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ESP STUDENTS' EXPERIENCES OF CONTENT AREA READING

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Abstract

This study is intended to study the reported reading strategy use of ESP students, and attempts to explore the factors that influence student motivation to read content area textbooks. The subjects are students from four majors at China Medical University. The results show that the subjects are not metacognitively aware readers in content area reading. They are still not skilled in using effective strategies to help themselves solve the reading problems. Therefore, they (especially LEP students) rarely read the English textbooks actively, and tend to avoid reading the text itself because of reading problems and learning anxiety. Some suggestions are provided for teachers to enhance students' learning experiences and outcomes.

Key words: ESP, content area reading, metacognitively aware readers, effective strategies, reading problems

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INTRODUCTION

More and more college students understand the importance of content area reading (CAR), but they rarely read the English textbooks actively (Shen, 2003). Often, we erroneously judge students as lazy due to their perceived reluctance to engage in reading. However, most of the reasons why they avoid reading are that they are commonly confronted with difficulties when faced with the textbooks completely written in English (Rasinski & Padak, 2005; Fang, 2006; Shen, 2006). That is why there is a great gap between teacher expectations and student achievement (TESA) (Chang, 2001). Therefore, the critical tasks for English teachers in ESP (English for Specific Purposes) or EAP (English for Academic Purposes) programs are to understand students' problems in content area reading and to help them solve the problems through acquiring reading strategies so as they can develop from passive to active readers.

LITERATURE REVIEW

Students' mastery of subject matter rests heavily upon their ability to read proficiently (Strong, et al, 2002). Difficulties in reading can be due to reading fluency difficulties. Poor readers tend to direct much effort into word recognition and decoding more than attempting to understand text meaning (Moore & Kirby, 1981). But comprehension is the reason for reading (Boulware-Gooden, et al, 2007), and according to Massey and Heafner (2004), "decoding does not guarantee comprehension". The result is that many students who can read fluently are unable to comprehend the words that they read (Pressley & Block, 2002).

Reading comprehension is both a subconscious and conscious act. As readers become more cognizant of the processes involved, they can apply appropriate cognitive strategies for textbook understanding. Implementing appropriate cognitive strategies is referred to as Metacognition (Burley & Others, 1985). Metacognition is

an important component to the reading process. It has been defined as having knowledge (cognition) and having understanding, control over, and appropriate use of that knowledge (Tei & Stewart, 1985). Thus, it involves both the conscious awareness and the conscious control of one's learning.

The concept of metacognition involves two processes: an awareness of certain skills (strategies and resources that are needed to perform a task effectively), and the ability to use self-regulatory mechanisms to ensure the successful completion of the given task. Effective readers are not only aware of but also use strategies to plan, monitor and evaluate their work (Simpson, 1986; Goldberg, 1999; Conner, 2007; Kurt, 2007). They can distinguish between important and unimportant information in the text. Mostly, they elaborate on important parts of the text and tend to use the most effective strategy that leads to a thorough processing of the text (e.g., skimming, rereading, underlining, etc.).

Furthermore, effective readers have a variety of strategies to help fix-up their reading when they are struggling. They will mentally underline words which they don't know as they read, and adjust their reading or shift speeds to fit their purpose. Instead of getting stuck while reading, effective readers can live with uncertainty, skip over difficult words and read on by making intelligent guesses and negotiating meaning based on context clues (Goodman, 1967).

When reading in content areas, effective readers master the fluent recognition of all the codes making up a written text. They can apply their knowledge of word origins to determine the meaning of new words encountered in reading materials and to use those words accurately. They can maximize their use of context clues and make predictions about the text by the titles, key words, headings, introductions, pictures, illustrations, etc. They also can activate their schema, relevant prior knowledge which helps them relate to the topic they are working on, and make inferences by connecting prior knowledge and experience with information from the text.

Historically, there have been two paths to studying metacognition: assessing the

knowledge one has about a particular domain and/or determining the executive strategies that regulate one's thinking (Jacobs & Paris, 1987). Many researchers have studied the strategies that regulate thinking in regards to reading (Allen, 2003; Mokhtari & Reichard, 2002). Mokhtari and Reichard (2002) develop an inventory to determine metacognitive awareness and perceived use of reading strategies of adolescents and young adults. They identify three factors important to reading metacognition: global reading strategies, problem-solving strategies, and support reading strategies.

According to Mokhtari and Reichard, global reading strategies are those related to the whole text, such as deciding what to pay close attention to and what to ignore. Problem-solving strategies refer to the approach readers might take when difficulties arise, such as reading slower or rereading. Support strategies are other strategies such as taking notes or using outside references. These three classes of strategies interact with and support each other when used in the process of constructing meaning from text.

RESEARCH QUESTIONS

The research literature on metacognitive awareness of reading strategies indicates the need to increase our understanding of readers' metacognitive knowledge about reading and reading strategies so that individuals develop into active, constructively responsive readers. Therefore, this study is intended to examine the strategy use of ESP students, specifically English for Medical Purposes (EMP) students from China Medical University, and further to explore the factors that influence their motivation to read.

This study attempts to find answers to the following questions:

1. What are students' views on content area reading?
2. What problems do students have in content area reading?
3. What is students' general approach to content area reading? Are they

metacognitively aware readers?

4. Are there any differences in the process of content area reading between high and low English proficiency students? Do they use different reading strategies to aid text comprehension?

METHODS

To achieve the research objectives stated above, 120 students enrolled in a Practical English course at China Medical University in 2005 served as subjects, 30 each from four different majors: Medical Radiological Technology, Nutrition, Public Health, and Health Services Administration. Each of them had the experience of content area reading. According to student performance in Practical English, the bottom half of students (N=60) were classified as low English proficiency students (low achievers), and the top half (N=60) as high English proficiency students (high achievers).

