok. My...pace. So the author is very excited or nervous because maybe he was the one or she was the one who is going on the operation.

I: Mm hm

P: My...trembling. This shows that the author is really nervous about the operation as he or her hands are trembling. Drops...forehead. The perspirations show the nervous state the author was in as he is perspiring very...ya his or her is perspiring.

I: Ok.

P: Quickly...away. He is trying to...dry his face...his forehead because um, his face is wet or perspiration.

— Tim, primary 6, High-Proficiency learner

In contrast, a low-proficiency primary 6 pupil, Jennifer, also guessed at the text information, but when her verbal reports were examined more carefully, we found that what she did were, more often than not, wild guesses and speculations, which were not supported by any contextual evidence. Decoding the text in isolation or in a linear fashion and repeating individual words for the sake of looking for phoneme-grapheme correspondences tended to dominate the whole reading process. Relevant meaning construction did not occur in relation to the text she read. We assume that due to her failure to understand the passage, she just wanted to show to the researcher that she had understood the text.

I was in the operating theatre. My heart was beating at an extremely fast pace. My hands were trembling. Drops of perspiration rolled down my forehead. Quickly, I used my sleeve to wipe the perspiration away.

P: Mm, a man was...um...going out of the OPENING DAY [operating theatre] and when he was out, he was actually sad...and the place got some of the family. Yes... I think it was fighting each other.

I: Fighting each other? Mm hm

P: And...and he was very sad when and he was very worried that they all are fighting for it.

I: Mm hm

P: And...and take out the knife....

I: Mm hm

P: And...

I: What are you thinking? Just tell me what you are thinking. Don't worry.

P: mm...and then he was when...when he going back to the [?] because they stopped fighting with each others. He tell them that they are supposed to not to fight with each others.

I: Mm hm

P: He was afraid that when he has gone back and [?]

I: Mm. What are you thinking? Keep talking. What are you thinking?

P: Mm...and I think the people down there are so time to [?] he was going back they all was very happy to see him but when he was going to the [?] he was very very [?] but when he coming back there he was very happy.

I: Mm. Anymore?

P: No.

— Jennifer, Primary 6, Low-proficiency Learner

The two proficiency groups engaged themselves with the reading tasks at different levels in terms of their deliberate attempts at using strategies to process the texts. The low-proficiency group spent a large portion of their time decoding the text to arrive at an understanding of what they read. The high-proficiency group, on the other hand, displayed constant interactions between bottom-up decoding and top-down meaning-making processes.

In the following, we present an excerpt based on a narrative text. Johnny, a Primary 5 high-proficiency pupil, made sufficient predictions about the content on the basis of linguistic cues available and his schematic knowledge, synthesizing other relevant information in order to approach the text in a coherent manner. Due to the high interest level he exhibited in the text and his good command of vocabulary, he summarized the passage quite accurately. He was even able to make some meta-comment on the text to indicate why he liked reading the text, i.e., he liked the text because it was "mysterious".

Junwei put on his slippers and dragged his feet to the toilet with a towel wrapped around his waist ... The air was cold since it was close to midnight. His campmates were in their room fast asleep. While doing so, he suddenly heard a soft wailing from the last cubicle. It sounded like a child crying. The cry was very faint but this was enough to send shivers down his spine.

P: I think he is going to have a shower. He...hands. Think he is getting ready to bathe. He...toothpaste. I think he wanted to brush his teeth...the...midnight. I think the air was very chilling as it was almost 12 pm.

I: Mm hm.

P: His...asleep. I think he is in a camp. While...cubicle. I think he heard something like a baby crying. It...crying. I think he heard a child cry. The...spine. I think that the cry was very faint but it made him terrified.

I: Mm hm.

P: Slowly...from. He carefully ... After...heard. After he had...he was less terrified, he told them what he had heard in the cubicle. His...out. His friends who...went to the cubicle to check it out. He could still hear the baby's wailing...wailing in his ears.

I: Do you like this passage?

