



TOP-DOWN AND BOTTOM-UP STRATEGY USE AMONG GOOD AND POOR READERS IN EFL READING COMPREHENSION

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Abstract:

This study revealed the readers' use of top-down and bottom-up strategies in EFL learning context in Taiwan. The participants, 111 undergraduates EFL learners, were classified into good and poor readers. Quantitative and qualitative data were collected through a questionnaire and interviews. The results showed that almost no difference was confirmed between good and poor readers in bottom-up and total strategy use, whereas it was found that good readers tended to use more top-down strategies than poor readers. It is suggested that both groups of readers use bottom-up strategies to a similar degree; however, the use of top-down strategies has helped good readers advance their level of reading comprehension.

Keywords: EFL, English reading strategy use, top-down strategies, bottom-up strategies

1. Introduction

Reading is not only the process of perceiving the meaning from words to words, but it is also one of the ways of interaction between the author who expresses his/her point of view into the text and the readers who try to interpret the words provided by the author. In terms of reading comprehension, the readers usually use their vocabulary knowledge which provide the lexical meaning to the readers and their background knowledge which help them to infer what the text argues simultaneously. There have been many researches who argue that while reading a text using readers' background knowledge encourages them to perceive the author's meaning easily (Goodman, 1967; Gowie, 1978; Kurby, Britt, & Magliano, 2005; Nagao, 2002; Pang, 2008; Smith, 2004).

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Within the fields of psychology and cognitive science, a lot of research has been done on the relationship of background knowledge and cognition. Researchers of English as foreign language (EFL) have applied the findings and explored what factors may influence EFL learners' reading comprehension. Goodman (1967) claimed that reading is a psycholinguistic guessing game which requires the readers to find the relationship between thought and language.

It is believed that the training of using appropriate reading strategies will enhance the success in reading comprehension among EFL readers (Tsai, Ernst, & Talley, 2010). Poor readers may improve overall learning if even a small amount of training related to their choice of effective reading comprehension strategies is provided (Dansereau, 1985). Hosenfeld (1977) found that skilled readers tended to keep a textual meaning in mind, read the text in large chunks of phrases, and ignored irrelevant vocabulary, whereas less-skilled readers failed to extract the main ideas from the text and tended to work in short phrases or single words. In her study, Block (1992) revealed that good readers used prior background knowledge and worked out the meaning of needed words through the use of context clues, while poor readers concentrated almost exclusively on identification of and resolution of lexical problems.

Although the above-mentioned studies provide valuable information concerning the proportion of attention devoted to reading strategies, still little is known about the interaction between top-down and bottom-up reading strategy use among EFL learners of different levels. Hence, this study intends to investigate top-down and bottom-up reading strategy use among good and poor readers at university level in Taiwan to further such a limited understanding.

2. Literature Review

2.1 Two approaches of reading: top-down and bottom-up processing

Reading is a way of communication between the author and the reader. Although the communication in reading is regarded as the interaction between the author and the reader, it is not that the author conveys the meaning to the reader directly but that the reader is demanded to perceive what the author intends to say in the text, which serves as a bridge between the author and the reader, by extracting the meanings in it (Nagao, 2002). Reading text is not only the process of comprehending the components in a sentence word by word but also comprehension process combining schemata or background knowledge with information in the text. When people read the text, they have access to proper knowledge that is related to the text from a wide variety of sources to comprehend it (Kubby, Britt & Magliano, 2005).

The relationship between reading comprehension and reader's background knowledge is discussed widely in the field of psycholinguistics. Owing to the recent research emphasis on linguistic input, psycholinguistics has more focused on the characteristics of individual language users than the language itself. Gowie (1978) explained that readers link their personal experiences or knowledge of the world to the

components of the text, and comprehension is influenced by the interaction between the linguistic processing and prior knowledge. Goodman (1967) reported that in order to make temporary decision readers select available language cues in the text by accessing to input knowledge based on the reader's expectation. *"More simply stated, reading is a psycholinguistic guessing game. It involves an interaction between thought and language"* (Goodman, 1967, p.2).

