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STRATEGIC PROCESSING OF ACADEMIC TEXT: IDENTIFYING A STRATEGIC READER

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ABSTRACT

The study aimed to explore the strategic processing of an academic text by students to discover the types of strategies employed. The research employed a qualitative case study method to investigate the cognitive processes that the subjects experienced as they were engaged in a reading task. The study was conducted at Universiti Teknologi MARA Sarawak (UiTMS) involving 10 out of 23 students from the Bachelor of Administrative Science (BAS) Programme, where permission was obtained from both the university and the respondents. The number of sample was small because the study focused on individual cases to generate data on strategic processing. The subjects were given an academic text to read in one lecture session and immediately after the silent reading session, the subjects were required to do retrospective written recall protocols (RWRP). The RWRPs of the subjects were inter-rated and analysed for the presence and occurrence of strategies which were identified using the Metacognitive Awareness Reading Strategies Inventory (MARSI) as guideline for interpretation. The findings revealed that the subjects were actively engaging strategic processing; they were using strategies to make meaning from the text. It was found that the subjects used more of global and support strategies rather than problem-solving strategies. Hence, it is possible to say that the subjects were strategic in their reading approach as evidenced from the analysis of the written protocols.

Keywords: Strategy. Cognitive. Written Protocols. Metacognitive. Awareness.

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INTRODUCTION

In Malaysia, university students of English as a second language (ESL) have to read large volumes of academic texts in English. However, as Dreyer and Nel (2003) discover, many students coming for university education are not prepared to meet the reading demands placed on them. More often than not, the students show a lack of ability to read selectively, that is, choosing and extracting what is important for their purpose while getting rid of what is insignificant and irrelevant. Dreyer (1998) found that the students often show a low level of reading strategy knowledge and lack the strategies required to successfully understand different types of texts which include argumentative and expository texts. Besides, these students often select ineffective and inefficient strategies with a lack of strategic intent and ability (Wood, Motz & Willoughby, 1998). According to Muniandy (2001), most Malaysian students, although having little problem in understanding academic texts in Malay, are having difficulties in comprehending academic texts in English. It is therefore necessary to explore and understand how Malaysian students process academic texts. There have been very few studies, notably by Pressley and Afflerbach (1995) that have explored fully the students' strategic processing of academic texts. In Malaysia, one study was conducted by Philip (2005), which delves into the metacognition of the students through assessment of the students' conditional knowledge. Since there is a gap in the literature as regards research into strategic processing of texts, there is certainly a need to conduct a study that explores strategic processing of texts by ESL students in universities. The study seeks to explore by means of qualitative inquiry on how the students are actually processing their reading texts to make meaning from those texts.

LITERATURE REVIEW

Paris, Wasik, and Turner (1991) found that readers who are not strategic often encounter difficulties in their reading. Hence, the goal of all reading instruction is to assist students into becoming expert readers so that they can achieve automaticity in strategy use and overall independence for lifelong learning and enjoyment. More importantly, learning to use strategies effectively is essential to constructing meaning.

Mokhtari and Richard (2002) are of the view that reading to learn requires comprehension, and any attempt to comprehend must involve *strategic reading* and *comprehension monitoring*, which are metacognitive behaviours. Brown (1980) proposed that the following metacognitive behaviours are essential for reading comprehension:

1. Understanding the purpose of the reading assignment (e.g., for enjoyment, to be able to explain a principle, to compare one story to another, to complete a worksheet)
2. Identifying the important aspects and main ideas of a message
3. Focusing attention on major content rather than trivial ones
4. Monitoring to determine if comprehension is occurring
5. Engaging in self-questioning to determine if one's goals in reading are being achieved
6. Taking corrective action when comprehension fails

Garner (1987) pointed out that if students are using those strategic metacognitive behaviours,

then they will actively use information from content and text grammar schemata to facilitate comprehension by making predictions about what is to come in a text and by monitoring their comprehension to determine if their predictions are met. The choice, maintenance, or modification of schemata during text comprehension requires monitoring (Carell, 1989). When a student listens or reads, he/she is matching the present information to his/her schema knowledge and making attempts to determine if he/she has a schema for what is being presented. As new information arrives, one must determine if it fits the selected schema or if another schema is needed. According to Grabe (2001), proficient readers have knowledge of cognition, and language which includes organization, patterns of structure and using suitable strategies that help them process a particular text. Being able to apply one's knowledge of cognition strategically is a metacognitive ability.

