The Reading Strategies Used by EFL Technical Students

Shiu-chen Hsu
Department of Applied Foreign Languages, Nanya Institute of Technology

Abstract

Reading is one of the most important skills to acquire knowledge in each discipline. In the information explosion times, good English reading ability is indispensable. The purpose of this study is to investigate what learning strategies are adopted by technical college students in English reading comprehension. The author find out the way of obtaining good reading proficiency, and this will provide the teachers and the students with a more effective teaching and studying method. The subjects were four-year technical college students in the Department of Applied Foreign Languages. Statistic analysis methods, such as descriptive statistics, T-test, analysis of variance, and Pearson product-moment correlation analysis were adopted. The author investigates the following problems concerning reading comprehension. (1) Do gender and reading proficiency play an important role in reading strategy use? (2) What strategies do students prefer during the process of learning? (3) What are the effective learning strategies in reading comprehension?

1. Introduction

Reading is the foundation of all knowledge. Either the textbook or the extracurricular reading materials supply many vocabularies and phrases to readers, so as to develop their spoken language skill and writing ability. The technical students not only need to acquire knowledge and theories from English reading materials, but also need to read many English books, periodicals or magazines for the absorption of new knowledge and information. Students often search and retrieve materials from the Internet, and it is estimated that over 70% of the information is presented in English. Good English reading ability can be helpful to effectively obtain the current information as it is necessary. In addition, our industrial and commercial circles continuously develop the internationalization and globalization. It is in urgent need of English talented person. Strengthening English reading ability will be necessary for us to promote individual ability in competing.

A lot of researchers and teachers have tried hard to find out possible ways to help students read successfully in English, but there are many factors affect the reading proficiency of a second language. They are text types, school and social environments, student's intelligence, learning motivation, teaching method, and so on. One of the most important factors is learning strategy. From the previous studies, it demonstrates that reading performance relates to the use of reading strategies. The reading strategies used by efficient and inefficient learners were different [Block, 1986; Singhal, 2001]. With effective study strategies, the learners gain better achievement [Ley & Young, 1,998; 吳訓生, 民 89]. However most of technical college students are unfamiliar with the utilization of English reading strategies, and it reduces their reading comprehension. Recently, we no longer ask the students to obtain knowledge by parroting, but to learn with organized and strategical approaches. Some researchers found that structured reading strategies can act as learning guidance [Bereiter & Bird, 1,985; 鄒美華, 民 92]. Therefore, besides student's diligence, teachers can teach learning strategies to help students read effectively.

Many studies have shown the influence of reading strategies on EFL learners in Taiwan. Most of the subjects are students of the elementary school, senior high school, junior high school and university (Hung, 2001; Kuo, 2002; 陳雅文，民 92; Lin, 2005). This study aims to understand the reading strategy use of technical students. The author expects the results of this research can suggest teachers a more effective way of teaching in English reading and enable students to get the twice result with half of the effort.

2. Literature Review

Reading strategies indicate how readers conceive of a task, how they make sense of what they read, and what they do when they don't understand. These strategies consist of a whole range of strategies including skimming and scanning, contextual guessing, reading for meaning, utilizing background knowledge, recognizing text structure, and so forth.

2.1 Classifications of Reading Strategies

Different classifications of learning strategies were found in the previous studies. Rubin (1981) identifies six general strategies that might contribute directly to language learning. They were clarification, guessing, deductive reasoning, practice, memorization, and monitoring. O'Malley & Chamot (1990) adopted the three-category learning strategies: cognitive, metacognitive, and social/affective strategies. There are subcategories under each main category. Another taxonomy of learning strategies that is very popular and has been used in many studies is Oxford's (1990) language learning strategy classification. She divided learning strategies into six categories: memory strategies, cognitive strategies, compensation strategies, metacognitive strategies, affective strategies, and social strategies. Grabe (1991) proposed six general reading skills and knowledge areas as follows: automatic recognition skills, vocabulary and structural knowledge, formal discourse structure knowledge, content or word background knowledge, synthesis and evaluation skills or strategies, and metacognitive knowledge and skills monitoring. Shih (1991) and Baker-Gonzalize & Blau (1995) suggested three stages of reading strategy use: before reading, while reading, and after reading.