Two psycholinguistic approaches have been proposed to explain the process of reading comprehension, top-down and bottom-up processing. Top-down processing is an approach which relies on the reader's schemata and background knowledge, expecting the comprehension of the components of the text as much as the actual words read (Wilson, 2008).

Schemata plays a very important role in reading comprehension (Bensoussan, 1998). The word 'schemata' is a term in the area of psychology and cognitive science, which describes a pattern of thought or behavior. In 1781, Kant Immanuel defined the word "schema" as background knowledge which has long rooted in philosophy, psychology, and cognitive information process and so on (Zhao & Zhu, 2012). Sir Frederic Bartlett, who is a British Gestalt psychologist, regarded the term schema as an active organization of prior experience which allows readers to construct response effectively. While reading the text, readers not only perceive the literal meaning itself but also get direction to interpret appropriate meaning by applying acquired knowledge. *"The previously acquired knowledge is called schema"* (Zhao & Zhu, 2012, p.2). Schemata influence perceiving and organizing predictable idea or new information. In terms of reading comprehension, the purpose of schemata is to distinguish the interaction between literal meaning and the reader's background knowledge. In addition, it also influences the construction of new knowledge. When the reader encounters abstract meaning or new information, the reader's schemata and background knowledge will be integrated with related information. This integration allows the reader to perceive multiple cues which link the information in the text with the reader's prior knowledge.

On the other hand, bottom-up processing is a text-based approach which focuses on building up the message word by word manner (Wilson, 2008). The reader follows the meaning in the text literally. Reading is a decoding process. The reader decodes the meaning from the text word by word. In terms of reading comprehension, these two approaches influence readers' comprehension simultaneously. Therefore, reading comprehension is regarded as the interaction between top-down processing which involves schemata and background knowledge and bottom-up processing of the message word by word.

Reader's words recognition is one of the important factors for reading comprehension rather than reader's intelligence, memory (Andrews & Bond, 2009). While reading the text it is essential process for comprehension to recognize each word appropriately. *"The precision of lexical representations increases with reading development"*

(Andrews & Bond, 2009, p.5). However, when readers encounter ambiguous words, bottom-up processing will also cause problem with interpreting the meaning.

Although readers can comprehend the text effectively through top-down processing, bottom-up processing is more necessary for poor readers than top-down processing because it allows the readers to construct the fundamental base of reading (Dehghan & Sadighi, 2011). Top-down processing requires readers' proficient language skill such as fluency and automatic processing. Readers who do not reach this level cannot apply it to reading. Both top-down and bottom-up process are very important for reading comprehension as reading is an interactive process between the reader and the author.

Top-down and bottom-up approach can not be easily distinguished individually. The reader applies both approaches to comprehend in reading. However, the degree of the reader's level will influence how to use each approach efficiently. In general, poor readers tend to follow in a word by word fashion to perceive what the text means, and good readers more relies on linking their background knowledge with their expectation of reading. Golinkoff argued that good readers regard reading comprehension as the process to scan information about events and relations in the world and apply it to their reading purpose (as cited in Gowie, 1978). Good readers seek precise information to comprehend the text by using prior knowledge. Therefore, the more proficient the reader is, the more they can seek proper information to construct the prediction of comprehension.

2.2 Strategy use among good and poor readers

The distinction between proficient and less-proficient readers is vague because reading process is influenced by a lot of factors, such as reader's behavior and the topic of the text. Pang (2008) argued that there are three elements that distinguish the readers' proficiency of reading comprehension: linguistic knowledge, cognitive ability, and metacognitive strategic ability. He explains that linguistic knowledge is involved with readers' vocabulary which influences reading comprehension considerably. As a result of the lack of linguistic knowledge, poor readers show less comprehension about ambiguous sentences than good readers who are able to deal with sentences quickly. Readers' linguistic knowledge is one of the key factors of reading comprehension and language proficiency. Cognitive ability is related with readers' prior knowledge and strategy use. Metacognitive strategic ability refers to readers' observation and application to reading strategies. Readers' high proficiency has great influences on constructing inference. Hammadou reported that reader's high proficiency enables them to make proper inference and integration (as cited in Pang, 2008). Good readers tend to comprehend the text focusing on the author's meaning, instead of the text itself through integrating information with their understanding.