Metacognitive abilities ensure the successful comprehension of texts that enables learning via reading (Brown, 1987). There are two dimensions to metacognition. One dimension involves self-appraisal, or knowledge about cognition and conscious access to one's own cognitive operations and reflection about those of others. The other dimension of metacognition involves self-management, or regulation of cognition, which involves planning, evaluating, and regulating strategies (Jacobs & Paris, 1987; Schunk & Ertmer, 2000). Both types of metacognition are critical for reading comprehension. Many students with lack of reading abilities demonstrate weak control of their metacognitive abilities such as comprehension monitoring, planning of their own behavior, and they also lack metacognitive awareness so much so that they view planning strategy as something that they do not do. If students lack such metacognitive abilities, then they will not likely be able to recognize planning as an important strategy to understand the overall structure of the texts, nor will they attempt to use metacognitive strategies to interpret text and to monitor their own comprehension of the text.

The current literature on reading strategies has been shaped significantly by research on what expert readers do (Bazerman, 1985; Pressley & Afflerbach, 1995). These research studies illustrate that successful comprehension does not occur automatically. Rather, successful comprehension depends on directed cognitive effort, referred to as metacognitive processing, which consists of knowledge about and regulation of cognitive processing. During reading, metacognitive processing is expressed through strategies, which are "procedural, purposeful, effortful, willful, essential, and facilitative in nature" and "the reader must purposefully or intentionally or willfully invoke strategies" (Alexander & Jetton, 2000, p.295), and does so to regulate and enhance learning from text. Through metacognitive strategies, a reader allocates significant attention to controlling, monitoring, and evaluating the reading process (Pressley, 2000).

Pressley and Afflerbach (1995) elaborate that effective readers are strategic in the way they attack text material.

(1) They consciously plan for their reading:

• They preview the material to get a sense of its contents, scope, and organization.

From this preview, they activate prior knowledge about the topic and formulate some predictions and questions about what will be covered.
• They consider what kinds of reading skills they will need to use, based on their preview and on their knowledge of what the particular subject or content area typically requires.
• They clarify their purpose for reading, and select a reading style that will help them achieve that goal.

(2) As they read, they monitor their reading process:

• On one level, they are engaged with the content material of the text, making mental notes about important concepts, revising predictions, answering questions, and noting main and subordinate ideas.
On another level, they are observing and assessing their attitude toward the task and their reading style, and whether these are helping accomplish the purpose.

• They adjust their attitude and style as needed to improve comprehension—perhaps slowing their pace, restraining any impulsive desire to stop reading, redirecting their focus, or selecting fix-up strategies (e.g., rereading confusing passages and examining the context of unfamiliar words to ascertain meaning).

(3) After they read, they evaluate how well they understood the text:

• They summarize the text's main ideas. If needed, they reread or review certain passages.

• They appraise their learning in terms of their original purpose, and strategize how they might demonstrate that understanding if asked to do so. In addition to being strategic about their reading process, ideal readers are reflective.

• They mull over the text ideas both as they read and after they finish reading, weighing the information in light of their reading purpose.

• They analyze how the material aligns with their prior knowledge and experience, measuring it against what they believe, what they know, and what they have experienced.

• They make inferences and draw conclusions about what they read.

• They revise their schema as needed, incorporating new learning into their knowledge base.

• After reading, they continually extend and refine what they have learned, deepening their understanding of the material.