2.2 Reading Strategies of Effective and Ineffective Learners

Skilled readers know how to use effective strategies to facilitate the functioning of various cognitive processes and construct meaningful understanding of the text, but poor readers simply read the text word by word without using any strategies (Lau & Chan, 2003). In some first language studies, the use of various strategies has been found to be effective in improving students' reading comprehension (Baker and Brown, 1984; Palinscar & Brown, 1984). In a second language study, Hosenfeld (1977) used a think-aloud procedure to identify relations between certain types of reading strategies and successful or unsuccessful second language reading. Olshavsky (1977) stated that most strategies were applied when readers were interested in the material, when readers were proficient, and when they faced with abstract material. Although the types of strategies did not change with the situation, the frequency of strategy use did change. Various studies in the area of reading strategies have shown that younger and less proficient students used fewer strategies and used them less effectively in their reading comprehension (Garner, 1987; Waxman & Padron, 1987). The successful readers kept the meaning of the passage in mind while they were reading, read in broad phrases, skipped inconsequential or less important words, and had a positive self-concept as a reader.

Anderson (1991) investigated the differences in reading strategy use by adult second

language learners. The results revealed that both high and low scoring readers appeared to be using the same kinds of strategies while answering the comprehension questions; however, high scoring students seemed to be applying strategies more effectively and appropriately. Vandergrift (1999) concluded that the learning strategies used by successful and less successful learners were different, and that the former made better use of metacognitive strategies including planning for learning, monitoring the process and self-evaluating learning after the tasks.

2.3 Reading Strategies of Male and Female Learners

Bugel (1996) found that sex-based differences appeared to be obvious in reading habits. Females do better on questions about human relations, education, care, art, and philosophy; males do better on economic and technological topics, politics, sports, and violence. Hung (2001) investigated the frequency and types of reading strategies used by third-year male and female students in senior high school. The findings are as follows: (1) There is a significant difference by gender in the reading comprehension ability. Female students are better than male students. (2) There is no significant difference between male and female students in terms of overall strategy use. Besides, no significant difference is found between male and female students when they read narrative and expository materials separately. Kuo (2002) investigated proficiency and gender differences in reading strategies used toward the reading comprehension tests of the Basic Competence Test (BCT). He stated that there is no difference between male and female junior high school students in reading strategy use.

3. Methodology

The subjects were 41 four-year technical college students in Department of Applied Foreign Languages at Nanya Institute of Technology in 2006. Among 41 subjects, 7 were males and 34 were females. All of these subjects had the same training programs in English courses. The questionnaire consists of 55 items with a 5-point Likert scale ranging from “strongly disagree” (1 point) to “strongly agree” (5 points). It is a revised questionnaire based on the previous studies (Mckeachie, 1987; Heilman, 1990; 程炳林, 民 90; 陳雅文, 民 92). The questionnaire was divided into four groups: student’s background, cognitive strategy, metacognitive strategy, and social/affective strategy. Internal consistency reliability (Cronbach alpha) was analyzed to show how well a group of items measures the same concept. The reading proficiency was evaluated by the score of the midterm of “Reading and Discussion in English III” class.

The author adopted SPSS 11.0 statistical package to compute collected data. Mean value and standard deviation of each reading strategy item were analyzed by descriptive statistics. And then, the author ranked all of the items.

Independent-samples T-test was conducted to determine if there is a significant difference of reading strategy use for subjects with different sexes, proficiency levels and abroad experience. Pearson product-moment correlation coefficients were computed to understand relationships among three reading strategy categories. A three-way analysis of variance (ANOVA) method was used to reveal the main and interaction effects of three independent variables on all reading strategy use of the subjects. The probability level of significance for T-test, correlation analysis and ANOVA was set at 0.05.

4. Results and Discussion

The author adopted O'Malley & Chamot's classification of learning strategies (1990). The reading strategies were divided into three categories in cognitive psychology concept as follows: (1) Cognitive strategies refer to process information, summarizing, and recognition. (2) Metacognitive strategies refer to higher-order planning, monitoring, evaluating, and comprehension. (3)Social and affective strategies involve interaction with others or self-assurance.

The internal consistency reliability of each group of this questionnaire was analyzed firstly. Cronbach alpha values are 0.92, 0.85 and 0.71 for cognitive, metacognitive and social/affective strategy groups respectively. The overall Cronbach alpha reliability is 0.95. Since all Cronbach alpha values are larger than 0.70, this questionnaire has a good internal consistency to evaluate student's reading strategy use.

