

Approaches to Learning and Reading Strategy Use of Bilingual Primary School Pupils

(Short title: Investigating Reading Strategy Use)

Zhenhui Rao

Centre for Research in Pedagogy and Practice

Peter Yongqi Gu, Lawrence Jun Zhang and Guangwei Hu

English Language & Literature Academic Group/Centre for Research in Pedagogy and
Practice

National Institute of Education
Nanyang Technological University
Singapore

Contact Information:

Dr Zhenhui Rao

CRPP, National Institute of Education

Nanyang Technological University

1 Nanyang Walk, Singapore 637616

Tel: ++65-6790 3979 Fax: ++65-6316 4787

Email: zhrao@nie.edu.sg

Approaches to Learning and Reading Strategy Use of Bilingual Primary School Pupils

Abstract: The research reported here investigated primary school pupils' use of reading strategies. The study differed from most of the previous studies on reading strategies in that (1) the participants were young bilinguals in multicultural Singapore; (2) the data were examined within the Student Approaches to Learning (SAL) framework developed by John Biggs (1993). Analyses of think-aloud data revealed that successful pupils made more frequent use of deep-level processing strategies (e.g., inferencing, prediction, reconstruction, questioning of the text) while less successful pupils more often deployed surface-level processing strategies (e.g., paraphrasing, rereading, questioning the meaning of a word or phrase). The findings suggest that, since children's reading efficacy is affected by their use of learning strategies, teachers should integrate the training of deep-level reading strategies into their reading instruction. They should direct their pupils' attention towards the intentional content of the reading material (what is signified) rather than towards learning the text itself (the sign) in their actual teaching practice.

Key words: young learners, bilinguals, reading strategies, deep approach, surface approach

Since the late 1970's, many language learning theorists have advocated teaching students to use a variety of reading strategies or skills in order to read better (Cohen, 1998). Reading strategies are defined by these specialists as mental operations relating to how readers conceive a task, what textual cues they attend to, how they make sense of what they read, and what they do when they do not understand. Strategies, therefore, are a reader's resources for understanding (Langer, 1982).

Research of reading strategies has concentrated on describing those strategies which are involved in understanding. Many researchers have compared the reading strategy use of "good" and "poor" readers (Carrel & Wise, 1998; Gambrell & Heathington, 1981; Hare, 1981; Knutson, 1997; Swaffar et al, 1991; Zhang, 2001) as well as adult and young readers (Bauman, 1982; Scardamalia & Bereiter, 1984). Others (Abraham & Van, 1996; Lockhart & Craik, 1990; Oded & Walters, 2001; Perkins & Brutton, 1992) have studied

student' approaches to reading tasks. The results of these studies suggest that good readers are more able to monitor their comprehension, have a greater awareness of the strategies they use, and use strategies more flexibly than poor readers. More importantly, they know how to process the information in a text at a deep level and distinguish important information and details as they read.

While these studies provide valuable information about certain types of readers and their frequently used reading strategies, little research has been done on bilingual or multilingual primary pupils' use of reading strategies. Still fewer researchers have tried to explain the apparent discrepancy between good and poor primary school readers from the perspective of student approaches to learning. Recent research has been characterized by a process-oriented approach to comprehension based on the work of cognitive psychology (Anderson & Pearson, 1984; Stanovich, 1980). Explaining reading performance in terms of student approaches to learning provides us with another avenue to understand their underlying process in reading. In addition, a large percentage of the world population consists of bi- or multilingual speakers, and intuitively one would expect that as learners acquire more languages, they become better at language learning.

For this reason, we undertook a case study of Singaporean primary pupils' use of reading strategies in their learning of the English language, aiming at providing a detailed description of these pupils' approaches to reading. This description encompasses both the strategies these readers used while reading English texts and the product of their reading — the amount of information understood and remembered. First, we briefly introduce the conceptual framework on which this study was based and review the related literature. Then, we present analyses of the think-aloud data collected to map out various types of reading strategies these pupils employed to approach their reading materials. An important part of the data analyses addresses two different levels of processing that the pupils engaged in. Finally, we discuss the implications of this study for English teachers in bi- or multilingual contexts.

Conceptual Framework and Research Review

Student Approaches to Learning (SAL)

The SAL framework was developed by Biggs (1993), who built on Marton and Saljo's (1976) conceptualizations of surface/deep approaches to learning. The term "approach" has been used to describe how a learner engages on a particular learning task. The surface approaches in the SAL framework stem from various types of extrinsic motivation: The student sees learning as means towards some end, such as avoiding failure or simply keeping out of trouble. A surface approach is predominantly "concerned with getting the right answer" (Ramsden, 1988, p. 19) and is, by nature, corner-cutting. It is a learning pathology whereby the learner does not engage with a task in a way that can lead to long-term benefits. Students adopting such an approach are primarily concerned with fulfilling the minimum requirements of an assignment they are asked to complete, and their understandings consequently tend to be superficial. Strategies associated with surface approaches are described by Biggs (1993) as "satisficing", rather than satisfying, the task demands by investing the minimal time and effort needed for one to appear to meet the requirements. In an academic learning context, the use of surface approaches results in study behaviors that enable students to reproduce material in a required form without analysis or integration, leading to low-quality learning outcomes. Rote-learning selected content without understanding is a prototypical strategy adopted in surface approaches (Biggs, 1993).