At the primary stage of reading, the reader recognizes the components in the text, which are words or a sequence of letters involved in the sentences (Sheridan, 1978). Golinkoff explained that the poor readers seem to read the text word by word and

cannot extend their task beyond lexical manner (as cited in Gowie, 1978). Anderson and Pearson assume that the poor readers have some expected tendencies in reading comprehension. First, poor readers tend to have gaps in knowledge. As reader's comprehension is related to his/her prior knowledge, the less knowledge the reader has, the less it will influence the reader's comprehension. Secondly, poor readers tend not to take account of the relationships among prior knowledge about the topic. Thirdly, poor readers tend not to make a coherent meaning to weave the information (as cited in Bensoussan, 1998).

Although considerable number of research has been done to investigate the contribution of background knowledge, reading strategies, and tendencies of reading to reading comprehension, the issue regarding specific factors influencing EFL readers' comprehension requires further examination. This paper focuses on the difference of reading strategy use among good and poor EFL readers in Taiwan. Three research questions are raised below:

- 1) What top-down reading strategies do Taiwanese EFL learners use in reading comprehension?
- 2) What bottom-up reading strategies do Taiwanese EFL learners use in reading comprehension?
- 3) Is there any significant difference among good readers and poor readers in the use of reading strategies?

3. Material and Methods

3.1 Participants

A total of 111 students learning English as a foreign language at a university in Taiwan participated in this study. Table 1 shows the grades of the participants and their reading comprehension level as two groups, good and poor. As shown in Table 1, there were 39 sophomores, 51 juniors, and 21 seniors. In order to investigate the relationship between reading strategy use and comprehension, these students were separated into two groups, good and poor readers, based on the score of the reading comprehension in the classes of reading comprehension (I) and (II) in average, which were offered in the previous year to the participants of this study. Among the 111 participants, those who got above 75 were classified as good readers (63 participants) and the others were classified as poor readers (48 participants).

Table 1: Grades of the participants

Grades	Good readers	Poor readers	Total
Sophomore	21	18	39
Junior	39	12	51
Senior	3	18	21
Total	63	48	111

The score of reading comprehension was influenced by not only the participants' reading abilities but also their attitude in the class and the way how professors in the class evaluate students. Among the years of the participants, the bias of their reading comprehension was emerged. Within the students in junior year, there were more good readers than poor readers based on their reading comprehension score. On the other hand, in senior year only three students got over 75 of average of reading comprehension class score.

Furthermore, in order to collect more specific data, all the students were invited for an interview. It turned out that 16 out of 111 students agreed to accept the interview. These 16 participants were asked to answer the questions in the reading comprehension test and 6 questions aiming at investigating more information about reading attitude beside the questionnaire. In terms of reading comprehension test, participants were required to read the article, which was at intermediate level with 329 words, and answer 5 questions, which were multiple choice questions. The aim of the test was examining participants' reading comprehension. 16 participants were separated into two groups, good and poor readers, based on the score of the test. Participants who got more than 3 correct answers were classified as good readers (8 participants), and others were classified as poor readers (8 participants).

3.2 Materials

3.2.1 Questionnaire

The questionnaire was constructed to investigate the participants' reading strategy use. The participants were required to offer the score of reading comprehension (I) and (II) class in average, in order to distinguish the participants' reading comprehension. Every participant answered the questionnaire containing 24 questions according to their reading strategy use. In order to analyze the effect of strategy use on reading comprehension, the questionnaire consists of two major sections: (1) Top-down strategy use (item 1 to 12) and (2) Bottom-up strategy use (item 13 to 24).

3.2.2 Reading comprehension test and interview

Sixteen participants were invited to take an English Reading Comprehension Test at intermediate level (available on http://englishteststore.net/index.php?option=com_content&view=article&id=2981:english-intermediate-reading-comprehension-test-008&catid=201&Itemid=143) and interview. The participants were categorized into two groups by the score of the test. After finishing the test, all the participants answered 6 interview questions for collecting specific data about reading attitude and tendency.