The primary research instrument was a 13-item questionnaire which consisted of six categories of questions: (1) Views on content area reading (Items 1-2); (2) Problems in content area reading (Items 3-5); (3) Situation of using content area textbooks (Items 6-9); (4) Views on how to develop content area reading skills (Item 10); (5) Testing strategies (Item 11); (6) Reading strategies (Items 12-13) (please refer to Appendix A).

Items 12 and 13 focused on understanding what strategies students used in the chapter reading and how such strategies were used. Item 12 was related to the chapter reading process, and Item 13 was concerned with the frequency of strategy use in chapter reading. In Item 13, students' metacognitive awareness of reading strategies was assessed by eighteen sub-questions on a 4-point scale, modified from the Metacognitive Awareness of Reading Strategies Inventory (MARSI) (Mokhtari & Reichard, 2002), which was designed for measuring adolescent and adult students' awareness and use of reading strategies while reading academic or school-related

materials.

There were two types of multiple choice questions in the questionnaire: single-answer and multiple-answer. Single-answer questions allowed one and only one answer to be chosen; but multiple-answer questions allowed one or more answers to be chosen. There were two to five answers provided for single-answer questions. If the question had four answers to choose from, the chosen answer was scored on a 4 to 1 scale. That is, the first answer was given 4 points; the second answer 3 points; and so forth.

Two to ten answers were provided for multiple-answer questions. In order to get the ranking of the given answers in each question, students were asked to list all their choices for one question in order of priority. The scoring method was as follows: If Answer A was put on the first place twice and on second place once in a 6-answer question, its mean score would be (6×2+5×1) divided by the number of students.

Students had 15 to 20 minutes to answer the questions. To understand students' views, reading problems, and general approach to content area reading, the collected data were analyzed by SPSS computer software to get the mean scores. Besides, T-tests were performed to assess the similarities and differences between high achievers and low achievers. Ranking was also done to determine the order of all the answers to each question.

RESULTS

Views on Content Area Reading

From the results in Table 1, according to the rank order, students think they "ought to" use content area textbooks more than "fear to", "try not to", and "expect to" use them. They have low expectations to use those books. There are significant differences between the two groups in their responses to the two answers "expect to" and "fear to". High achievers have higher expectations to use content area textbooks,

but low achievers are more afraid to use them.

Table 1 Views on content area reading

(multiple-answer)	High		Low		t-value	*p*	Subtotal	
	mean	rank	mean	rank			mean	rank
● Q1: How do you feel about using content area textbooks?								
A. expect to	1.35	2	0.27	4	4.68	0.00**	0.81	4
B. ought to	3.30	1	3.15	1	0.70	0.49	3.23	1
C. fear to	1.22	3	2.13	2	-2.98	0.00**	1.68	2
D. try not to	0.88	4	1.10	3	-0.79	0.43	0.99	3

* p<0.05; ** p<0.01

In Table 2, students expect to "improve English proficiency" through the development of content area reading skills more than to "gain content knowledge" and to "help develop my future career". But the opinions of the two groups differ on the purposes of content area reading. High achievers more expect to "gain content knowledge", but low achievers more expect to "improve English proficiency" and to "help develop my future career".

Table 2 Purposes of content area reading

(multiple-answer)	High		Low		t-value	*p*	Subtotal	
	mean	rank	mean	rank			mean	rank
● Q2: You think content area reading skills are developed to								
A. gain content knowledge.	2.07	1	1.08	3	4.90	0.00**	1.58	2
B. improve English proficiency.	1.98	2	2.37	1	-2.09	0.04*	2.18	1
C. help develop my future career.	0.87	3	1.87	2	-5.63	0.00**	1.37	3

* p<0.05; ** p<0.01

Problems in Content Area Reading

In Table 3, the biggest factor affecting students' content area reading is that "there is too much to read", but reading speed, English reading skills, and content knowledge also play some roles in their reading process. Regarding the group differences, low achievers think that they "lack sufficient English reading skills" and "desire to escape from the pressure of learning" more than high achievers do. On the whole, the significant overall mean difference (p=0.01) indicates that low achievers have more difficulties in content area reading.

Table 3 Biggest obstacles to content area reading

(multiple-answer)	High		Low		t-value	p	Subtotal	
	mean	rank	mean	rank			mean	rank
● Q3: The biggest obstacles to content area reading are that								
A. I lack sufficient English reading skills.	2.78	4	3.75	3	-2.36	0.02*	3.27	3
B. I lack sufficient content knowledge.	3.18	3	3.05	5	0.36	0.72	3.12	4
C. there is too much to read.	4.60	1	4.28	1	1.09	0.28	4.44	1
D. my reading speed is too slow.	3.30	2	3.90	2	-1.73	0.09	3.60	2
E. the words are too small.	0.73	6	0.60	6	0.58	0.56	0.67	6
F. I desire to escape from the pressure of learning.	2.08	5	3.60	4	-3.80	0.00**	2.84	5
Overall	2.78		3.20		-2.50	0.01*	2.99	

* p<0.05; ** p<0.01

As for the obstacles in professional fields, Table 4 shows similar results for both groups. They think their reading problems result from "limited terminology knowledge" more than from "limited content knowledge".

Table 4 Professional obstacles

(multiple-answer)	High		Low		t-value	*p*	Subtotal	
	mean	rank	mean	rank			mean	rank
● Q4: The biggest professional obstacles are								
A. limited terminology knowledge.	1.72	1	1.67	1	0.49	0.63	1.69	1
B. limited content knowledge.	1.02	2	1.12	2	-0.82	0.42	1.07	2
Overall	1.37		1.39		-0.28	0.78	1.38	

In Table 5, students think the major linguistic obstacle is that they "still can not understand the sentences after looking up unfamiliar words in the dictionary", followed by the reasons that they have "poor vocabulary skills", and they are "unable to summarize the main ideas of a paragraph or a chapter". But low achievers have more problems with sentence interpretation and summarization than high achievers. The significant overall mean difference (p=0.02) also shows that low achievers encounter more linguistic obstacles in content area reading.