The deep approach in the SAL framework is based on interest in the subject matter of a task, and strategies employed by students with the deep approach is to maximize understanding. The focus is thus on meaning-making and understanding rather than the surface aspects of a task; the intention is to "treat different learning tasks with different learning strategies" (Biggs, 1993, p. 7). A student taking a deep approach reads widely, discusses with others, theorizes about the subjects, and relates what is learnt to personally meaningful contexts and/or existing prior knowledge. In the case of reading, for example, deep-approach readers "interact vigorously" (Ramsden, 1988, p. 19) with the texts they read to gain a deep understanding of the topic area. They process information at a high level of generality, such as main ideas, themes, and principles rather than as conceptually unsupported specifics. High-quality learning outcomes, such as development of analytic

skills, are expected with the use of deep approaches to learning (Biggs, 1993; Entwistle, 1998; Marton & Saljo, 1984).

From what is described above, we can see that each approach consists of a combination of motive and strategy. In general, students have fairly stable sets of motives for school learning and each set determines a generic strategy for handling a range of learning tasks. Thus, the surface motive and surface strategy together comprise the surface approach and the deep motive and deep strategy the deep approach. Biggs's SAL provides a useful theoretical framework within which students' use of reading strategies can be elucidated. By examining students' reading strategies in terms of surface- and deep-level processing, we are able to identify patterns of interaction between students and reading materials and understand why students approach specific reading tasks in particular ways. The SAL framework also offers very useful insights into why some reading strategies are more successful for some students than for others.

Research on Student Approaches to Learning and Choice of Reading Strategies

Research to date has revealed that different student approaches to learning are related to different patterns of reading strategy use. One of the most widely cited studies in the literature of educational psychology is Marton and Saljo (1984). The researchers investigated how students' use of learning strategies is related to their approaches to learning in reading practice. Participants in the study were asked to read an academic article and then explain what they had learnt and how they had achieved that learning. The students reported two major ways of tackling this task. Some tried to memorize details or key terms in order to be able to answer subsequent questions. They tended to focus on the article at word or sentence level. Most of the other students endeavored to understand the message conveyed in the article, focusing on the themes and main ideas and trying to process the reading for meaning. These intentions and their associated reading strategies were interpreted by Marton and Saljo as "surface" and "deep" approaches respectively. The researchers reported qualitative differences in learning outcomes depending on the approach to reading that had been utilized. Students who had adopted a surface approach typically could not explain the author's message and could

only recall isolated factual fragments of the passage. Those adopting a deep approach were able to provide a more sophisticated overview of the author's intentions and frequently use extracts from the reading to support their reasoning.

Marton and Saljo's findings were confirmed by Kirby's (1988) study of reading strategies. Kirby found that students processed a text at two levels: micro-propositions and macro-propositions. While students employing surface reading strategies tended to focus on the detail of micro-propositions, those utilizing deep strategies tended to focus on macro-propositions. Richards and August's (1975) research supports Kirby's theory of text analysis. They found that when readers were instructed to highlight structurally important information there were positive direct effects on learning, but if readers were instructed to highlight the less important information the effects on main idea learning were negative.

A similar link between strategy use and student approaches to learning was also discovered in Abraham and Vann's (1996) study. The researchers asked language students to take notes on a reading text and classified note-taking strategies as deep-level processing if they focused on main ideas and as surface-level processing if they related to an isolated element of the text. Organizing or graphically laying out the information, and underlining, highlighting, and listing main ideas were considered deep processing, while verbatim copying of the original text and underlining, highlighting, listing, and defining individual lexical items were considered surface level processing. The researchers reported greater use of deeper level strategies by graduate students than by undergraduates, indicating that students with higher language proficiency are more likely to employ deep-level strategies.

In general, research on reading strategies has found that students who are better in their language performance generally make frequent use of a greater number of reading strategies and process reading materials at a deep level for greater reading comprehension (Abraham & Van, 1996; Johns, 1988; Lockhart & Craik, 1990; Oded & Walters, 2001; Perkins & Brutton, 1992). They posit that reading ability in a language is largely a function of proficiency in that language. As language proficiency develops, linguistic

cues can be used more efficiently and that deep-level processing strategies such as inferencing, prediction and contextualization will operate more smoothly.

Methodology

The research reported here is part of a 3-year study conducted to examine how successful and unsuccessful primary school pupils in Singapore might differ in the quantity, quality, and variety of strategies they use in dealing with different language learning tasks, as well as how background variables such as grade and gender might influence their use of language learning strategies.

Participants

Participants in this study were six primary six pupils from three average government-run neighborhood schools in Singapore. They were selected by their teachers, who were asked to choose two primary six pupils from each school, representing two levels (high, low) of English proficiency, based on their scores in the most recent English examinations and the teachers' own ratings. The participants ranged from 11 to 12 years in age. Of the six participants, five were ethnic Chinese, and the last one was Indian. While English is the major official language and medium of instruction in multilingual and multicultural Singapore (Gopinathan, 1998), most people from different ethnic backgrounds in Singapore would prefer to use their mother tongues (Chinese, Malay, Tamil) to communicate in their own communities. Thus, these participants were functionally bilingual in English and their respective mother tongues.

Materials

The researchers selected four passages from *Primary Six English* and *Multiple Reading Skills 1*. The four passages were intended to represent two different text types — narrative and expository. Within the same text type, one passage was more difficult than the other so as to give us opportunities to obtain a more comprehensive picture of strategy use in relation to different types of reading at different levels of difficulty. Each passage was a self-contained selection that was rated by the researchers as appropriate to the readability level of grade six pupils. Passage 1, which was 270 words long, narrated a

surgeon's first operation; Passage 2 was a 320-word fairytale, relating how God looked after a holy man named Albert, who was on his way to visit the people in a little village tucked away among snow-covered hills; Passage 3 was a 182-word text about a race in which teams of five made a meal while racing over an eight-to-ten mile course; and Passage 4, the shortest of all, with only 143 words, described how sand castles were commercially employed by businesses of various types. All these passages were rated by the researchers as having a similar organization of main ideas and supporting details. Checklists of main points and important details were developed on the basis of our close reading of the passages, and then were used to score the retellings of the passages elicited from the pupils.