3.3 Procedure

The questionnaire was distributed in the classes at Applied English department. Students who have taken reading comprehension (I) and (II) class in their freshman year were eligible to fill in questionnaire with 24 questions. After answering the

questionnaire, participants were divided into two groups based on the score of reading comprehension classes. Sixteen students took the reading comprehension test and answered six questions on the interview about their reading attitude and tendency. Participants were divided into two groups based on the score of the test.

4. Results

4.1 Results of the questionnaire

Table 2 shows the means and standard deviations among top-down strategies, bottom-up strategies, and all strategies used by good and poor readers in the questionnaire. As shown in Table 2, the means of top-down strategy use by good readers is slightly higher than that of the poor readers (4.13 and 3.96 respectively). However, both the means of bottom-up strategies and all strategies among good readers and poor readers are quite similar. Therefore, although the tendency of using top-down strategy use is different among two groups, two groups showed similar results in terms of bottom-up strategies and all strategies.

Table 2: Means and standard deviations of strategies used by good and poor readers

Strategy use	Group	Mean	Standard deviation
Top-down	Good	4.13	0.67
	Poor	3.96	0.61
Bottom-up	Good	3.69	1.03
	Poor	3.72	0.81
All	Good	3.90	0.85
	Poor	3.84	0.71

In order to examine whether there was significant difference of strategy use between good and poor readers, independent samples t-test was run by using SPSS 20.0. The results were presented in Table 3, which indicated that there was no difference of overall strategy use as well as bottom-up strategy use. However, significant difference was found in top-down strategy use. In both categories of all strategies ($p = 0.36$) and bottom-up strategies ($p = 0.76$) there was no difference between two groups. However, there was difference in top-down strategies, which reached the significant level ($p < 0.05$). In general, although both groups used bottom-up strategy at a similar level, good readers tend to use more top-down strategies in reading.

Table 4 shows the means and standard deviations of the top-down strategies concerning the application of background knowledge, including the means and standard deviations of each question among good and poor readers. In question 2 (How much experience I have will influence my reading comprehension.), the mean of good readers was higher than that of poor readers (4.29 and 3.88 respectively). It shows that good readers tend to take their experiences seriously for reading more than poor readers.

Table 3: The comparison of strategy use between good and poor readers

Strategy	Levene's Test		t-test				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Top-down	.824	.366	2.325	109	.022*	.17262	.07425
Bottom-up	10.114	.002	-.302	109	.763	-.03266	.10797
All	3.281	.073	.912	109	.364	.06998	.07677

Table 4: The use of top-down strategies concerning background knowledge

	Group	Application of background knowledge							
		SD	D	N	A	SA	Total	Mean	Std.D
1. It is easier for me to understand if I am familiar with the topic.	Good	0 0%	0 0%	1 1.6%	40 63.5%	22 34.9%	63 100%	4.33	0.50
	Poor	0 0%	1 2.1%	2 4.2%	34 70.8%	11 22.9%	48 100%	4.15	0.58
2. How much experience I have will influence my reading comprehension.	Good	0 0%	1 1.6%	3 4.8%	36 57.1%	23 36.5%	63 100%	4.29	0.63
	Poor	0 0%	1 2.1%	12 25%	27 56.3%	8 16.7%	48 100%	3.88	0.70
3. How much experience I have will influence my reading comprehension.	Good	0 0%	0 0%	2 3.2%	41 65.1%	20 31.7%	63 100%	4.29	0.52
	Poor	0 0%	0 0%	5 10.4%	35 72.9%	8 16.7%	48 100%	4.06	0.52
4. Background knowledge helps my reading comprehension.	Good	0 0%	4 6.3%	2 3.2%	37 58.7%	20 31.7%	63 100%	4.16	0.76
	Poor	0 0%	0 0%	2 4.2%	32 66.7%	14 29.2%	48 100%	4.25	0.52

Table 5 shows the means and standard deviations of the top-down strategies concerning constructing inference. In question 6 (While I read a text, I will guess what happens next.) and question 7 (Reading is a kind of guessing game.), the means of good readers were slightly higher than that of poor readers (4.21 and 3.81 in question 6, 3.83 and 3.52 in question7). It shows that good readers try to guess the content next through reading to comprehend the articles more than poor readers.