Thus, strategic processing of text in the form of awareness and monitoring of the comprehension process is critically important aspects of skilled reading (Pressley & Afflerbach, 1995; Sheorey & Mokhtari, 2001). Such awareness and monitoring is often referred to as "metacognition" which "entails knowledge of strategies for processing texts, the ability to monitor comprehension, and the ability to adjust strategies as needed" (Auerbach & Paxton, 1997: 240-1). According to Sheorey & Mokhtari (2001), it is the combination of conscious awareness of the strategic reading processes and the actual use of reading strategies that distinguishes the skilled from the unskilled readers. Studies in L1 and L2 contexts show that successful reading strategy use is dependent on whether a strategy is employed metacognitively (Jiménez, Garcia & Pearson, 1996). Studies also show that unsuccessful students lack this strategic awareness and monitoring of the comprehension process (Garcia, Jiménez & Pearson, 1998). These less successful students, who are often unaware of their own cognitive process, must be helped to acquire and use the reading strategies that have been found to be successful (Mokhtari & Reichard, 2004).

RESEARCH QUESTIONS

The research questions formulated to guide this study are as follows:

1. How do the students process academic texts strategically?
2. What are the strategies used by the students in strategic processing?

METHODOLOGY

The research employed a qualitative case study approach. The study was conducted at Universiti Teknologi MARA Sarawak (UiTMS) in Kota Samarahan, Kuching, Sarawak. It involved 10 undergraduates who were volunteers from Bachelor of Administrative Science (BAS) class doing a course on Critical Reading. Permission was obtained from the class lecturer to conduct the study, and the participants were voluntary. The reading materials used were comprised of academic texts extracted from academic reference books. Using the system metaphor, cases are seen as holistic entities that have parts and that act or operate in their environments. Based on Cresswell 's (2005, p.439) explanation, the types of cases that qualitative researchers often study include: The 'case' may be single individual, several individuals separately or in a group, a program, events, or activities (e.g., a teacher, several teachers, or the implementation of a new math program).

The ten undergraduate participants had obtained bands 3 or 4 in the MUET Exam. They were given an academic text, extracted from chapters of their reference book on management. The text which was about 500 word in length contains theoretical explanations of concepts in management. For each reading session the participants were given two hours to read and process the text. The instrument used to capture the strategic reading process was immediate retrospective written recall protocols (RWRP). The RWRP was used because it helps capture the cognitive process of the students as regards their reading process. Although concurrent think-alouds would be more accurate as the students can verbalise their thoughts while processing

texts, the researcher could not employ the instrument due to time constraints and the possibility of infringing onto the class process. The best that the researcher could do to explore the students' strategic processing was to use RWRP. This instrument is also valid because the students were asked to recall immediately after they have completed the reading task. In this way, the chances of students reporting their strategic processing are very high as their thoughts on processing the text were still fresh and current.

RESULTS

Data collection and analysis

The data obtained were in the forms of written recall protocols. The protocols were inter-rated in order to ensure validity of the occurrences of strategies. Two inter-raters were engaged to analyse the reports separately. These inter-raters were English language lecturers with years of teaching experience and highly qualified with masters' degrees in TESL. The data were analysed by looking for occurrences of strategy use based on MARSI. The MARSI Inventory was not scored statistically but was used as reference to determine the occurrence of use of the three main strategy categories: Global strategies, support strategies and problem-solving strategies. In this paper, in answering the two research questions, only the data obtained from three out of ten subjects were discussed here due to the limitation of the requirements set by this journal.

How do the students process academic texts strategically?

The subjects were given academic text to read and comprehend. Once they have finished reading, they were required to think aloud their thinking process retrospectively. This means that the students were required to do immediate retrospective written recall protocol (RWRP) to self-report on their thinking process as they tried to comprehend the texts. Before engaging in the actual written recall protocol, the students were trained in the self-reporting by emphasising the kinds of strategies that they were using to comprehend the text. In fact, prior to the study, the students were involved in discussions regarding the strategies that they might have been using during their reading practice, they were also informed of the strategies that could be used to comprehend academic text strategically. The students' written recall protocols were analysed and interpreted to show evidence of strategic processing. Selected excerpts were taken from each student's protocols to illustrate any evidence of strategic processing.