Think-aloud Interviews

The data for this study consisted of think-aloud protocols elicited in one-on-one interviews and the pupils' retellings of the passages collected at the end of each reading task. Before the think-aloud interviews were conducted, the researchers developed a set of guidelines for the think-aloud interviews. Interviewers participated in training sessions in which they studied the guidelines, watched the researchers demonstrate think-aloud interviewing, and then received post-session coaching as they used the guidelines to conduct interviews.

When conducting an individual think-aloud interview, the interviewer first explained the purpose of the interview, and then started the think-aloud training with a game, "Guess What's Inside". The pupils were given a bag containing some objects and told to guess what they thought was inside the bag by touching the objects only. They were then asked to speak their minds out aloud as they felt about inside the bag. By speaking out guesses of hidden objects in the bag, the children understood what they were supposed to do when they were asked to talk-aloud while completing the reading tasks for strategy elicitation. As soon as the think-aloud training was completed, the pupils were instructed to read the four passages as they normally would and verbalize as much as possible about what they were thinking while reading. A slash was placed after each sentence or two to remind them to report their thoughts. If they were silent for an extended period, they were

asked questions like “What are you thinking about?” or “How did you figure that out?” All the interview sessions were both audio- and video-taped and transcribed.

Retellings

Retellings were used to measure memory and comprehension of the reading passages. Before they started retelling, the pupils were given an opportunity to look over each reading passage so that their comprehension was not affected by the continual interruptions occurring on the think-aloud task. They were then asked to tell everything they remembered about the passage. However, the pupils were not allowed to refer to the text during the retelling. These retellings were scored for the number of main ideas and details, using the aforementioned checklists.

Coding Scheme

To analyze the think-aloud data, a coding scheme was developed to identify the reading strategies used by the pupils. Tentative categories were established based on the data from a pilot study and an extensive review of the literature on reading strategies, and refined iteratively in the process of coding the data reported in this article. The finalized categories described only those strategies employed by the participants and were not intended to exhaust all possible reading strategies.

Based on Bigg’s (1993) conceptualization of student approaches to learning, strategies were categorized into two levels in the coding scheme: deep-level and surface-level processing strategies. This binary division rather closely parallels classifications presented in other studies, for example, Barnard’s (1980) “global” and “local” strategies, Hosenfeld’s (1977) “main meaning line” and “word-solving” strategies, Olshavsky’s (1977) “clause-related” and “word-related” strategies, and Barnett’s (1988) “text-level” and “word-level” strategies. We characterized each strategy as involving deep-level or surface-level processing, depending on whether it appeared to represent an attempt to extract and/or relate main ideas (deep) or focus on an isolated element of the text (surface). Descriptions of these categories are as follows.

Deep-level processing strategies consist of those strategies employed to create a mental representation of the text, namely, a gist which includes the author's intent and the main ideas of the text and which is shaped by the reader's prior knowledge and goals. Table 1 lists each strategy type, its definition, and an illustrative example.

Table 1 Deep-level processing strategies

Strategies	Definitions	Examples
Inferencing	Guessing unknown meaning using prior knowledge and other relevant sources of knowledge.	The surgeon... must be very happy... as he saved someone's life and he felt relieved.
Prediction	Anticipating what content will occur in succeeding portions of text.	The smile on the family members' face will give the surgeon more confidence when doing operation next time.
Contextualization	Connecting new information with previously stated content.	So the surgeon himself must have gone through this kind of thing as he said he knew how it felt to lose someone you love.
Global questioning of text	Questioning the significance, coherence or veracity of content.	Like this is really talking about triathlons, and why now suddenly it jumps to another [topic].
Recognition of text structure	Distinguishing between main ideas and supporting details.	Mm... the happy ending they had, because they all had a great meal.
Comprehension evaluation	Noticing that an interpretation or paraphrase is incorrect and modifying comprehension.	Oh, now I think the author is the surgeon... because he doing the operation.
Summarization	Summarizing the main ideas of a passage.	The story is mainly about how the surgeon completed his first operation.
Appreciation of given text	Appreciating what one is reading	It feels that Mm... I really in the passage myself.
Reconstruction	Reorganizing the content of a text to grasp the main idea.	Mm, the sand castle just suppose to be very very small, and now big and they are used for advertising and companies who hired professionals to build these.

Surface-level processing strategies include strategies used in attempts to understand the meaning of discrete linguistic units at word or sentence level. Paraphrasing is included in this category, because it was used mainly to restate the meaning of a word, phrase or sentence at its superficial level. In addition, paraphrases were classified as reasonably accurate or inaccurate. Each surface-level strategy type is presented in Table 2, together with its definition and a related example.

Table 2 Surface-level processing strategies

Strategies	Definitions	Examples
Paraphrasing	Rephrasing content using different words but with the same sense.	The surgeon is satisfied with his work.
Rereading	Rereading a word, phrase, or chunk aloud or silently.	Perspiration...perspiration...perspiration.
Local questioning of text	Questioning the meaning of a small portion of text at or below the sentence level.	What does this sentence mean?
Questioning vocabulary	Questioning the meaning of a word.	What's the meaning of this word?

Data Analysis

Using the categories described above, the first author and a research assistant coded the transcribed think-aloud data with Nvivo 2.0, a software package for both qualitative and quantitative data analysis. To ensure the reliability of the codings, the two coders first coded a complete transcript of one pupil's think-aloud data independently and then met to compare the codes, calculate percentage of agreement, and resolve differences in coding decisions. Initial inter-coder agreement was found to be 81% of the codes. The differences in coding were resolved by discussion and negotiation. One of the coders then coded the remaining transcripts, and the other reviewed the coded transcripts and suggested revisions. The two met regularly to review and resolve the differences in their coding decisions. Thus, all the coded data were agreed upon by the two.