Table 5: The use of top-down strategies concerning constructing inference

	Group	Constructing inference							
		SD	D	N	A	SA	Total	Mean	Std.D
5. When I encounter ambiguous words or sentences, I will infer the meaning.	Good	0 0%	2 3.2%	1 1.6%	48 76.2%	12 19%	63 100%	4.11	0.57
	Poor	0 0%	1 2.1%	8 16.7%	32 66.7%	7 14.6%	48 100%	3.94	0.63
6. While I read a text, I will guess what happens next.	Good	0 0%	2 3.2%	4 6.3%	36 57.1%	21 33.3%	63 100%	4.21	0.69
	Poor	0 0%	4 8.3%	6 12.5%	33 68.8%	5 10.4%	48 100%	3.81	0.73
7. Reading is a kind of guessing game.	Good	1 1.6%	10 15.9%	3 4.8%	34 54%	15 23.8%	63 100%	3.83	1.02

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	Poor	1 2.1%	8 16.7%	9 18.8%	25 52.1%	5 10.4%	48 100%	3.52	0.96
8. I will select key words and construct the whole picture.	Good	0 0%	4 6.3%	7 11.1%	34 54%	18 28.6%	63 100%	4.05	0.81
	Poor	0 0%	0 0%	6 12.5%	30 62.5%	12 25%	48 100%	4.13	0.60

Table 6 shows the means and standard deviations of the top-down strategies concerning the interaction between background knowledge and inference. The significant difference of mean among good and poor readers was in question 12 (Knowledge about the topic strengthens my inference.) the mean of poor readers in question 12 was 3.83, whereas the mean of good readers was 4.11. It shows that for good readers the topic of the articles is one of the factors for reading comprehension. Through the topic they can start to guess the content and expect what the author writes in the article.

Table 6: The use of top-down strategies concerning the interaction between background knowledge and inference

	Group	Interaction between background knowledge and inference							
		SD	D	N	A	SA	Total	Mean	Std.D
9. Knowledge about the topic supports me to understand ambiguous text.	Good	0 0%	1 1.6%	3 4.8%	47 74.6%	12 19%	63 100%	4.11	0.54
	Poor	0 0%	0 0%	4 8.3%	40 83.3%	4 8.3%	48 100%	4.00	0.41
10. I will infer the component if I am familiar with the topic.	Good	0 0%	0 0%	7 11.1%	40 63.5%	16 25.4%	63 100%	4.14	0.59
	Poor	0 0%	0 0%	7 14.6%	36 75%	5 10.4%	48 100%	3.96	0.50
11. Background knowledge or experience is the main source to construct inference	Good	0 0%	6 9.5%	4 6.3%	40 63.5%	13 20.6%	63 100%	3.95	0.81
	Poor	0 0%	1 2.1%	5 10.4%	36 75%	6 12.5%	48 100%	3.98	0.56
12. Knowledge about the topic strengthens my inference.	Good	0 0%	2 3.2%	5 7.9%	40 63.5%	16 25.4%	63 100%	4.11	0.67
	Poor	0 0%	2 4.2%	8 16.7%	34 70.8%	4 8.3%	48 100%	3.83	0.62

Table 7 shows the means and standard deviations of the bottom-up strategies concerning the dependence on vocabulary. As shown on item 15 (I will be anxious if I encounter words I do not know.), 23.8% of good readers showed their disagreement. In addition, on item 17 (If there are ambiguous or complex words, my reading process will be interrupted.), 25.4% of good readers responded with disagreement. This shows that good readers do not feel anxious even if they encounter ambiguous words. Therefore, they do not follow each word for reading comprehension but try to catch bigger image such as paragraphs or contents.