P: Mm yes. Uh...Junwei was going to have a shower in the toilet at and his teammates were asleep. He went back to his room to get his tube of toothpaste as he had left it in the room. When he had taken it and reached the toilet, he gone in he heard a wailing that sounded like a baby's cry. He was utterly shocked and turned his head to look, look at where the wailing came from but there was no one there. He dashed into his room, into the room where his friends were sleeping. His friends were awoken by the commotion and wanted to know what had happened. Junwei told them after he had calmed down; he told them what had...the whole story. His friends decided to go to the toilet to check it out for themselves. They could only hear silence but there was no sound of the wailing, baby's wail.

I: Mm. Do you like this story? Which part that is attracted to you?

P: Um...the baby's wailing.

I: Why?

P: When it just started. Mm ... seems very mysterious.

I: Mysterious huh? Mm, good.

— Johnny, Primary 5, High-proficiency Learner

In contrast, low-proficiency pupils attempted at many guesses, but, like what happened to the poor reader reported above, their guesses had no contextual support. Decoding bits of the text in isolation and focusing narrowly on individual words tended to dominate the whole reading process. Relevant meaning construction of the processed text did not occur to any significant extent. These pupils' responses to the researchers' probing revealed their apparent lack of the ability to construct a coherent text. Although the low-proficiency learners made use of strategies such as inferencing and predicting, they seldom rationalized their attempts, nor did they monitor or evaluate their inferences. Therefore, the occasions where they should have modified their predictions, inferences and reconstruction for meaning-making did not show that they were engaged in reading for comprehension. Often they came up with inconsistent interpretations of different parts of a reading text but did not make any effort to resolve the inconsistencies.

It can be argued that the various problems exemplified above from poor readers can be attributed to a lack of strategy orchestration (Gu et al., 2005). A number of researchers (e.g., Anderson, 1991, 2003; Morrow et al., 2003; Vandergrift, 2003; Zhang, 2001) have noted the importance of the orchestration concept and described in detail how learners orchestrate their strategy use. Gu et al. (2005) described strategy orchestration as a dynamic process of metacognitive regulation. It is characterized by an overall executive role a learner plays in making strategic choices based on analyses of task, self, and context, monitoring and evaluating, and modifying strategies to solve the problem in question. Without skilful orchestration, individual strategies may well fail to yield a satisfactory result. Wenden (1991) and Zhang (2001) regard this aspect of strategy orchestration as a terrain that is within learners' metacognitive knowledge as defined by Flavell (1992). In particular, Zhang (2001) suggests that good and poor second language readers differ in the degree and the range of the metacognitive knowledge they had pertaining to their understanding of themselves as learners (person knowledge), requirements of learning materials (task knowledge) and useful strategies for problem-solving (strategy knowledge). This knowledge needs to be materialized through scaffolded practice that most often involves learner training through strategy-based instruction programs.

Insufficiency of Weak Pupils' Decoding Skills

While the low-proficiency group pupils differed from the high-proficiency group in their use of strategies and in the extent to which individual strategies were orchestrated, the most striking difference between the two was in basic language processing skills. Most pupils in the low-proficiency group had decoding problems at the perceptual stage, which could not be mediated through strategy deployment. In other words, these weak pupils were either not able to understand or miscomprehended a text not because of their failure to use comprehension strategies but because of something more basic, that is, the perceptual difficulties they encountered in decoding language input. This is most clearly reflected in the low-proficiency pupils, as evidenced from a primary 5 pupil, George's think-aloud protocols when he was reading the same text that Johnny read.

Junwei put on his slippers and dragged his feet to the toilet with a towel wrapped around his waist ...

I: Yes. What... what are you thinking? What are you doing?

P: His...this only his time is fall sleep at midnight.

- I: Mm.
- P: Very naughty. His own room sleeping.
- I: Mm hm, good.
- P: He...was...sleeping and sleeping days.
- I: Mm hm.
- P: Finish.
- I: Good. Where are you now?
- P: Here. How to spell?
- I: While doing
- P: While doing so, while doing so, he...he... suddenly have a so wai...how to read this word?
- I: Ok, wailing.
- P: Wailing from the last...
- I: cubicle.
- P: cubicle.
- I: Ok, what does that mean?
- P: Don't know.
- I: Try. What are you thinking? Never mind, just tell me what you are thinking. Tell me what you are thinking.
- P: Empty.
- I: Ok.
- P: Finish[ed].
- I: Read through that first.
- P: It...I think....nothing nothing. The crying was...the cry was...was...was very very very...