For each coded transcript, frequency counts of the identified strategies were calculated, as was the proportionate use of each strategy by each pupil. Each occurrence of a particular strategy was counted as one instance. If interrupted and resumed, a strategy was counted twice. Therefore, the response to one sentence might contain several strategies and several instances of the same strategy.

Results

General Patterns of Reading Strategy Use

The coded strategies were quantified as described earlier. Table 3 sums up the absolute frequencies of the strategies and the percentage of each strategy in all the strategies used by each pupil when responding to the four reading passages. (All the names are pseudonyms) .

Table 3 Descriptive statistics

Strategy type	Successful Pupils			Less successful Pupils		
	Guigen	Jinming	Sunfu	Raja	Furong	Guoming
<i>Deep-level strategies</i>	Raw* %	Raw %	Raw %	Raw %	Raw %	Raw %
Inferencing	7 14	6 13	6 11	4 11	12 31	4 11
Prediction	6 12	3 6	3 5	0 0	0 0	2 5
Contextualization	4 8	4 9	5 9	1 3	0 0	2 5
Global questioning of text	2 4	2 4	2 4	0 0	0 0	0 0
Recognition of text structure	4 8	3 6	6 11	0 0	0 0	0 0
Comprehension evaluation	1 2	2 4	2 4	0 0	0 0	0 0
Summarization	4 8	3 6	5 9	2 6	0 0	2 5
Appreciation of given text	4 8	4 9	4 7	1 3	0 0	1 3
Reconstruction	4 8	4 9	4 7	1 3	1 3	1 3
Subtotal	36 72	31 66	37 67	9 26	13 34	12 32
<i>Surface-level strategies</i>						
Paraphrasing						
accurate	9 18	9 19	11 20	1 3	1 3	1 3
inaccurate	1 2	2 4	2 4	3 9	4 10	5 13
Rereading	2 4	2 4	2 4	15 43	10 25	9 24
Local questioning of text	2 4	1 2	1 2	3 9	5 13	4 11
Questioning vocabulary	1 2	2 4	2 4	4 11	6 15	7 18
Subtotal	15 30	16 33	18 34	26 75	26 66	26 69
Total	51 102	47 99	55 101	35 101	39 100	38 101

* Raw refers to absolute frequency of students' mention of a strategy

Note: Some percentages total to slightly more or less than 100 due to rounding.

A distinctive pattern of strategy use emerged from the table above, which distinguished the successful pupils from the less successful pupils. More than 66 percent of the strategies the successful pupils used consisted of deep-level processing strategies. They constantly used their knowledge (a) to explain, extend, and clarify content; (b) to evaluate the veracity of content; (c) to react to content; and (d) to anticipate what would occur in succeeding portions of the text. They also distinguished between main points and supporting details and connected new information with previously stated content. On the contrary, over 66 percent of the strategies used by the less successful pupils consisted of surface-level strategies. When they encountered a new word, an unfamiliar phrase or a difficult sentence, they tended to reread it either aloud or silently, and then question its meaning. Although they tried in one way or another to paraphrase the difficult point in a text, most of their paraphrases were inaccurate.

Individual Differences in Strategy Use

A close look at each pupil's think-aloud protocols further illuminated how the successful pupils differed in qualitative ways from the less successful pupils in their use of reading strategies. For example, although the successful pupils had difficulty in understanding some portions of the reading passages, they used a variety of deep-level processing strategies to resolve their difficulties. Guigen used predominantly inferencing and prediction strategies. When his comprehension of a text was inhibited by a linguistic obstacle, he used his knowledge about the real world and the English language to guess its meaning. In responding to the sentence "...I did not want to let his loved ones down" in passage 1, he elaborated like this:

So that the surgeon did not want the family members to lose their loved ones and so he must ... he wanted to he wanted the operation to be successful.

As he read on, he was more deeply engaged in the context itself and ready to make more guesses.

P:¹ *I knew how it felt to lose someone you love and I did not want anyone to experience such sadness.*² So the surgeon himself must have gone through this kind of thing as he said that he knew how it felt to lose someone you love.

I:³ Can you explain on that?

P: And because maybe he ... one of his family members had also passed away and he knew the feeling of losing someone that you love.

I: Good.

In the excerpt above, Guigen tried to relate what he was reading to his world knowledge, which assisted him to gain a thorough understanding of the text. Meanwhile, he also used information from his own life to foretell the content of the story. For instance, immediately after he read the first sentence in Passage 1, he anticipated: “The author is going into an operation room, go on an operation himself or herself or accompanying someone to go in an operation.” The prediction paved the way for his further understanding of the succeeding parts of the text. When he finished reading the last sentence in the same passage, he made a further and highly plausible prediction about the effects of the successful operation on the surgeon:

The smile on the family members’ faces gave the surgeon more confidence when doing the next operation as it was his work.

Thus, using his background knowledge to guess and predict facilitated Guigen’s deep understandings of the reading materials. Because he used his real world and linguistic knowledge to fill in the many gaps in his understanding, his responses in the think-aloud focused more on elaboration than on the texts per se.

Jinming also made frequent use of deep-level processing strategies. Of all the six participants, she used the strategies of comprehension evaluation and global questioning of text most frequently. Although her use of comprehension evaluation was lower in

¹ P stands for pupil.

² The italicized part is the original text.

³ I stands for interviewer

percentage than the other deep-level processing strategies, it exerted a substantial influence on many of her subsequent responses. When she finished reading the first sentence in Passage 1, she misunderstood the author as a patient to be treated. Soon after, however, she realized that her interpretation was incorrect.