Table 5 Linguistic obstacles

(multiple-answer)	High		Low		t-value	*p*	Subtotal	
	mean	rank	mean	rank			mean	rank
● Q5: The biggest linguistic obstacles are								
A. because of poor vocabulary skills.	2.00	1	1.68	3	1.63	0.10	1.84	2
B. I still can not understand the sentences after looking up unfamiliar words in the dictionary.	1.78	2	2.43	1	-4.15	0.00**	2.11	1
C. I am unable to summarize the main ideas of a paragraph or a chapter.	1.23	3	1.70	2	-2.30	0.02*	1.47	3
Overall	1.67		1.94		-2.37	0.02*	1.81	

* p<0.05; ** p<0.01

Situation of Using Content Area Textbooks

In Table 6, four single-answer questions are discussed to describe the situation of using content area textbooks. There are two answers "yes" and "no" to Question 6. The following data show that most students have ever tried to read unfamiliar content area textbooks independently.

Five answers provided for each of Questions 7 and 8 are "more than 5 hours", "3-4 hours", "1-2 hours", "1 hour", and "0 hour". From the results, we can see students spend about 1 hour reading content area textbooks before class and about 1-2 hours after class every week.

Question 9 has five answers to choose from: "a whole chapter 2 times", "a whole chapter", "half a chapter", "1-2 paragraphs", and "1 paragraph". The mean score is 3.21 out of 5, which means students can finish about half a chapter in four hours.

According to the two groups, they have similar independent reading experiences. But it seems that high achievers spend more time on the textbooks after class, and they can finish more than low achievers do.

Table 6 Situation of using content area textbooks

(single-answer)	High	Low	Subtotal	Relative meaning
	mean	mean	mean	
Q6: Have you ever tried to read unfamiliar content area texts independently?	1.95	1.80	1.88	Most students have.
Q7: How many hours do you spend reading content area texts before class per week?	2.02	2.15	2.08	About 1 hour
Q8: How many hours do you spend reading content area texts after class per week?	3.05	2.60	2.83	About 1-2 hours
Q9: How much reading can be completed by you in 4 hours?	3.43	2.98	3.21	About half a chapter

Views on How to Develop Content Area Reading Skills

Table 7 shows that the rank order for each group is very similar. Both groups think the best way to develop content area reading skills is "improving English reading skills", followed by "spending more time reading content area textbooks", "improving vocabulary skills", and "developing content knowledge". In their opinions, the last two ways to help develop these skills are "asking teachers and classmates about content area reading skills", and "sharing the load of reading with classmates".

There is only one significant difference (p=0.00) between the two groups. That is, even though the answer "sharing the load of reading with classmates" is ranked 5 out of 6 for high achievers, they agree with the benefit of such a strategy more than low achievers do.

Table 7 Views on how to develop content area reading skills

(multiple-answer)	High		Low		t-value	p	Subtotal	
	mean	rank	mean	rank			mean	rank
● Q10: What are the best ways to develop content area reading skills?								
A. Improving vocabulary skills	3.25	3	3.42	3	-0.41	0.68	3.33	3
B. Improving English reading skills	3.82	1	3.88	1	-0.18	0.86	3.85	1
C. Developing content knowledge	3.13	4	2.95	4	0.46	0.65	3.04	4
D. Spending more time reading content area textbooks	3.55	2	3.65	2	-0.26	0.79	3.60	2
E. Sharing the load of reading with classmates	2.53	5	1.40	6	2.88	0.00**	1.97	6
F. Asking teachers and classmates about content area reading skills	2.42	6	1.97	5	1.10	0.28	2.19	5
Overall	3.12		2.88		1.42	0.16	3.00	

* p<0.05; ** p<0.01

Testing Strategies

The purpose of the question in this section (Question 11) is to explore students' testing strategies for the courses using content area textbooks. In Table 8, we can obviously see that when preparing for exams, students take "reading the handouts from teachers" as their first priority, and its mean score (7.64) is much higher than the others'. Before "reading the English textbooks" (ranked 4 out of 10), they also use two other testing strategies, "looking up new words in the English-Chinese dictionary" and "reading collaborative hypertexts (共筆)". And they use the English-Chinese dictionary more often than the professional dictionary.

Table 8 Testing strategies

(multiple-answer)	High		Low		t-value	*p*	Subtotal	
	mean	rank	mean	rank			mean	rank
● Q11: What are your testing strategies for the courses using content area texts?								
A. Looking up new words in the English-Chinese dictionary	5.65	3	5.98	3	-0.48	0.63	5.82	2
B. Looking up the terms in the professional dictionary	4.50	5	3.90	6	0.80	0.43	4.20	5
C. Reading the texts (English version)	5.78	2	3.87	7	2.37	0.02*	4.83	4
D. Reading the texts (Chinese translated version)	1.90	7	4.05	4	-2.99	0.00**	2.98	7
E. Reading Chinese reference materials	3.72	6	3.95	5	-0.33	0.74	3.83	6
F. Collaborating with classmates	1.22	8	2.87	8	-2.86	0.01**	2.04	8
G. Reading collaborative hypertexts	5.33	4	6.02	2	-1.02	0.31	5.68	3
H. Reading the handouts from teachers	7.32	1	7.97	1	-1.25	0.21	7.64	1
I. Guessing the exam questions	1.03	9	1.62	9	-1.24	0.22	1.33	9
J. Reciting the answers in retired tests	0.27	10	1.18	10	-2.57	0.01*	0.73	10
Overall	3.67		4.14		-1.98	0.05*	3.91	

* p<0.05; ** p<0.01

There are four significant differences between the two groups. In Figure 1, we can see high achievers use the strategy of "reading the English textbooks" more frequently; yet low achievers use the strategies of "reading the Chinese translated version", "collaborating with classmates", and "reciting the answers in retired tests" more often than high achievers.