— George, Primary 5, Low-proficiency Learner

The excerpt here clearly shows the perceptual problems George had. As a low-proficiency learner, most often the decoding difficulty was caused by his inability to read the words that were not familiar to him. So he was not able to proceed with his reading. Although, later on, with the assistance and constant prompts by the researcher, he went on with the reading with a very unclear purpose of why he was reading it, he did not seem to understand much of the text ultimately. Meaning-integrators are far and few in between in this group of low-proficiency pupils. In our earlier report, we documented that decoding problems such as the above one could be found in the data of virtually all poor readers at all grade levels.

Discussion

Insofar as the use of reading strategies is concerned, on the whole, our statistical analysis shows that grade level did not seem to function as significant a variable as did L2 language proficiency in offering us important information about how pupils of different age groups

approached reading tasks for comprehension. However, our analysis of individual cases suggests that the relatively mature students who were two to three years senior to the younger ones predominantly performed better in reading than their younger peers. This was reflected both in their more frequent and flexible use of strategies and clearer awareness of reading processes. This is quite logical given their many years of exposure to English in society and home.

Also, it is known that younger learners may not be as strongly aware of their reading processes as their older peers when this phenomenon is examined from a developmental psychology perspective. Flavell (1992) reported that children's monitoring ability grew with their developmental maturity. Bialystok (2001) posited that learners' metalinguistic awareness grew with their physical and cognitive development. Gu et al. (2005) also found that primary 3 pupils in Singapore were more mature than their primary 1 counterpart in their deployment of language learning strategies in general. This finding was also supported by other recent findings. It seems that older learners' greater developmental maturity might have equipped them with some kind of better understanding of not only the learning tasks and the variables related to learning but also the conditions in which learning took place. Overall, good readers were not only "code-breakers" but also "meaning-makers", "text-users" and "text analysts" (Luke & Freebody, 1997), but poor readers most of the time processed the text as "code-breakers", without making much progress towards meaning-making.

We found from the data that high-proficiency pupils reported a higher frequency of strategy use than did their low-proficiency counterparts and the number and the type of strategies they used were also greater, but we need to be more careful in interpreting such a pattern. This is because we feel that only relying on strategy count will not reveal important aspects relating to language learners' efforts for improvement in language skills. We have to see the strategies used by the pupils with specific reference to the learner, the task and the context in which learning takes place so that we can have a panoramic view of the various factors important to language learning (Cohen, 2003; Gu, 2003; Gu et al., 2005; Zhang, 2003). As long as the use of strategies can maximize the learning process, appropriateness and flexibility are two major principles that we need to keep in mind while examining the research issue. Moreover, research has already shown that effective strategy users coordinate strategy use with metacognitive knowledge (Anderson, 2003; Cohen, 1998; Zhang, 2001).

As reported above, younger learners seemed to be weaker than older ones in having a clearer awareness of the reading process. The pattern was more conspicuous in relation to learners' proficiency levels. To a great extent, differences between low-proficiency and high-proficiency learners were more salient as those between the two age groups. High-proficiency

learners seemed to be more concerned about meaning, therefore, they knew that they needed to “predict” and “infer” meaning and “monitor” their comprehension processes. Their efforts to infer textual meanings through contextual and linguistic clues as well as their use of real world knowledge made a difference in terms of meaning-making. Many times, this kind of behavior was observed when the text required them to do so, resulting in a kind of synthesizing on their part. Low-proficiency learners, however, did not show this tendency. Their focus in the reading process was on linguistic aspects, and if they did not understand particular words or expressions, they wanted to give up or abandon the task. Or else, wild speculation and guessing permeated the whole process. This qualitative difference between the two groups might offer some insight into how learners of different proficiency levels learn English. Classroom teachers might need to examine afresh how their way of teaching could have some impact on learners’ learning behaviors.

The successful readers demonstrated their overall metacognitive awareness of the reading process, the reading tasks at hand and themselves as the major participants in the reading event. The unsuccessful readers focused too much on decoding the print, without showing much evidence to suggest that meaning was of any primary concern. Their use of cognitive and socioaffective strategies was also different in that both the quality and quantity of the strategies used by the learners were suggestive of their relationships with English proficiency.