P: *I had never operated on a living person before. During my housemanship...*

Oh, now I think the author is the surgeon.

I: Okay, how do you know?

P: Mm ... he doing the operation.

It is obvious that her assessment of the coherence of her interpretation relied on her ability to connect new information with old information and evaluate her understanding accordingly. She continually referred back and forth to assess her understanding, and commented on types of information in the text, which, in turn, resulted in her higher use of the strategy of finding problems with text than others. Here is an excerpt of her verbal report explaining why she found Passage 3 most difficult to comprehend:

I: And you said they are confusing, in what way are they confusing?

P: Mm ... (pause 5 seconds) ... Maybe the structure is not very good. The points jump from place to place.

I: The structure is not very good and the points jump from place to place. Em ... you want to give me one example?

P: Like this is really talking about triathlons and now suddenly it jumps to another type of race.

Jinming's think-aloud data amply demonstrated that she was more critical and appreciative of what she had read than the other participants. The approach she took suggests that she made more attempts at synthesizing information presented in the text and attested it against what she knew about the subject matter.

Sunfu talked less and used fewer strategies than the previous two successful pupils. He kept reading without commenting too much on his use of reading strategies while the think-aloud interview was being conducted. However, when he did make responses in his reading process, he could use the information in the context to infer the meaning of a word, phrase, or sentence.

I: I want to ask you a question. Um, look at the mm last paragraph that “in the first leg”, um you said earlier on that you didn’t understand what was the word “leg”.

P: Mm hm.

I: Right, in the end you said something like what did you say?

P: I think it’s um in the first “part” in the ...

I: Ya, how do you know it’s known as “part”?

P: Because mm when I read on, they say the bikers ride six to eight miles out ... ten miles. So ... this must be the first part of the biker, is the first um, would be the first ... first one to start the contest.

Another feature in Sunfu’s think-aloud data was his frequent use of the strategy of recognizing text structures. In his think-aloud performance, he frequently ignored irrelevant or distracting details and focused his attention only on main ideas. After finishing all the reading tasks, he commented:

... Mmm, usually I uh read quite some parts then I get the whole idea.

... I just read then after some time I concluded what ... what is talking about.

Though the transcripts of his recorded think-aloud data was the shortest of all, his retellings revealed that he had had a comprehensive understanding of each passage.

Compared with the strategies used by the successful pupils, those used by the less successful pupils were differently orientated. About 75% of the strategies used by Raja were directed at processing the information in the reading passages at the surface level,

and the rereading strategy alone accounted for nearly half of the instances. She seemed to be perplexed by constantly encountering unfamiliar words or phrases and difficult sentences in her reading process. Each time when she met a new word, she would pause for a while and then reread it. If the word was too difficult for her to pronounce, she would ask the interviewer to read it out for her and then repeat it herself.

P: It was my very first OPENTATION [operation] ... OPENATION ...
OPEITION ...

I: Good.

P: I had never OPETED [operated] on a living thing before. Before my housemanship, I was only able to EXCETEMENT [experiment] on ...
what is this?

I: corpses

P: corpses and animals.

On most occasions, she did not know the meaning of the repeated part at all and would just let it pass. Only sometimes did she question its meaning. For those words she thought she had once met, she would use simple words to restate them, but most of her paraphrases were incorrect. She did sometimes try to make inferences, but almost all those inferences were wild guesses.

Like Raja, Fu Rong also used predominantly surface-level strategies. However, her use of the rereading strategy was much less frequent than that by Raja, because she continually ignored those tough words or phrases in the passages.

I: Mmm, so what is “confidence”?

P: Mm ... don't know.

I: You don't want to try?

P: Don't know (shakes head).

I: What are you thinking? Is that what you do? You don't know something you just say don't know? And you?

P: Skip.

Fu Rong did not paraphrase as often as others did, but she used inferencing quite frequently, accounting for nearly one third of the total strategies she used. However, as she was never sure about the main content of each text, nearly 80% of her inferences were wild guesses which had little to do with the text.

Of all the three less successful pupils, Guoming was the only participant whose reading strategies were somewhat similar to those used by the successful pupils. Although the majority of his strategies also dealt with processing the incoming information at a surface level, he did sometimes employ a number of deep-level strategies. He was able to use his prior knowledge and experience to make reasonable guesses and predictions, and find cues from the context to assess the coherence of his interpretation. In addition, his retelling of each passage indicated that he was, to a certain degree, capable of reconstructing and summarizing what he had read. In spite of all these, however, Guoming's comprehension of each text never went beyond the text itself. For most part, he was still bound by those unknown words, phrases, or complex sentences.

I: Mm, good. Do you like this passage?

P: Mm, Ya.

I: How?

P: It's interesting and make me know more words.

It is worth noting that Guoming did sometimes use contextualization strategy to help him sort out the meaning of the new word, but it seemed that he devoted a great deal of his attention to the meaning and usages of discrete vocabulary items. He did so because "I can know the words better and next time if I read I will know the words." Undoubtedly, too much attention to discrete linguistic details during reading undoubtedly prevented him from making a good understanding of the passage he was reading, which is illustrated in the following dialogue:

I: Mm, OK. Do you find this passage difficult?

P: Difficult.

I: Why?

P: Mm, I try to remember most of the words.

Results of Retellings

Based on the checklists developed for this study, the number of main ideas and details mentioned by the participants in their retellings of each passage is listed in Table 4.