Student 1 (S1)

The report by the researcher based on the interpretation of S1's retrospective written recall protocol (RWRP) excerpt is given below and the occurrence of strategies are indicated in bold letters:

S1 described **looking at the text** from the title which he found clear and that he knew that the text would touch on the stages or steps of Maslow's Hierarchy of needs. He described doing **skimming of** the text before reading it. He also started to look for specific points by looking for main ideas. He drew a chart to explain his own understanding of the text. He tried to fit examples in his mind map to identify the meanings easily. Some parts, he tried to make **an**

intelligent and logical guess to get better understanding. He described that he did a lot of guessing when he did not know the meaning of words because some words were quite difficult. As far as content was concerned, he claimed that he had learned it in his management class so he tried to recall **what he already knew**. He found it easier to put ideas into short sentence. In **summarization**, he tended to integrate events, ideas into shorter phrase. Sometimes in the reading process he related getting stuck because of vocabulary. He would normally **ask his friends or the teacher for help**. He found that this helped him to know their meaning.

Student 2 (S2)

The report by the researcher based on the interpretation of S2's retrospective written recall protocol (RWRP) excerpt is given below and the occurrence of strategies are indicated in bold letters:

S2 related his strategic processing by first making **preview** of the article. Then he analysed and decided on strategies to use. He tried to **scan and then skim** for general ideas. S2 found that some parts of the passage were difficult for him to understand so he tried to **recall on his background knowledge** on the issue. He recalled having remembered learning about Maslow's Hierarchy in his diploma days and so he tried to apply what he knew and tried to understand the concept. He made review and evaluated his strategies and then modified it and implemented new strategy. This was because, according to him, sometimes he got stuck with one strategy like making a guess on meaning of vocabulary which was not effective. When he could not understand he **tried to ask ask friend** about it or ask the teacher. So he tried to change his strategy to suit how well he could understand the passage. Sometimes before asking his coursemates or teacher, he tried **looking for some clues** in the article so that he could get the meaning. But not many clues could be found in the article to help understand the meaning of words. S2 found that even to look for the main points was also difficult.

Student 3 (S3)

The report by the researcher based on the interpretation of S3's retrospective written recall protocol (RWRP) excerpt is given below and the occurrence of strategies are indicated in bold letters:

S3 described **scanning** through the text because she found the text not familiar. S3 also claimed that she **used her academic knowledge** to predict the content. She even drew a **graphic organizer**. She also **double-checked** to confirm whether the information given was correct. She felt that by doing mind-mapping a longer text can be shortened. She found this helps as it makes it easier for her to remember the main ideas in the text and it helps simplify the memorization process. As she read without any dictionary around, she reported that she tended to **make a guess** from the passage. Sometimes her guessing was incorrect, so she said that she would normally **countercheck with her classmates**. If her classmates could not tell her the meaning she went on to ask the teacher for the meaning. She reported that when there were a lot of tips or **clues from the passage** it would be easier for her to understand a word or phrase. She even recommended that when reading, it pays to always look for the topic sentence in the first line in a paragraph because it helps getting the main idea in the passage.

What are the strategies used by the students in strategic processing?

Student 1 (S1)

Table 1: Strategies used by S1

	Evidence of strategies from RWRP	MARSI-Based Strategy Category
1	*I looked at the text, I skimmed, make an intelligent and logical guess, recall what I already know*	GLOBAL STRATEGIES
2	*Summarization, ask my friends or the teacher*	SUPPORT STRATEGIES
3	NIL	PROBLEM-SOLVING STRATEGIES

S1 used mostly global as well as support strategies. There were no evidence of problem-solving strategies probably because the task at hand did not require him to engage problem-solving strategies. S1 indeed provided some evidence of strategic processing based on interpretation of certain terms and phrases taken from his RWRP excerpt: *I looked at the text, I skimmed, make an intelligent and logical guess, recall what I already know, summarization*, and *as my friends or the teacher.* S1 seems to demonstrate abilities of a strategic reader.

Student 2 (S2)

Table 2: Strategies used by S2

	Evidence of strategies from RWRP	MARSI-Based Strategy Category
1	*preview, scan and then skim, recall my background knowledge, and looking for some clues.*	GLOBAL STRATEGIES
2	*I try to ask my friend*	SUPPORT STRATEGIES
3	NIL	PROBLEM-SOLVING STRATEGIES

Quite similarly, S2 used only global and support strategies but not problem-solving strategies. In the above report, S2 shows evidence of strategies from the excerpt of his RWRP*: preview, scan*

and then skim, recall my background knowledge, I try to ask my friend, and looking for some clues. This confirms that S2 was moderately strategic vis-à-vis a highly strategic reader who employs a lot of strategies to facilitate his text processing task.