Furthermore, for high achievers, "reading the English textbooks" is ranked 2 out of 10, but for low achievers, its mean score (3.87) is not high and it is ranked 7. Such a result is very similar to the above findings. That is, low achievers "fear to" use content area textbooks and "desire to escape from the pressure of learning". Therefore, before reading the textbooks, they would rather search other sources for help, so they use more testing strategies (p=0.05) than high achievers.

For both groups, Chinese reference materials are used as one source to help them prepare for exams. And they rarely use the testing strategies of "collaborating with classmates", "guessing the exam questions", and "reciting the answers in retired tests".

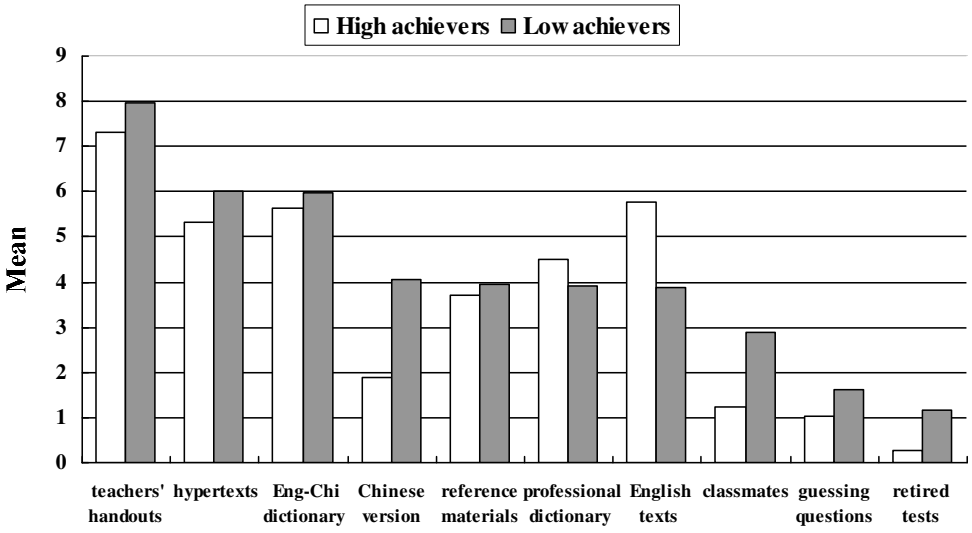

Figure 1 Testing strategies

Reading Strategies

From the results in Table 9, we find that in the chapter reading process, students begin with reading the chapter titles, subheadings, introduction, and pictures/tables; then they skim the chapter and read the text itself; finally, they read the conclusion, boldface/italics words and footnotes.

Both groups have the same rank order in the beginning, starting by reading the chapter titles and subheadings, but differences between them appear in the following results. In Figure 2, low achievers seem to follow the page order when reading a chapter: chapter titles, subheadings, introduction, text, pictures/tables, boldface/italics words, conclusion and footnotes. "Reading the text itself" is ranked 4 out of 9. "Skimming the chapter" is the last second (ranked 8) strategy used in their chapter reading.

But for high achievers, the answer "reading the text itself" is ranked 7. It means that before reading the text, they will read the chapter titles, subheadings, introduction, pictures/tables and conclusion. The skimming strategy is ranked 3, right after they read the chapter titles and subheadings.

Table 9 Chapter reading process

(multiple-answer)	High		Low		Subtotal	
	mean	rank	mean	rank	mean	rank
● Q12: What is your chapter reading process?						
A. Skimming the chapter	5.42	3	2.27	8	3.84	5
B. Reading the chapter titles	7.18	1	5.95	1	6.57	1
C. Reading the introduction	4.82	4	4.45	3	4.63	3
D. Reading the subheadings	5.53	2	5.15	2	5.34	2
E. Reading the text itself	2.92	7	4.18	4	3.55	6
F. Reading the pictures or tables	4.53	5	3.90	5	4.22	4
G. Reading the boldface or italics words	2.72	8	3.57	6	3.14	8
H. Reading the footnotes	0.63	9	1.60	9	1.12	9
I. Reading the conclusion	3.87	6	2.55	7	3.21	7

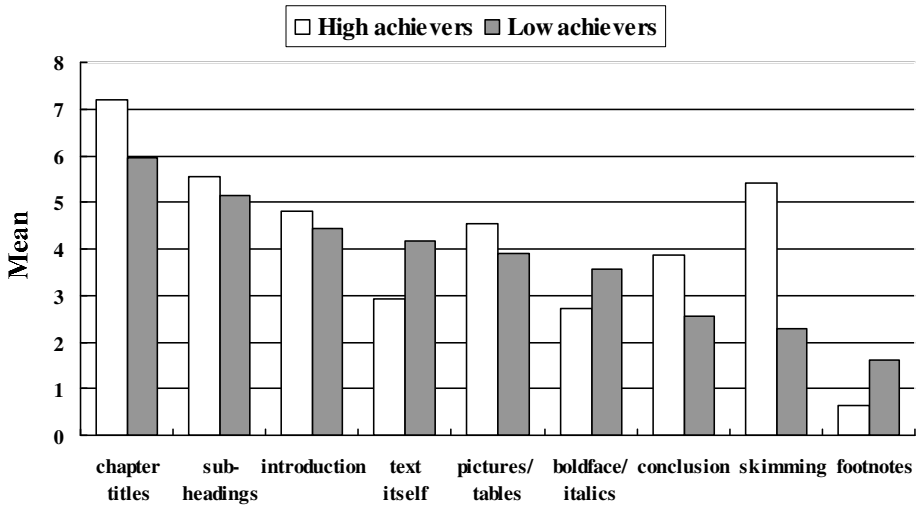

Figure 2 Chapter reading process

There are eighteen sub-questions on the topic "Frequency of strategy use in chapter reading", six each related to global reading strategies, problem-solving strategies, and support reading strategies. Each of them is a single-answer question with four answers: "always", "often", "sometimes", and "never"; these variables are measured on a 4-point scale from 4 to 1. If the mean score is between 1.0 and 1.3, then the frequency is "close to never"; if the mean score is between 1.7 and 2.0, then the frequency is "close to sometimes"; and so on.