Table 4 Memory and comprehension scores for the four passages

	Passage 1		Passage 2		Passage 3		Passage 4	
	Main idea	Details	Main idea	Details	Main idea	Details	Main idea	Details
Guigen	4	7	4	10	3	8	3	7
Jinming	3	5	3	6	2	5	2	5
Sunfu	3	8	4	7	2	6	2	4
Raja	0	0	0	0	0	0	0	1
Furong	0	4	0	3	0	0	0	0
Guoming	2	6	1	8	0	0	0	6

Note: There were 5 main ideas and 14 details in Passage 1.

There were 5 main ideas and 13 details in Passage 2.

There were 3 main ideas and 10 details in Passage 3.

There were 3 main ideas and 9 details in Passage 4.

Only Guigen, Jinming, and Sunfu—the three successful pupils—were able to recognize each text structure. The retellings of these participants tended to cover the information in the passage and contain both main ideas and details, while the other two less successful pupils, Furong and Guoming, tended to focus on details instead of main ideas and did not follow the organization of information in the passages. Of all the participants, Guigen’s retellings included more main ideas and details associated with the main ideas. His thorough understanding of the reading materials was also reflected in his ability to provide an appropriate title for each passage he had read.

The retellings of the less successful pupils did not generate as much information as expected. Raja nearly provided no information at all in her retellings of all the passages. She only produced one comment for Passage 4 and made no attempt to do the retellings for the other passages, because, as she said, “I cannot understand the meaning of the

passage.” Though the other two less successful pupils did attempt to retell what they had read, their retellings were scanty. Furong was unable to retell the last two passages, and Guoming did not retell Passage 3 because of his poor understanding of it. It seems that their failure to do the retellings for these passages originated from their low English proficiency level, which prevented them from making a comprehensive understanding of the passages.

Discussion

Our findings support Biggs’ (1993) theoretical work on processing strategies of language learners. There appeared to be two consistent and distinctive levels of processing. These two different levels of processing, deep-level processing and surface-level processing, corresponded to the different aspects of the learning materials on which the primary school pupils focused.

The successful pupils in the present study directed their attention towards the intentional content of the learning material (what was signified). In other words, they focused on comprehending what the author wanted to convey. For this purpose, they used a variety of deep-level processing strategies including drawing on background knowledge to assist understanding, predicting the development of the reading text, guessing the meaning of a new word on the basis of contextual information, looking for logical connections, assessing the coherence of interpretation, and making critical judgments. In the case of the less successful pupils, however, attention was directed towards local parts of the text itself (the sign). That is, these pupils had a “reproductive” conception of learning, which meant that they were more or less forced to keep to a rote-learning strategy. As this group of pupils was content with a superficial understanding of the reading text, their strategy use was mainly limited to paraphrasing, rereading, and questioning discrete linguistic details. These findings concur with previous research on reading strategies in that students with high language proficiency generally process a reading text at a deep level while students with low language proficiency tackle a text at a surface level (Abraham & Van, 1996; Johns, 1988; Lockhart & Craik, 1990; Oded & Walters, 2001; Perkins & Brutton, 1992). They also demonstrate that young children follow the same pattern of

reading strategy use as adult readers, though they are still undergoing cognitive development (Bialystok, 2001).

Not only did the successful pupils have a larger repertoire of reading strategies, but they were also more capable of retelling each reading passage than the less successful pupils: all the retellings from the successful pupils were much longer than those from the less successful pupils. In general, the successful pupils were able to describe both the main content and supporting details of each passage, but the less successful pupils could only remember some details without capturing the main ideas. It is evident that the use of deep-level processing strategies by the successful pupils helped them dig deep into each reading text, therefore enabling them to recall the main ideas contained in each passage.

Another area in which the successful pupils differed significantly from the less successful pupils is their reading process. For the successful pupils, reading comprehension involves two major components. First, they translated the surface form of the text into underlying conceptual propositions. Second, they used their own knowledge to identify referents of the text's concepts, linking expressions that referred to the same entity and drawing inferences to knit together semantic and linguistic relations among parts of the text. In so doing, the pupils constructed a mental representation of the situation and actions being described. They used this mental representation to interpret, evaluate incoming information and predict what would occur next in the text. By contrast, the less successful pupils were characterized by a blind, spasmodic effort to repeat words or phrases that they found difficult to understand or hinder their progress in reading; these learners seemed, metaphorically speaking, to see themselves more or less as blank tape to be filled with the words on the pages. Their awareness skated along the surface of the text. Their only aim was to be able to recall details later when they would be asked questions about them. This sharp discrepancy between the two groups of pupils in reading strategy use once again confirmed the previous research findings that the reading comprehension process consists of synthesizing simple propositions into larger conceptual units rather than analyzing complex units into small propositions (Gu, 2003; Kirby, 1988; Stanley, 1984).

In addition to the differences in reading strategy use between the successful and the less successful pupils, pupils within each group also differed in their respective priorities when working on a text. Of all the successful pupils, Guigen obviously made more attempts to connect information and tended to refer to his prior knowledge and experience more often than the other pupils. Jinming also constantly integrated information, but her overriding intention was to match her emerging interpretation with the context of a message, which, in turn, enabled her to question information in the text. As for Sunfu, his integration of information was mainly manifested in finding cues in the context so as to find the meaning of a word. Sunfu was also adept at extracting the gist of a passage. His retelling of each passage included its theme and focused more on main ideas than on details.

The less successful pupils also showed some differences in their use of surface-level processing strategies. For Raja, the selected reading materials seemed to be beyond her English proficiency level. Her constant rereading of new words or phrases unavoidably interrupted her global understanding of each passage. Furong's situation was even worse. She did not reread tough words or phrases as frequently as Raja did, because, as she said, "I skip the new words or phrases if I don't understand them." Her continuous ignoring of key words or phrases, unfortunately, made it impossible for her to capture the main ideas of each passage. Guoming seemed to have used a wider range of reading strategies, but most of his strategies were intended to deal with isolated words rather than intentional content. His predominant interest in individual words inevitably made him unable to see the forest from the tree, as was evidenced by his retellings of all the passages, in which he recalled more details than main ideas.