Student 3 (S3)

Table 3: Strategies used by S3

	Evidence of strategies from RWRP	MARSI-Based Strategy Category
1	*scanned, used my academic knowledge, graphic organizer, double-checked, make a guess, and clues from the passage.*	GLOBAL STRATEGIES
2	*countercheck with my classmates*	SUPPORT STRATEGIES
3	NIL	PROBLEM-SOLVING STRATEGIES

S3 also utilised only global and support strategies for her reading task. S3 also engaged some strategies in the meaning-making process***:*** *scanned, used my academic knowledge, graphic organizer, double-checked, make a guess, countercheck with my classmates, and clues from the passage.* S3 shows much of strategic ability in processing meanings from the text; she is a strategic reader.

DISCUSSION

Skilled readers also search for specific information and are able to formulate questions. Good readers are more aware of the strategies they use, and are more flexible in adapting strategies than poor readers (Block, 1986). Moreover, good readers adjust their strategies to the type of text and to the purpose of reading. They distinguish between important information and details as they read, and are able to use clues in the text to predict new information and relate it to previous knowledge (Stewart and Ebo, 1985). The participants in the study demonstrated the use of such strategies reflecting that they were good readers themselves. Research has also shown that more effective readers employ metacognitive strategies before, during and after their reading in order to enhance comprehension (Swanson, 1993).

In a study by Zimmerman (1990), successful readers are active participants. They use their previous knowledge in order to comprehend a text, and as they learn new information they modify their original schemata, ie. knowledge structures associated with a specific state, event or concept. On the other hand, the primary difficulty for poor learners is lack of coordinating

thinking processes (Cohen, 1987). Low-achieving readers need to acquire strategies that will result in comprehension, through assisting, motivating and building confidence which are essential in improving the performance of these students.

Based on the evidence of strategic processing obtained from the students' immediate retrospective written recall protocols, it was found that the three subjects were generally strategic readers. The two readers demonstrated that they used global strategies like previewing, planning, skimming, scanning, looking for key terms and several others. The readers were also actively engaging support strategies such as looking for assistance from peers as well as teachers. There was however a lack of use in terms of problem-solving strategies, probably because the subjects could manage without engaging problem-solving strategies. A lack of use of problem-solving strategies however, did not deter the process of understanding the text on the part of the learners. What the three students did was that they actively engaged strategies in their reading process. This seems to be in line with what other researchers had previously found out. During reading, metacognitive processing is expressed through strategies, which are "procedural, purposeful, effortful, willful, essential, and facilitative in nature" and "the reader must purposefully or intentionally or willfully invoke strategies" (Alexander & Jetton, 2000, p.295), and does so to regulate and enhance learning from text. What the learners in the study did was to engage strategies at controlling, monitoring and evaluating their reading process.

The subjects employed a varied range of strategies in their text processing. Their strategy use was assessed and interpreted using the MARSI Inventory (Appendix) as guideline in determining the types of the strategies. Based on MARSI, the types of strategies used by the subjects were mainly Global strategies and Support strategies. There was only one instance of problem-solving strategies being used. The Global strategies used include *I looked at the text, I skimmed, make an intelligent and logical guess, recall what I already know preview, scan and then skim, recall my background knowledge, and looking for some clues, scanning, used my academic knowledge, graphic organizer, double-checked, make a guess, and clues from the passage, Looking at the title, recall all my past knowledge, graphic organizer* and, the support strategies used include *Summarization, ask my friends or the teacher, countercheck with my classmates, summarise the topic, I usually ask the teacher for the correct answer, , jotted down some main points. .*

The research provides some evidence of strategic processing carried out by students as they were engaged in an academic reading task. The evidence opens a window into the minds of the learners so much so that it is possible for the teachers to determine how the learners approach their reading text to make meanings from it. The teacher will have clues as to the kinds of strategies that learners use at the beginning of the reading task, while reading and after reading. This finding can help inform the teaching techniques for reading instruction. In fact, the findings seem to suggest that before actual reading task is given, it is recommended that some form of strategy instruction is important. The learners can be explicitly taught the strategies that learners commonly and successfully use to process a reading text. Strategy instruction should include as many strategies as possible to equip learners with the necessary techniques for them to attack an academic text.