In Table 10, we find that the overall mean score is 2.51 out of 4, which means the average frequency for all 120 subjects to use these eighteen strategies is "between sometimes and often". Analyzed by one-way ANOVA, a significant difference (p=0.00) is found in the frequency of use of the three categories of strategies. That is, students use problem-solving strategies and support reading strategies more often than global reading strategies.

The strategy which students use most frequently is "underlining unknown parts". It's the only strategy with a mean score (3.15) higher than 3, and the frequency is "close to often". Other strategies (close to) often used in chapter reading are

"guessing the meaning of unknown words", "using the English-Chinese dictionary", "rereading unknown parts", and "using the professional dictionary". The last three strategies they use are "completing a whole chapter without a break" (close to sometimes), "fast reading without dictionaries" (close to sometimes) and "discussing with teachers" (between sometimes and never).

As for the group differences, global reading strategies are the least used in each group's reading process, but high achievers use these three categories of strategies more frequently. Therefore, the overall mean score of high achievers (2.65) is significantly higher than low achievers' (2.37).

The strategies significantly more frequently used by high achievers include: (1) three global reading strategies, "using context clues", "using prior knowledge", and "thinking about the author's ideas"; (2) three problem-solving strategies, "rereading unknown parts", "skipping over unknown parts", and "applying word analysis skills"; (3) two support reading strategies, "underlining unknown parts", and "taking notes".

The only strategy significantly more often used by low achievers is "using the English-Chinese dictionary." The other higher frequency, though not significant, appears when low achievers use the strategy of "discussing with classmates". Both of these two strategies belong to the class of support reading strategies.

In Figures 3 and 4, obvious rank differences between the two groups are found in the following strategy use: "skipping over unknown parts" (high=3, low=10), "taking notes" (high=9, low=14), "using the English-Chinese dictionary" (high=10, low=1), "applying word analysis skills" (high=11, low=16), and "discussing with classmates" (high=14, low=6). Generally speaking, the overall mean score of high achievers is much higher than low achievers', which means that when reading a chapter, high achievers use these eighteen strategies more frequently than low achievers.

Table 10 Frequency of strategy use in chapter reading

(18 single-answer sub-questions)	High		Low		t-value	*p*	Subtotal	
	mean	rank	mean	rank			mean	rank
• Q13: When reading content area textbooks,								
(1) I use tables, figures, and pictures in text to increase my understanding.	2.83	6	2.33	8	2.84	0.01**	2.58	8
(2) I use prior knowledge to aid comprehension.	2.80	7	2.38	7	2.11	0.04*	2.59	7
(3) I think about the author's ideas.	2.73	8	2.30	11	3.03	0.00**	2.52	9
(4) I predict what the next paragraph will be about.	2.53	13	2.27	13	1.97	0.05	2.40	13
(5) I complete a whole chapter without a break.	2.42	15	2.15	15	1.77	0.08	2.28	16
(6) I read rapidly without dictionaries.	2.23	17	2.00	17	1.73	0.09	2.12	17
(Global Reading Strategies)	***2.59***		***2.24***		***5.40***	***0.00****	***2.42***	
(7) I go back to reread what I don't understand.	3.00	2	2.62	4	3.60	0.00**	2.81	4
(8) I skip over the parts I don't understand and keep on reading.	2.98	3	2.32	10	5.50	0.00**	2.65	6
(9) I guess the meaning of unknown words from context.	2.95	4	2.75	3	1.62	0.11	2.85	2
(10) I apply word analysis skills (prefixes, roots, and suffixes) to understand new words.	2.60	11	2.05	16	4.25	0.00**	2.33	14
(11) I read the text out loud.	2.58	12	2.33	8	1.62	0.11	2.46	11
(12) I reread a whole chapter.	2.37	16	2.28	12	0.54	0.59	2.33	14
(Problem-Solving Strategies)	***2.75***		***2.39***		***6.28***	***0.00****	***2.57***	
(13) I underline or highlight what I don't understand.	3.37	1	2.93	2	3.23	0.00**	3.15	1
(14) I look up terms in the professional dictionary.	2.88	5	2.60	5	1.83	0.07	2.74	5
(15) I summarize and write down the main ideas.	2.72	9	2.18	14	3.40	0.00**	2.45	12
(16) I look up unfamiliar words in the English-Chinese dictionary.	2.62	10	3.03	1	-3.25	0.00**	2.83	3
(17) I discuss what I don't understand with classmates.	2.43	14	2.55	6	-0.87	0.39	2.49	10
(18) I discuss what I don't understand with teachers.	1.65	18	1.55	18	0.84	0.40	1.60	18
(Support Reading Strategies)	***2.61***		***2.48***		***2.01***	***0.04****	***2.54***	
Overall	2.65		2.37		7.66	0.00**	2.51	