Most of our findings in this study corroborate those from other studies on adult ESL learners in other learning environments (e.g., Anderson, 1991; Block, 1986; O'Malley et al., 1989; Zhang, 2001, 2002a). Good readers at the primary school level in Singapore were also found stronger in metacognitive awareness and regulation than their less successful counterparts. Their cognitive strategies tended to be meaning-oriented (e.g., inferencing, predicting, and elaborating), while poor learners tended to dwell on perceptual processing and bottom-up decoding (e.g., sounding out words, repeated reading of isolated unknown lexis). Good learners were able to quickly form a conceptual framework and monitor their understanding against this framework (Pressley & El-Dinary, 1997), orchestrating their strategy use along the way. Poor readers, on the other hand, either had difficulties forming a coherent framework of understanding or were unable to monitor and evaluate their own comprehension (Anderson, 2003; Gu et al., 2005; O'Malley et al., 1989; Vandergrift, 2003).

We need to point out that the use of think-aloud was not without problems in our data collection process. We know that controversies surrounding the use of think-aloud as a research tool have been present ever since it was introduced (see Ericsson, 2001, for a recent update). However, it is now generally agreed that as long as care is taken to guarantee the

relative completeness of data, it is a very useful research tool (Pressley & Afflerbach, 1995). It might be one of the best means available for observing mental procedures such as strategy use (Cohen, 1998; Ericsson, 2001; Ericsson & Simon, 1993). We are aware that think-aloud procedures for data collection have been used by second language researchers with older or adult learners (see e.g., O'Malley & Chamot, 1990; Vandergrift, 2003), but collecting think-aloud data from young learners proved to be challenging. Although the think-aloud technique has proven useful in understanding L1 learners' reading processes (Pressley & Afflerbach, 1995; cf. Smagorinsky, 2001), the task might become complicated with reading, and the task might be made more difficult with participants whose native language was not English.

The significance of the study lies in the fact that, in a sociocultural context such as Singapore, success in mastering English is crucial to the pupils' future. If some interesting patterns are found about successful readers/high achievers, then pedagogical interventions to conduct reading strategy instruction will become an integral part in the curriculum. Therefore, it is our hope that pedagogical practices based on informed research findings may possibly provide some insight into the way language learning and teaching is conducted in our daily professional lives as language researchers and teachers.

Pedagogical Implications

Research on language learning strategies has shed light on how second language acquisition can be expedited if the ways in which language learning is maximized can be shared with those learners who lack such knowledge. Before we started this project, we assumed that Singapore's unique linguistic context could determine to a considerable extent how Singaporean pupils learn English. We also noticed that very few extensive learning strategy studies could be found on primary school children's learning of ESL, and that children might well differ from adults in learning strategies. As with other skill areas investigated, our findings here are surprisingly similar to those of other studies on reading strategies (Gu et al., 2005). These findings have led us to believe that the major differences between the successful and unsuccessful learners may transcend age and contextual differences. We note, however, that despite accumulating research insights into strategies for second language learning and use, most teachers remain uninformed of how their students learn. If language learner strategy research is to make any difference to student learning, the time has come for us to integrate research with teaching.

Chamot and her associates (Chamot, 2005) and Cohen and his colleagues (Cohen & Weaver, 1997) have already started implementing strategy-based instruction for ELL on a

relatively large scale in the USA. However, not much work has been done to integrate second language learning strategy research and classroom teaching and learning of ESL in an Asian context (Gu, 2002; Zhang, 2003). Since the time when language learning strategy research was initiated by Rubin (1975) and Stern (1975), research on second language learning strategies has gone through three decades of exploration. Armed with the knowledge that has been amassed, we should be directing our attention to strategy instruction in the classroom.