Table 7: The use of bottom-up strategies concerning the dependence on vocabulary

	Group	Dependence on vocabulary							
		SD	D	N	A	SA	Total	Mean	Std.D
13. Knowing many words is most important for reading.	Good	1 1.6%	4 6.3%	4 6.3%	21 33.3%	33 52.4%	63 100%	4.29	0.95
	Poor	0 0%	2 4.2%	9 18.8%	18 37.5%	19 39.6%	48 100%	4.13	0.86
14. If there are words I do not know, then I will look up the meaning.	Good	1 1.6%	4 6.3%	2 3.2%	30 47.6%	26 41.3%	63 100%	4.21	0.89
	Poor	0 0%	2 4.2%	3 6.3%	30 62.5%	13 27.1%	48 100%	4.13	0.70
15. I will be anxious if I encounter words I do not know.	Good	1 1.6%	15 23.8%	10 15.9%	22 34.9%	15 23.8%	63 100%	3.56	1.14
	Poor	1 2.1%	6 12.5%	13 27.1%	23 47.9%	5 10.4%	48 100%	3.52	0.91
16. Vocabulary level used in a text decides difficulty of the text.	Good	1 1.6%	1 1.6%	4 6.3%	38 60.3%	19 30.2%	63 100%	4.16	0.74
	Poor	0 0%	1 2.1%	10 20.8%	28 58.3%	9 18.8%	48 100%	3.94	0.69
17. If there are ambiguous or complex words, my reading process will be interrupted.	Good	2 3.2%	16 25.4%	3 4.8%	26 41.3%	16 25.4%	63 100%	3.60	1.20
	Poor	0 0%	5 10.4%	6 12.5%	32 66.7%	5 10.4%	48 100%	3.77	0.77
18. I will memorize vocabulary words for improving reading.	Good	1 1.6%	2 3.2%	7 11.1%	35 55.6%	18 28.6%	63 100%	4.06	0.81
	Poor	0 0%	2 4.2%	10 20.8%	32 66.7%	4 8.3%	48 100%	3.79	0.64

Table 8 shows the means and standard deviations of the bottom-up strategies concerning following lexical meaning. In most of the items, good readers showed more negative answers than poor readers. It indicates that good readers do not follow lexical meaning strictly and value its process. However, there were small differences in the means of each question among good and poor readers. Therefore, whether following each word through reading depends on the readers' characteristics.

Table 8: The use of bottom-up strategies concerning following lexical meaning

	Group	Following lexical meaning							
		SD	D	N	A	SA	Total	Mean	Std.D
19. Reading is the process of translating each word and sentence.	Good	0 0%	19 30.2%	5 7.9%	33 52.4%	6 9.5%	63 100%	3.41	1.02
	Poor	1 2.1%	8 16.7%	6 12.5%	32 66.7%	1 2.1%	48 100%	3.50	0.87
20. I spend long time to read a text because I need to follow the meaning of each word meaning to comprehend.	Good	4 6.3%	21 33.3%	3 4.8%	22 34.9%	13 20.6%	63 100%	3.30	1.29
	Poor	1 2.1%	7 14.6%	10 20.8%	27 56.3%	3 6.3%	48 100%	3.50	0.89
21. I need to read the whole	Good	1	17	9	27	9	63	3.41	1.08

text to understand what the content conveys.		1.6%	27%	14.3%	42.9%	14.3%	100%		
	Poor	0 0%	7 14.6%	11 22.9%	26 54.2%	4 8.3%	48 100%	3.56	0.84
22. I will focus on word meaning when I read a text.	Good	1 1.6%	14 22.2%	8 12.7%	34 54%	6 9.5%	63 100%	3.48	0.99
	Poor	0 0%	5 10.4%	9 18.8%	30 62.5%	4 8.3%	48 100%	3.69	0.77
23. I will identify sentence meaning from start to end.	Good	2 3.2%	9 14.3%	7 11.1%	37 58.7%	8 12.7%	63 100%	3.63	0.98
	Poor	0 0%	3 6.3%	15 31.3%	25 52.1%	5 10.4%	48 100%	3.67	0.75
24. Google translation helps my reading comprehension	Good	8 12.7%	16 25.4%	7 11.1%	23 36.5%	9 14.3%	63 100%	3.14	1.30
	Poor	3 6.3%	8 16.7%	7 14.6%	24 50%	6 12.5%	48 100%	3.46	1.10