The findings of our study and the research reviewed earlier indicate an association between strategy use and language proficiency, but the exact nature of this association, particularly the issue of causality, is a subject of some debate. While it is true that frequent use of effective strategies leads to increased language proficiency, students' higher language proficiency can also influence choice of strategies. For example, the

good command of English by the successful pupils in this study seemed to facilitate their reading process, enable them to have a better understanding of the reading materials, and induce flexible and appropriate deployment of deep-level processing strategies. On the other hand, all the four selected reading passages seemed rather challenging for the less successful pupils. These pupils' reading comprehension was constantly hampered by new words or complex sentences, and therefore they were at a loss as to what each passage was about. It can be inferred, then, that when a learner's language proficiency is very low, it is extremely difficult, if not impossible, for him or her to make use of deep-level processing strategies. This inference about the relationship between strategy use and language proficiency level is consistent with Green and Oxford's (1995, p. 288) proposal: "[The] relationship is best visualized not as a one-way arrow leading from cause to effect, but rather as an ascending spiral in which active use strategies help students attain higher proficiency, which in turn makes it more likely that students will select these active use strategies."

Conclusions and Implications

This study reveals some important differences in reading strategy use between the successful and the less successful young language learners in Singapore. Many of these differences are similar to those reported about adult language learners. The successful pupils tended to use a deep approach most of the time, whereas the less successful pupils favored a surface approach. The depth of processing engaged in by the successful pupils ensured quality encoding of the content and hence better retrieval. It also helped to create a mental representation which enabled further coherent comprehension. Conversely, the surface-level processing used by the less successful pupils consisted in attending overwhelmingly to discrete linguistic details and resulted in more superficial encoding. Consequently, all the less successful pupils had poorer comprehension of the text content and poorer performance on the retelling tasks.

The similarities in the use of reading strategies between young and adult language learners suggest that reading strategy use is a stable phenomenon. They remind us that reading is a process of construction in which the processor is an active participant. In

particular, the successful pupils seemed to be adept at using cues in the text to anticipate information and relating new information with information already stated. They seemed able to see the connections between their own knowledge and the more abstract material they were reading. Like successful adult language learners in other studies, the successful young learners in this study demonstrated a variety of strategies when approaching a particular reading task and tended to adjust their strategies to the type of text they were reading and to the purpose for which they were reading (Chamot & El-Dinary, 1999).

This study has yielded useful information regarding the patterns of reading strategy use by some Singaporean primary pupils. It must be acknowledged, however, that the study has several limitations. First, the number of participants ($N = 6$) was very small, and therefore replication studies on a larger scale are needed to confirm our findings. Second, the retellings used to measure memory and comprehension in this study might not be accurate and comprehensive enough. In replicating, a variety of instruments such as multiple-choice tests or cloze tests should be used to measure reading outcomes in a more comprehensive manner. Third, although the think-aloud interviews allowed us to examine what was going on in a learner's mind while s/he was performing a reading task, we must bear in mind that the think-loud data collection technique cannot reveal all the thinking processes. This limitation can lead to an underestimate of strategy use.

Despite the limitations, the findings of the present study could contribute to English language teaching in Singapore primary schools and other similar educational contexts. For example, the picture outlined so far indicates that a significant component of a deep approach is that the reader engages in a more active dialogue with the text. It is as if the reader is constantly asking himself or herself questions of the kind "How do the various parts of the text relate to each other?"; "Is the argument consistent or are there any logical gaps?"; "How does this relate to what I already know?" and so on. Since one of the problems with a surface approach is the lack of such an active and reflective attitude towards the text, it would make sense that teachers should try to induce a deep approach in their students by adopting a macro-textual approach in their reading instruction (for more details, see Stanley, 1984). Instead of demanding careful word-for-word reading,

discouraging guessing and tolerating no mistakes, teachers should direct their students' attention towards the main content of a text and encourage them to identify how information is organized in a text. They might achieve these ends by asking their students to answer the questions of the following kind:

1. How many sub-sections do you think there are in this section? (Say where they start and finish)
2. Can you summarize the content of each of these sub-sections in one or two sentences?
3. What is the relationship between the various sub-sections?
4. Can you summarize the content of the whole section in one or two sentences?

There is some evidence that summary making is most effective in facilitating a deep approach when it is done from memory, because it forces students to read actively first and organize details into appropriate schemata (Biggs and Moore, 1993).

The findings of this study also suggest that, while successful pupils differed from less successful ones in reading strategy use, there is also some individual variation among the pupils in each group. Thus, prepackaged solutions to problems will probably have only limited effects. This should serve to remind us as teachers to look closely at what our students can do before we decide what to teach them. The pupils in this study had all developed strategies which could, in one way or another, serve them as readers and learners, but only those strategies employed by the successful pupils were efficient in improving their reading comprehension and their learning.

Finally, the responses from the participants in this study suggest that the thinking-aloud procedure is an important learning tool. On many occasions, the task of thinking aloud appeared to focus the pupils' attention on what they understood and what they needed to know. By saying aloud what they understood, they became aware of what they did not understand. Awareness of what they were doing and what they understood allowed some

of them to teach themselves. Though thinking-aloud is time-consuming, the results seem to justify the effort.