Table 1 shows mean values and standard deviations of the use of various strategy categories. The mean value of overall strategy use is 3.16, and those of three strategy categories are 3.22, 3.15, and 3.13 for metacognitive, social/affective, and cognitive, respectively. It means that the use of reading strategies of four-year technical college students is positive toward. The most often used one is metacognitive strategy category. The second one is social/affective strategy category. But, the differences among the employment of three strategy categories are slight.

Table 1. Descriptive statistics for the use of reading strategy categories

Rank	Strategy Category	Number of Items	Number of Subjects	Mean	Standard Deviation
1	Metacognitive	17	41	3.22	0.51
2	Social/Affective	6	41	3.15	0.53
3	Cognitive	32	41	3.13	0.51

There are many factors affect the reading strategy use. In order to understand whether gender, proficiency level and abroad experience play an important role in reading strategy use, further analysis of T-test is performed. The outcome is listed in Tables 2-4. The data in Table 2 indicate that females use cognitive strategies and social/affective strategies more often than males do. It reflects that they process information, summarize, recognize, interact with others or self-assurance more frequently. Besides, there is no significant difference between male and female students in terms of overall strategy use. This finding is similar to that of Hung's (2001) research.

Table 2. T-test of reading strategy use for gender differences

Variable	Gender	Number of Subjects	Mean	Standard Deviation	t	p
Cognitive Strategies	Male	7	2.93	0.65	-1.15	0.257
	Female	34	3.18	0.48		
Metacognitive Strategies	Male	7	3.29	0.61	0.36	0.724
	Female	34	3.21	0.50		
Social/Affective Strategies	Male	7	3.00	0.57	-0.84	0.404
	Female	34	3.19	0.53		
All Strategies	Male	7	3.05	0.59	-0.68	0.498
	Female	34	3.19	0.46		

The reading proficiency of 41 students were ranked in a descending order, those who were in the top 34% were rated as “effective learner” while those in the bottom 34% were rated as “ineffective learner.” Regarding the subjects with different proficiency levels, the effective learners adopt reading strategies more frequently than ineffective learners do as shown in Table 3. It existed significant difference in terms of overall strategy use ($p < 0.001$) for different proficiency levels. This result is consistent with previous studies. They show high achievers tend to use a wider range of strategies and use strategies more frequently than low achievers do (Anderson 1991; Deegan, 1995).

Table 3. T-test of reading strategy use for different proficiency levels

Variable	Proficiency Level	Number of Subjects	Mean	Standard Deviation	t	p
Cognitive Strategies	Low	14	2.61	0.38	-6.37	0.000***
	High	14	3.52	0.37		
Metacognitive Strategies	Low	14	2.70	0.29	-7.79	0.000***
	High	14	3.60	0.32		
Social/Affective Strategies	Low	14	2.70	0.30	-4.94	0.000***
	High	14	3.54	0.56		
All Strategies	Low	14	2.65	0.32	-7.53	0.000***
	High	14	3.54	0.31		

*** $p < 0.001$

The data of T-test for students with different abroad experiences are list in Table 4. The subjects with living abroad experience have higher mean value of reading strategy use. It reflects that they are more familiar with EFL reading strategy uses, but the result of further study reveals that they got worse grades of midterm in “Reading and Discussion in English III” class.

Table 4. T-test of reading strategy use for students with different abroad experiences

Variable	Abroad Experience	Number of Subjects	Mean	Standard Deviation	t	p
Metacognitive Strategies	No	38	3.13	0.52	-0.33	0.742
	Yes	3	3.23	0.48		
Cognitive Strategies	No	38	3.20	0.51	-1.22	0.229
	Yes	3	3.57	0.40		
Social/Affective Strategies	No	38	3.14	0.53	-0.79	0.433
	Yes	3	3.39	0.59		
All Strategies	No	38	3.15	0.49	-0.70	0.491
	Yes	3	3.35	0.41		
Proficiency	No	38	3.76	1.53	1.56	0.128
	Yes	3	2.33	1.53		

The items of reading strategy are ranked according to the mean value as shown in Table 5. Strategies with mean value higher than 3.5 are regarded as strategies with high frequency of usage (Oxford, 1990). The top eight strategy uses belong to high frequency of usage and they are uniformly distributed into cognitive, metacognitive and social/affective strategy categories. In the overall 55 learning strategies, the most often used strategy item is “If I have difficulty in understanding the article, I will read it carefully.” The second one is “I usually underline the main passage of the article.” The two least used learning strategy items are “I usually write

down questions concerning the difficult part of the article." and "I propose some questions according to my thought." respectively.