* p<0.05; ** p<0.01

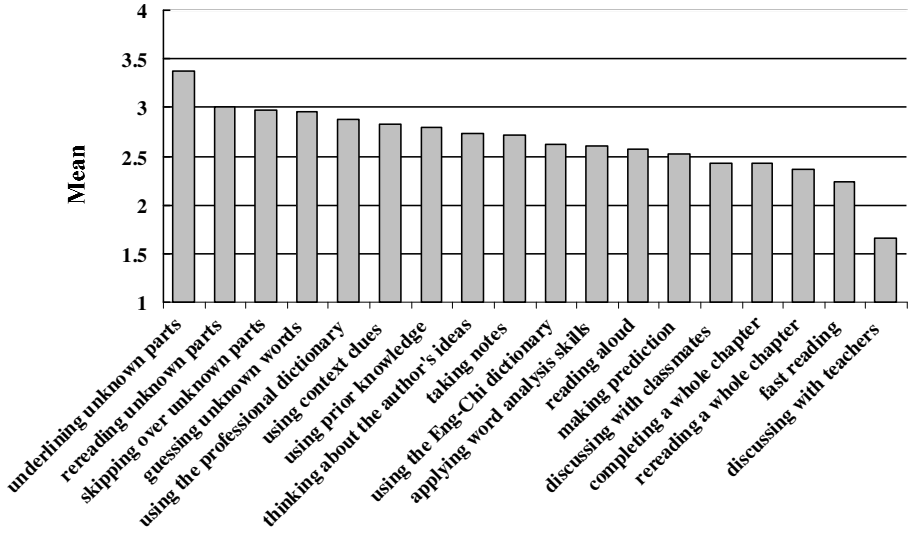

Figure 3 Frequency of strategy use in chapter reading (High Achievers)

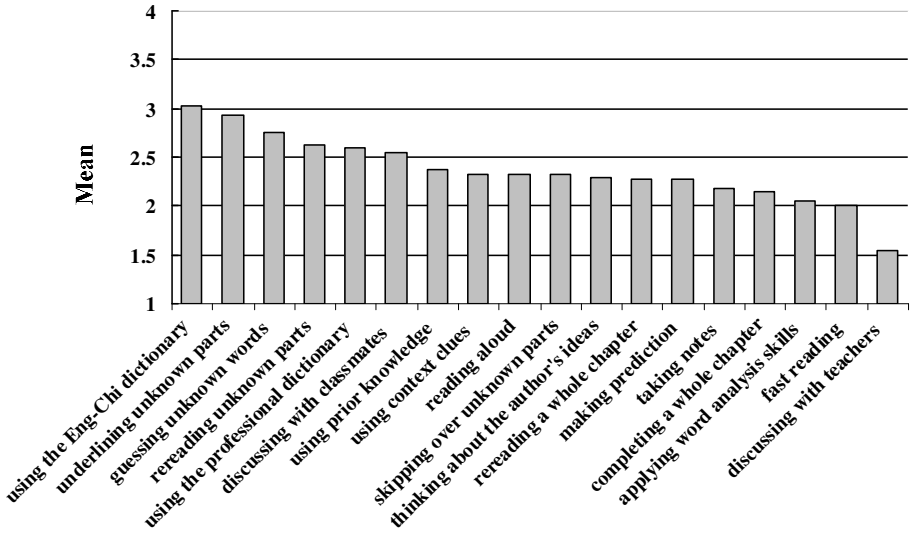

Figure 4 Frequency of strategy use in chapter reading (Low Achievers)

DISCUSSION

From the above findings, we can see even though students think content area textbooks should be used in college education, they don't expect to use those books. They can not get rid of the fear of using them and tend to avoid reading the English textbooks because of reading difficulties, especially for low achievers. Therefore, learning anxiety leads them to use more testing strategies. Before reading the English textbooks, they try to search for other sources to help prepare for exams, such as handouts from teachers, collaborative hypertexts (共筆) and dictionaries.

Furthermore, the subjects in this study spend about 1 hour reading content area textbooks before class and about 1-2 hours after class every week, but they can only finish about half a chapter in four hours. It is no wonder why heavy load of reading and slow reading speed are the biggest obstacles to content area reading for them. Fortunately they are aware of the necessity to spend more time on reading. But since they think the best way to develop content area reading skills is "improving English reading skills" and their biggest linguistic problem is a lack of sentence interpretation skills, then what students really need is reading strategies. They need to be taught how to use effective strategies in content area reading.

From the results, we also find that the importance of background knowledge seems to be neglected by students, especially by low achievers. In Table 7, "developing content knowledge" is considered as a good way to develop content area reading skills, but it is ranked 4 out of 6, following the answers "improving English reading skills", "spending more time" and "improving vocabulary skills".

Moreover, in Table 2, low achievers expect to improve their English proficiency through the development of content area reading skills more than to gain content knowledge. Tables 3, 4 and 5 show that low achievers have more difficulties in content area reading, but their major problems do not appear in professional learning, but in English learning. In testing strategies and reading strategies, they use the English-Chinese dictionary more frequently than the professional dictionary.

Therefore, lacking English reading skills seems to be the main factor affecting their reading comprehension. That is why they desire to escape from the pressure of learning, and use more testing strategies before reading the English textbooks.

As for the chapter reading process, students generally begin with reading the chapter titles, subheadings, introduction, and pictures/tables; then they skim the chapter and read the text itself; finally, they read the conclusion, boldface/italics words and footnotes. According to several researchers (e.g., Anderson & Pearson, 1984; Nagao, 2002; Kintsch, 2005; Abbott, 2006; Birch, 2007), their reading process should belong to the class of top-down pattern. And they use comprehension monitoring strategies to integrate, monitor, and control their own reading processes (Baker & Brown, 1984; Garner, 1987; Paris & Winograd, 1990; Berne, 2004; Yang, 2006). In other words, they are strategic readers (Vacca, 2002; McEwan, 2004; Kragler, Walker & Martin, 2005; Jones & Leahy, 2006; Szabo, 2006; Engelmann, 2007).