CONCLUSION

Strategic processing is critical to successful comprehension of a reading text. Strategic readers have strong metacognitive skills and monitor their reading. As illustrated by the evidence, they used strategies to strategically process difficult passages, that is, processing the information at a deeper level in order to use it in a meaningful way. The study was significant especially for teachers teaching reading comprehension because it provides hard evidence of the kind of cognitive processing that learners are engaging in as they process a reading text. Based on the evidence, teachers are able to look into the process that actually takes place in the 'black box' or the minds of the learners.

The study was also significant to reading teachers because with the data obtained, teachers are able to understand what strategies would be useful and not useful for students to assist their reading comprehension process. This knowledge on the part of the teacher is very important to help guide them in teaching academic reading. The teachers should be able to select strategies that were found reasonably useful to be taught explicitly to their students before allowing them to engage in academic reading tasks. In this way, the students would be better equipped to comprehend the texts more effectively. For future research, it is recommended that a more in-depth qualitative research be done involving more types of texts to enable generation of huge volume of written recall protocols. If possible, the use of concurrent think-aloud procedures would have ensured better reliability and validity as well as accuracy of the strategic processing as the data would be reported concurrently, that is, while reading the reader is also verbally reporting on the strategies they are using 'there and then' (simultaneously) . The use of triangulation involving interviews of the subjects involved would also be useful as there is a need to counter-check the data obtained from written recall protocols.

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APPENDICES

Metacognitive Awareness of Reading Strategies Inventory MARSI (Version 1.0)

Directions: Listed below are statements about what people do when they read *academic or school-related materials* such as textbooks or library books.

GLOBAL STRATEGIES

GLOB 1. I have a purpose in mind when I read.
GLOB 3. I think about what I know to help me understand what I read.
GLOB 4. I preview the text to see what it's about before reading it.
GLOB 7. I think about whether the content of the text fits my reading purpose.
GLOB 10. I skim the text first by noting characteristics like length and organization.
GLOB 14. I decide what to read closely and what to ignore.
GLOB 17. I use tables, figures, and pictures in text to increase my understanding.
GLOB 19. I use context clues to help me better understand what I'm reading.
GLOB 22. I use typographical aids like boldface and italics to identify key information.
GLOB 23. I critically analyze and evaluate the information presented in the text.
GLOB 25. I check my understanding when I come across conflicting information.
GLOB 26. I try to guess what the material is about when I read.
GLOB 29. I check to see if my guesses about the text are right or wrong.

SUPPORT STRATEGIES

SUP 2. I take notes while reading to help me understand what I read.
SUP 5. When text becomes difficult, I read aloud to help me understand what I read.
SUP 6. I summarize what I read to reflect on important information in the text.
SUP 9. I discuss what I read with others to check my understanding.
SUP 12. I underline or circle information in the text to help me remember it.
SUP 15. I use reference materials such as dictionaries to help me understand what I read.
SUP 20. I paraphrase (restate ideas in my own words) to better understand what I read.
SUP 24. I go back and forth in the text to find relationships among ideas in it.
SUP 28. I ask myself questions I like to have answered in the text.

PROBLEM-SOLVING STRATEGIES

PROB 8. I read slowly but carefully to be sure I understand what I'm reading.
PROB 11. I try to get back on track when I lose concentration.
PROB 13. I adjust my reading speed according to what I'm reading.
PROB 16. When text becomes difficult, I pay closer attention to what I'm reading.
PROB 18. I stop from time to time and think about what I'm reading.
PROB 21. I try to picture or visualize information to help remember what I read.
PROB 27. When text becomes difficult, I reread to increase my understanding.
PROB 30. I try to guess the meaning of unknown words or phrases.