In Table 5, the top six reading strategies used by effective learners and ineffective learners can also be compared. There were differences in both the type and frequency of reading strategy use between them. The average of the means of top six strategy uses for effective learner is 4.29, which is much higher than that of ineffective learner (3.50). The author also found that effective learners adopted " I remind myself by underlining the words or phrases I don't understand." and "I often check if I understand the contents." strategies more frequently.

Table 5. The rank of reading strategy use

Strategy Item	Strategy Category	Effective Subjects		Ineffective Subjects		All Subjects	
		Mean	Rank	Mean	Rank	Mean	Rank
If I have difficulty in understanding the article, I will read it carefully.	Metacognitive	4.29	3	3.71	1	4.15	1
I usually underline the main passage of the article.	Cognitive	4.43	1	3.64	2	4.12	2
I usually use the context to understand difficult words or sentences.	Social/Affective	4.36	2	3.50	3	3.90	3
I usually choose good circumstances to concentrate on reading.	Social/Affective	4.29	4	3.43	4	3.83	4
Reconsidering the difficult part of the article helps me understand its meaning.	Metacognitive	3.86	10	3.29	6	3.68	5
I imagine the image and sound described in the article.	Cognitive	4.00	7	3.29	7	3.63	6
I remind myself by underlining the words or phrases I don't understand.	Cognitive	**4.29**	**5**	**2.57**	**35**	3.59	7
…						…	…
I frequently check if I understand the contents.	Metacognitive	**4.07**	**6**	**2.57**	**36**	3.39	16
…						…	…
I propose some questions according to my thought.	Cognitive	-	-	-	-	2.51	54
I usually write down questions concerning the difficult part of the article.	Cognitive	-	-	-	-	2.41	55

The outcomes of Pearson product-moment correlation analyses among the uses of three strategy categories are listed in Table 6. All of the cognitive strategy use, metacognitive strategy use, and social/affective strategy use are significantly correlated to each other. The correlation coefficient between cognitive strategy use and metacognitive strategy use is as high as 0.84. It should be noted that only one of these two predictors is recommended to enter the regression equation if we perform the linear regression analysis.

The effects of gender, reading proficiency and abroad experience on the overall reading

strategy use can be revealed by the results of three-way ANOVA analysis as they are shown in Table 7. There is significant interactive effect of gender and reading proficiency on the overall reading strategy use. The main effects of reading proficiency and abroad experience are also significantly.

Table 6. Bivariate correlations between variables

Variable	Cognitive Strategies	Metacognitive Strategies	Social/Affective Strategies
Cognitive Strategies	1.00	0.84**	0.75**
Metacognitive Strategies	0.84**	1.00	0.62**
Social/Affective Strategies	0.75**	0.62**	1.00

** $p < 0.01$.

Table 7. Three-way ANOVA of overall reading strategy use by three independent variables

Source	SS	df	F	p
Gender	0.04	1	0.37	0.549
Reading Proficiency	2.55	2	12.28	0.000
Abroad Experience	1.22	2	11.77	0.002
Interaction:				
Gender * Reading Proficiency	0.71	2	3.40	0.046
Gender * Abroad Experience	0.30	1	2.84	0.101
Reading proficiency * Abroad Experience	0.13	1	1.24	0.274
Gender * Reading Proficiency * Abroad Experience	0.00	0	-	-
Error	3.33	32	-	-

5. Conclusions

This paper investigated the English reading strategy use of four-year technical college students in Taiwan. According to the results, the conclusions are as follows.

The most often used category is metacognitive strategy category. The second one is social/affective strategy category. Females use cognitive strategies and social/affective strategies more often than males do. But, there is no significant difference between male and female students in terms of overall strategy use. The subjects with living abroad experience are more familiar with reading strategy use. There were differences in both the type and frequency of reading strategy use for different proficient students. The effective learners tend to use specific kinds of strategies and use strategies more frequently than ineffective learners do. The effective learners adopted ”I remind myself by underline the words or phrases I don’t understand.” and “I often check if I understand the contents.” strategies more frequently. All of the cognitive strategy use, metacognitive strategy use, and social/affective strategy use of technical students are significantly correlated to each other.

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