Although, as other researchers (Brown et al., 1996; Olivares & Lemberger, 2002; Pressley & El-Dinary, 1997) have cautioned, establishing effective means of strategy instruction takes a long time in second language learning, it is a highly worthwhile enterprise. Chamot's model can be a good one to start with. Also, much can be learned from the extensive body of L1 reading strategy instruction (e.g., Palincsar & Brown, 1984; Pressley & El-Dinary, 1997; Pressley et al., 1987). One of these instructional models, the "reciprocal teaching" model implemented by Palincsar and Brown (1984), involves explicit teaching of reading strategies. Palincsar and Brown focused on four strategies in their teaching: "predicting", "question-generating", "summarizing", and "clarifying" and they reported very positive effects. Another model proposed by Alverman, Dillon and O'Brien (1987) is equally useful when discussions are foregrounded in reading comprehension classrooms so that learner collaboration naturally facilitates learning (Willet, 1995).

Conclusion

The use of reading strategies was found to be a function of English proficiency of language learners from a cognitive perspective. The high-proficiency learners orchestrated their use of reading strategies during reading that involved both bottom-up and top-down processing. Some of the high-proficiency pupils went beyond text comprehension to the extent that they interpreted the text with some kind of intent to synthesize the information they had understood. The low-proficiency learners had problems in comprehension and the severity often lies with bottom-up decoding, which appeared to be laborious and frustrating experiences for them. Overall, the high-proficiency learners tried not only to understand the text literally; they were also reconstructing, interpreting, summarizing and making inferences based on linguistic as well as real world or schematic knowledge to understand the text. As a result, even though they failed to understand a particular part, their overall reconstruction was a coherently meaningful chunk. The low-proficiency group, on the other hand, spent most of their time decoding, and in most cases, repeating phrases or words that appeared in the texts. Even if they made guesses on the basis of their real world knowledge and/or linguistic

knowledge, their guesses were often totally unrelated to the context. Instead of orchestrating their strategy use to arrive at a reasonable level of comprehension, low-proficiency pupils had perceptual problems. Most of them could not link one piece of information with another and was not able to monitor their own interpretation and understanding. Grade level did not function as an interesting dividing line that distinguished the older students from younger ones in terms of their metacognitive awareness of the reading process and their use of reading strategies as did learners' English proficiency levels.

Despite the inherent limitations of our study as reported here, i.e., the small sample size, the intrusive nature of the think-aloud research tool, other issues in connection with the research process, and the restricted generalizability, we believe that our findings in this study are important to primary school English language teachers in Singapore and possibly to teachers in similar contexts. In addition to better designed studies and better data elicitation and coding procedures and larger sample sizes, we recommend that future research focus on how findings such as ours can be used to improve student learning in and outside the classroom.

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Table 1 Subject Information in the Study

School	Grade	High English Proficiency	Low English Proficiency	Total
School 1	P 4	1	1	2
	P 5	1	1	2
	P 6	1	1	2
School 2	P 4	1	1	2
	P 5	1	1	2
	P 6	1	1	2
School 3	P 4	1	1	2
	P 5	1	1	2
	P 6	1	1	2
Total		9	9	18

Table 2 Materials Used in the Study

School	Grade level	Difficulty Level of Texts and Number of Texts Used	
		Easy	Difficult
School 1	P 4	2	2
	P 5	2	2
	P 6	2	2
School 2	P 4	2	2
	P 5	2	2
	P 6	2	2
School 3	P 4	2	2
	P 5	2	2
	P 6	2	2
Total		6 texts in each school	6 texts in each school