However, low achievers in this study seem to follow the page order when reading a chapter. They rarely use the skimming strategy to get an overview of the content and organization of the text. While such a strategy is ranked on the last second place (8th out of 9) for low achievers, high achievers use it right after they read the chapter titles and subheadings. Besides, they use more context clues, such as pictures/tables (ranked 5) and conclusion (ranked 6), to help themselves preview and comprehend the text. These reading strategies allow a chance for high achievers to grasp the main ideas before reading the text (ranked 7). Compared with low achievers, high achievers apply more metacognitive strategies to monitor their own thinking, and develop a global comprehension of the text (Benito, et al, 1993; Gil, Osiecki & Juarez, 2001; Mokhtari & Reichard, 2002).

Yet, in Table 10, the overall mean score (2.51) is not high. It indicates that there is a moderate overall use of chapter reading strategies, which means students use the eighteen strategies only between sometimes and often. Only a few strategies are often used by them, including underlining unknown parts (overall), rereading

unknown parts and underlining unknown parts (high achievers), and using the English-Chinese dictionary (low achievers), which belong to the classes of problem solving strategies and support reading strategies. That is to say, students have lower use of global reading strategies.

High achievers reported higher overall use of the chapter reading strategies than low achievers. Significant differences not only exist in the use of problem-solving strategies and support reading strategies, but also in the use of global reading strategies. The only strategy used more frequently by low achievers is "using the English-Chinese dictionary" (support reading strategy).

From the results, it seems that students place much emphasis on vocabulary learning and dictionary use, especially for low achievers. Compared with high achievers, they use more bottom-up strategies in reading (Kintsch, 2005; Abbott, 2006; Birch, 2007; Lacroix, Postma, & Herik, 2007). A student who reports overusing support reading strategies such as "using the dictionary" to look up every word in text may have a restricted view of reading (Mokhtari & Reichard, 2002). Support for this observation comes from Garner and Alexander (1989), who find that children, particularly younger and poorer readers, often rely on a single criterion for textual understanding: understanding of individual words. Although a dictionary may provide some assistance, the distraction of frequently stopping to look up words makes it difficult to focus on the main ideas of a text.

Each of the two groups rarely uses the strategy of collaborating or discussing with others (such as classmates and teachers). Their collaborative learning pattern (CLP) among peers focuses mainly on "collaborative hypertexts" (共筆), notes which are co-written by students themselves for the purpose of guessing what the exam questions will be, but not for text comprehension (Shen, 2003; Shen, 2008). The importance of interacting with teachers is also neglected by each group. An amusing contrast is found in the above results. That is, "reading the handouts from teachers" is chosen as their first testing strategy (out of 10), but "discussing with teachers" is the least frequently used strategy (out of 18) in their chapter reading.

CONCLUSION

Metacognition plays an important role in reading. Researchers investigating reading comprehension monitoring among skilled and unskilled readers have long recognized the importance of metacognitive awareness in reading comprehension because it distinguishes between skilled and unskilled readers (Paris & Jacobs, 1984; Mokhtari & Reichard, 2002).

According to the results, the subjects in this study, especially low achievers, are not metacognitively aware readers. They are still not skilled in using some global reading strategies, such as using context clues, using prior knowledge, and making predictions, to get an overview of text concepts. They are still not effective users of some problem-solving strategies, such as skipping, applying word analysis skills, reading aloud, and rereading, to help themselves solve the reading problems. They still can not frequently use some support reading strategies, such as taking notes and discussing with others.

Therefore, this is the reason why even though the students in this study are aware of the necessity to use content area textbooks, they rarely read the English textbooks actively, and tend to avoid reading them because of reading difficulties. And learning anxiety leads them to search for other sources than reading the text itself to help prepare for exams.

While reading, low achievers use fewer strategies to help comprehension, and most of their strategies belong to the class of bottom-up reading pattern. For example, they follow the page order and place much emphasis on vocabulary learning and dictionary use. On the contrary, high achievers tend to use more top-down global strategies, such as skimming, using context clues and prior knowledge, and thinking about the author's ideas. Besides, they agree that sharing the load of reading with classmates can benefit their learning experience more than low achievers. In comparison with low achievers, they are more effective readers.

In the reading process, both groups seem to ignore the importance of

interactions with peers and teachers. Their learning experiences are usually confined to collaborative hypertexts among peers and handouts from teachers. In addition, they spend little time on reading. Therefore, heavy load of reading and slow reading speed become their biggest obstacles. In conclusion, students, either high or low achievers, need assistance to help them through the challenging task of content area reading.

SUGGESTIONS

In light of the above, we recommend the following to help students reduce anxiety in content area reading and further to enhance their learning experiences and outcomes:

Activating and Building Schema to Aid Comprehension

Effective readers have meaning orientations to print, always seeking to make sense when they read. They bring their prior knowledge to the text they are reading, and use their prior knowledge to construct meaning from text. Therefore, teachers should help students build content area knowledge structures (schemata), and provide an effective learning environment where they can gain new knowledge and revise their schema to fit their needs.

Providing Opportunities for Strategy Learning

Appropriate strategies assist comprehension, so students need to be taught how to read strategically in the content areas. Teachers can implement comprehension strategy instruction for engaging students in challenging content area textbooks, or introduce the strategies that effective readers use and provide chances for students to practice. They can also be taught how to monitor their comprehension, and identify the strategies they already use as well as those strategies they need to develop.

Developing Critical Thinking Skills

Metacognitive reading strategies play an important role in constructing meaning from text. Students are using metacognition to create awareness and reflect on their own reading process. Therefore, teachers have the responsibility to improve their metacognitive skills through the development of critical thinking skills, and help them apply these skills to texts. Critical thinking skills help students form their own judgments and ideas. And they also help improve problem solving skills and lead to independent and active learning. In addition, students will feel empowered to be independent learners. Therefore, they will become more effective and engaged readers.

Encouraging Collaborative Learning

Collaborative learning activities involve students working together in small groups on some well defined task. In a collaborative learning environment, students encourage one another to do their best, and help one another to learn. It will help relieve their learning burden. They also can share their strengths and weaknesses. Therefore, low achievers can contribute and experience success in academic work, while bright students can develop and extend their understanding of concepts by explaining them to others.