References

- Anderson, R.C., & Pearson, P.D. (1984) A schema-theoretic view of basic processes in reading. In P.D. Pearson (Ed.), *Handbook of reading research* (pp. 255-292). New York: Longman.
- Abraham, R., & Vann, R. (1996). Using task products to assess second language learning processes. *Applied Language Learning*, 7, 61-89.
- Barnard, R., Harley, B., Graziella, P., & Tom, R. (1980). Reading strategies. In C. Guiseppeina (Ed.), *Reading a foreign language* (pp. 400-415). Milan: Franco Angeli.
- Barnett, M. (1988). Teaching reading strategies: How methodology affects language course articulation. *Foreign Language Annuals*, 21(2), 109-119.
- Bauman, J. (1982). *Linguistic structure and the validity of reading comprehension tests* (Final Report. G-80-0149). Washington, DC: National Institute of Education. (ERIC Document Reproduction Service No. ED 218 950).
- Bialystok, E. (2001). *Bilingualism in development: Language, literacy, and cognition*. New York: Cambridge University Press.
- Biggs, J.B. (1993). What do inventories of students' learning processes really measure? A theoretical review and clarification. *British Journal of Educational Psychology*, 63, 3-19.
- Biggs, J.B., & Moore, P.J. (1993). *The process of learning*. Sydney: Prentice Hall.
- Carrell, P., & Wise, T. (1998). The relationship between prior knowledge and topic interest in second language reading. *Studies in Second Language Acquisition*, 20, 285-309.
- Chamot, A.U., & El-Dinary, P.B. (1999). Children's learning strategies in language immersion classrooms. *Modern Language Journal*, 83, 319-338.
- Cohen. A.D. (1998). *Strategies in learning and using a second language*. London: Longman.
- Entwistle, N. (1998). Approaches to learning and forms of understanding. In B. Dart & G. Boulton-Lewis (Eds.), *Teaching and learning in higher education* (pp. 72-101). Camberwell, Vic.: ACER.

- Garmbrell, L. B., & Heathington, B. S. (1981). Adult disabled readers' metacognitive awareness about reading tasks and strategies. *Journal of Reading Behavior, 13*, 215-222.
- Gopinathan, S., Pakir, A., Ho, W. K., & Saravanan, V. (Eds.). (1998) *Language, Society and Education in Singapore* (2nd ed.). Singapore: Times Academic Press.
- Green, J.M., & Oxford, R.L. (1995). A closer look at learning strategies, L2 proficiency and gender. *TESOL Quarterly, 29*, 261-296.
- Gu, P. (2003). Fine brush and freehand: The vocabulary learning art of two successful Chinese EFL learners. *TESOL Quarterly, 37*(1), 73-104.
- Hare, V. C. (1981). Readers' problem identification and problem solving strategies for high and low knowledge articles. *Journal of Reading Behavior, 13*, 359-365.
- Hosenfeld, C. (1977). A preliminary investigation of the reading strategies of successful and non-successful second language learners. *System, 5*, 110-123.
- Johns, A.M. 1988. Reading for summarizing: an approach to text orientation and processing. *Reading in a Foreign Language, 4*, 79-90.
- Kirby, J.R. (1988). Style, strategy and skill in reading. In R.R. Schmeck (Ed.) *Learning strategies and learning styles* (pp. 230–274). New York: Plenum Press.
- Knutson, E. M. (1997). Reading with purpose: Communicative reading tasks for the foreign language classroom. *Foreign Language Annuals, 30*, 49-57.
- Oded, B., & Walters, J. (2001). Deeper processing for better EFL reading comprehension. *System, 29*, 357-370.
- Olshavsky, J. (1977). Reading as problem solving: An investigation of strategies. *Reading Research Quarterly, 12*, 654-674.
- Perkins, K., & Brutton, S. R. (1992). The effect of processing depth on ESL reading comprehension. *Journal of Research in Reading, 15*, 67-81.
- Langer, J. (1982). The reading process. In A. Berger & H. A. Robison (Eds.), *Secondary school reading: What research reveals for classroom practice* (pp. 39-52). Urbana, IL: ERIC Clearinghouse on Reading and Communication Skills.
- Lockhart, R. S., & Craik, R. M. (1990). Levels of processing: a retrospective commentary on a framework for memory research. *Canadian Journal of Psychology, 44*, 87-112.

- Marton, F., & Saljo, R. (1976). On qualitative differences in learning – 1: Outcome and process. *British Journal of Educational Psychology*, 46, 4-11.
- Marton, F., & Saljo, R. (1984). Approaches to learning. In F. Marton, D. Hounsell, & N. Entwistle (Eds.), *The experience of learning* (pp. 36-55).. Edinburgh: Scottish Academic Press.
- Ramsden, P. (1988). Studying learning: Improving teaching. In P. Ramsden (Ed.) *Improving learning: New perspectives* (pp. 13-31). London: Kogan Page.
- Richards, J.P., & August, G.J. (1975). Generative underlining strategies in prose recall. *Journal of Educational Psychology*, 67, 860-865.
- Scardamalia, M., & Bereiter, C. (1984). Development of strategies in text processing. In H. Mandl, N. L. Stein, & T. Trabasso (Eds.), *Learning and comprehension of text* (pp.379-406). Hillsdale, NJ: Lawrence Erlbaum.
- Stanley, R. M. (1984). The recognition of macrostructure: a pilot study. *Reading in a Foreign Language*, 2, 156-168.
- Stanovich, K.E. (1980). Towards an interactive-compensatory model of individual differences in the development of reading fluency. *Reading Research Quarterly*, 16, 32-71.
- Swaffar, J., Arens, K., & Byrenes, H. (1991). *Reading for meaning: An integrated approach to language learning*. Englewood Cliffs, NJ: Prentice Hall.
- Zhang, L. J. (2001). Awareness in reading: EFL students' metacognitive knowledge of reading strategies in an input-poor environment. *Language Awareness*, 10(4), 268-288.