4.2 Results of the interview

In terms of interview questions, the difference between good and poor readers was revealed. In question 2 (When you read articles, what do you focus on? (Ex) topic, content, each word or sentence, and so on), 7 out of 8 poor readers (student 9, 10, 11, 13, 14, 15, 16) suggested that they focus on each word or sentence in article while reading, whereas only 2 good readers (student 4, 5) mentioned it in question 2. In question 5 (What is the most important factor or way for reading comprehension? Why do you think so?), 6 out of 8 poor readers (student 9, 11, 12, 13, 14, 15) suggested that the most important factor of reading comprehension is vocabulary. Whereas there were 3 good readers (student 2, 6, 7) mentioned it. In a whole, poor readers tend to make a point of vocabulary for reading comprehension more than good readers.

5. Discussion and conclusion

Reading is not just a simple process of translating every word and combining them to make appropriate meaning, but it is a complex process combining readers' linguistic knowledge and cognition from readers' prior knowledge to receive the meaning that the authors put into the text. According to the results of the questionnaire and interview, some major findings emerged. First of all, the results of the questionnaire indicate that the tendency of using top-down strategies can influence readers' comprehension. There is significant difference of using top-down strategies between good and poor readers, whereas no difference was found in bottom-up strategies. Good readers tend to use their background knowledge and make inferences to comprehend articles compared to poor readers. However, the result also shows that both good and poor readers use both top-down and bottom-up strategies.

The result of interview shows more obvious difference among good and poor readers' tendency of strategy use. According to their answers to the interview questions, poor readers rely on lexical knowledge in reading more than good readers.

In contrast, good readers focus more on other aspects, such as background knowledge, full picture of the article, or main point and so on. These differences of reading behavior during reading can influence the degree of reading comprehension.

Pang (2008) raised three elements that distinguish the readers' level of reading proficiency: linguistic knowledge, cognitive ability, and metacognitive strategic ability. Readers' linguistic knowledge, such as vocabulary, is one of the key factors of reading comprehension. In addition, readers' high proficiency in cognition has great influence on constructing inference. Schemata strongly relate with readers' cognition. It influences the interpretation of ambiguous and new information and helping readers to construct inference about the components of the text. However, according to the result of interview question six (What kind of articles do you feel more difficult? Why do you think so?), most of participants even good readers (student1, 2, 3, 4, 5, 6, 8, 10, 13, 16) responded that the factor of the difficulty is about vocabulary or terminology in the article. Even readers who can use top-down strategy efficiently feel difficult to read articles if they are unfamiliar with the terms in the articles. Therefore, top-down strategies cannot compensate the lack of vocabulary knowledge but strategies that can facilitate the reader to catch the main idea or content of the text.

Reading comprehension involves complex information, which is not only concerned with word meaning, but also thought, culture, situation and so on. Although basic skills such as vocabulary and grammar knowledge are important factors to comprehend the text for the beginners, applying schemata and experience to making inference is also essential processing in order to improve readers' language proficiency. In order to encourage different kinds of readers to improve their reading skills beyond beginner level, teachers should provide more diverse ways to teach reading comprehension.

Reading strategy use is a skill that readers can acquire through learning and practicing. The more strategies readers have acquired, the more efficiently they can read. While reading the text, readers select the most appropriate strategy for their comprehension and sometimes combine several ones. Both good readers and poor readers use top-down and bottom-up strategies, but good readers tend to use top-down strategy more than poor readers. We cannot deny the fact that vocabulary knowledge is indispensable for reading comprehension; however, to go beyond beginners' level, using top-down strategies is one of the key factors to improve reading comprehension.

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