Collaborative discussions foster critical thinking, and improve understanding of both course content and the learning process. It will help students learn how to overcome their own learning problems. As an additional benefit, students can learn the valuable skill of cooperating with others to achieve a common goal. Their identity and confidence will then be enhanced. Therefore, they are more willing to take risks, and become more independent and active learners.

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Appendix A: A Survey of Content Area Reading Experiences

● **對閱讀英文原文書之看法** (可複選，請將選項依優先順序排列，不認同者可不選)

1. 使用英文原文書之感覺：A.很期待 B.大學生該用 C.害怕 D.儘可能不要 _____
2. 閱讀英文原文書之能力培養：A.可以獲得專業知識 B.可以提昇英文能力 C.有助於將來工作前途發展 _____

● **閱讀英文原文書最大的障礙** (可複選，請將選項依優先順序排列，不認同者可不選)

3. 閱讀英文原文書最大的障礙：A.缺乏英文閱讀能力 B.缺乏專業知識 C.內容份量太多 D.閱讀速度緩慢 E.字體太小 F.壓力大，潛意識想逃避 _____
4. 在專業領域方面最大的障礙：A.專業術語知識不足 B.專業知識不足 _____
5. 在英文方面最大的障礙：A.生字 B.在字典裡查完生字解釋之後，還是不瞭解句子的意思 C.無法歸納整段或整個章節之重點 _____

● **使用英文原文書之情形** (單選題)

6. 曾經嘗試獨立閱讀陌生英文原文內容？有☐ 沒有☐
7. 每個星期預習英文原文內容所花的時間：5 小時以上☐ 3-4 小時☐ 1-2 小時☐ 1 小時內☐ 0 小時☐
8. 每個星期複習英文原文內容所花的時間：5 小時以上☐ 3-4 小時☐ 1-2 小時☐ 1 小時內☐ 0 小時☐
9. 四個小時內，能完成之原文內容為：整個章節完成2次☐ 整個章節☐ 半個章節☐ 1-2段內容☐ 約一段內容☐

● **提昇英文原文書閱讀技巧之方法** (可複選，請將選項依優先順序排列，不認同者可不選)

10. 提昇英文原文書閱讀技巧之方法：A.加強字彙能力 B.提昇英文閱讀能力 C.累積專業知識 D.多花時間在原文閱讀上 E.和同學分攤內容份量 F.請教老師或同學英文原文之閱讀技巧 _____

● **準備英文原文書之科目考試之方式** (可複選，請將選項依優先順序排列，不認同者可不選)

11. 準備英文原文書之科目考試之方式：A.查英漢字典 B.查專業字典 C.看英文原文內容 D.看中文翻譯本 E.看中文參考資料 F.和同學共同完成 G.看共筆 H.看老師所發的講義 I.猜題 J.背考古題 _____

● **英文原文書之閱讀策略** (第 12 題可複選，請將選項依優先順序排列，不認同者可不選；第 13 大題皆為單選題)

12. 每個章節之閱讀程序：A.每頁翻一翻，略讀整個章節之內容 B.看整個章節的標題 C.看整個章節的引言 D.看小章節的標題 E.看文章內容 F.看圖片或表格 G.看內文中黑體或斜體字 H.看註解 I.看整個章節的結論 _____

13. 章節閱讀過程中所使用策略之頻率：

	每次都是	常常	偶而	完全沒有
(1) 我會利用表格或插圖來幫助理解文章意思。	☐	☐	☐	☐
(2) 我會運用自己以前的知識來幫助理解文章意思。	☐	☐	☐	☐
(3) 閱讀時，我會思考作者真正之意思。	☐	☐	☐	☐
(4) 我會預測下一段的內容。	☐	☐	☐	☐
(5) 我會一口氣看完一個章節。	☐	☐	☐	☐
(6) 我不用字典，而是快速閱讀內容。	☐	☐	☐	☐
(7) 我會回頭看先前不懂之處。	☐	☐	☐	☐
(8) 看到不懂的內容，我會先跳過去，往下看。	☐	☐	☐	☐
(9) 我會利用上下文解讀生字意義。	☐	☐	☐	☐
(10) 我會利用字根、字首、字尾瞭解陌生的單字。	☐	☐	☐	☐
(11) 閱讀時，我會唸出文中之字句。	☐	☐	☐	☐
(12) 看完一個章節後，我會回頭重看整個章節。	☐	☐	☐	☐
(13) 遇到不懂處，我會在該處劃線，或塗上螢光色。	☐	☐	☐	☐
(14) 遇到專業術語，我會查專業字典。	☐	☐	☐	☐
(15) 閱讀時，我會歸納重點，並寫下自己所理解的大意或重點。	☐	☐	☐	☐
(16) 遇到生字，我會查英文字典。	☐	☐	☐	☐
(17) 我會和同學討論不解之處。	☐	☐	☐	☐
(18) 我會和任課老師討論不解之處。	☐	☐	☐	☐

專業英語學生原文書閱讀之經驗

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摘 要

本文章旨在研究專業英語學生閱讀策略之使用情形，進一步探討影響學生原文書閱讀動機的因素。研究對象是中國醫藥大學四個科系的學生。研究結果顯示這些研究對象在原文書閱讀過程中並非是有後設認知知覺的閱讀者，他們並不擅長使用有效的策略來幫助他們自己解決閱讀上的困難；他們（特別是英語能力受限的學生）很少主動閱讀英語書本，而且會因為閱讀上的困難和學習焦慮逃避閱讀文本內容。本文章亦提供建議給老師，以協助學生能夠提升他們的學習經驗和學習成效。

關鍵詞：專業英語、原文書閱讀、有後設認知知覺的閱讀者、有效的策略、閱讀困難