Table 3 Frequency of Reading Strategy Use by Grade Level

Categories and Sub-categories of Reading Strategies			Mean Frequency (SD)			One-way ANOVA	
			Grade 4 (n = 6)	Grade 5 (n = 6)	Grade 6 (n = 6)	Sig.	Post hoc (Scheffé)
Metacognitive	Self-initiating		1.50 (1.23)	1.83 (1.94)	2.50 (1.64)	.569	-
	Planning		1.67 (2.42)	1.67 (2.42)	1.00 (1.55)	.830	-
	Monitoring		9.00 (2.10)	12.83 (3.76)	12.83 (6.40)	.259	-
	Evaluating		2.00 (1.79)	5.67 (8.31)	7.17 (8.70)	.443	-
	Follow-up decision-making	Re-reading	2.17 (2.14)	3.33 (5.75)	4.17 (3.06)	.686	-
Cognitive	Perceptual processing	Fixation	.00 (.00)	.00 (.00)	.17 (.412)	-	-
		Repetition	5.33 (7.94)	3.33 (5.16)	4.33 (4.63)	.852	-
		Decoding	4.67 (7.03)	4.00 (4.15)	7.50 (7.26)	.604	-
	Parsing/Organization	Inferencing	9.67 (5.20)	16.17 (5.75)	20.50 (6.01)	.039	6>5>4
		Prediction	15.17 (6.58)	17.83 (7.66)	19.17 (3.72)	.889	-
		Contextualisation	.00 (.00)	.17 (.41)	.17 (.41)	-	-
	Utilization/Elaboration	Translation	.00 (.00)	.00 (.00)	.33 (.86)	-	-
		Imagery	.33 (.52)	.00 (.00)	.17 (.41)	-	-
		Reconstruction	12.67 (8.05)	16.83 (7.14)	12.17 (3.09)	.804	-
		Summarisation	.67 (1.63)	1.50 (2.26)	1.00 (1.55)	.737	-
		Personal experiences	.83 (.98)	.50 (.55)	2.00 (1.27)	.043	6>5/4
		Appreciation of given text	.67 (1.21)	2.00 (2.10)	.67 (.82)	.228	-
		Evaluate using genre	.17 (.41)	.00 (.00)	.00 (.00)	-	-
	Using resources	Finding problems	.17 (.41)	.00 (.00)	.00 (.00)	-	-
		Using a dictionary	1.50 (1.52)	1.00 (.63)	1.33 (1.03)	.738	-
Social-affective	Social	Cooperative learning	.00 (.00)	.50 (.84)	.17 (.413)	-	-
		Asking for help	1.50 (.84)	2.33 (1.51)	4.83 (2.04)	.005	6>5/4
	Affective	Trying to enjoy	.00 (.00)	.33 (.52)	.17 (.41)	-	-
		Avoiding embarrassment	.67 (.82)	.67 (1.03)	.67 (1.21)	1.000	-

Table 4 Frequency of Reading Strategy Use by Proficiency Level

Categories and Sub-categories of Reading Strategies			Mean Frequency (SD)		t-test		
			High-proficiency (n = 9)	Low-proficiency (n = 9)	t	Sig. (2-tailed)	
Metacognitive	Self-initiating		3.00 (1.32)	.89 (1.05)	3.744	.002	
	Planning		2.56 (2.46)	.33 (.50)	2.661	.017	
	Monitoring		12.00 (4.77)	8.11 (4.62)	4.402	.003	
	Evaluating		5.56 (7.33)	4.33 (6.96)	.363	.772	
	Follow-up decision making	Rereading	5.96 (4.65)	4.62 (3.89)	.562	.684	
Cognitive	Perceptual processing	Fixation	.11 (.33)	.00 (.00)	-	-	
		Repetition	2.22 (4.02)	6.44 (6.69)	-1.622	.124	
		Decoding	1.00 (1.41)	9.78 (5.87)	-4.362	.000	
	Parsing/Organization	Inferencing	20.89 (7.70)	10.00 (7.33)	2.103	.052	
		Prediction	22.44 (9.87)	12.33 (8.20)	5.639	.005	
		Contextualisation	.22 (.44)	.00 (.00)	-	-	
		Translation	.00 (.00)	.22 (.67)	-	-	
	Utilization/Elaboration	Imagery	.33 (.50)	.00 (.00)	-	-	
		Reconstruction	18.11 (12.80)	9.67 (11.79)	1.456	.165	
		Summarisation	1.22 (1.64)	.89 (1.97)	.391	.701	
		Personal experiences	1.56 (1.33)	.67 (.71)	1.767	.096	
		Appreciation of given text	1.67 (1.87)	.56 (.88)	1.612	.127	
		Evaluate using genre	.67 (1.32)	.22 (.44)	-	-	
	Using Resources	Using a dictionary	.11 (.33)	.00 (.00)	-	-	
Social-affective	Social	Cooperative learning	.33 (.50)	.00 (.00)	-	-	
		Asking for help	2.22 (1.30)	3.56 (2.51)	-1.417	.176	
	Affective	Trying to enjoy	.33 (.50)	.00 (.00)	-	-	
		Avoiding embarrassment	.11 (.33)	1.22 (1.09)	-2.917	.010	