

## Students' Cognitive Reading Strategies and Their Reading Comprehension

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### Abstract

Reading comprehension is a fundamental aspect that has to be acquired by the students in learning language. However, this comprehension is difficult to achieve. Therefore, it is required strategies to develop this reading comprehension. This study reports the use of cognitive strategies which are a part of Language Learning Strategies employed by senior high school students in their reading activity. This study focuses to investigate cognitive reading strategies employed by the students, their reasons for employing those strategies, and the students' cognitive reading strategy used in relation to their reading comprehension. A total of 39 second grade senior high school students in Bandung participated in this mixed method study; qualitative explanatory and correlation studies. The data are collected by using the adoption of Oxford's Strategy Inventory for Language Learning (SILL) questionnaire, reading comprehension test, and interview. The results of the study show that the students employed cognitive strategies in reading comprehension. The data obtained through the questionnaire and validated by the interview show that the students employed cognitive strategies in a moderate frequency level. Then, *receiving messages* was the most frequently used category by the participants, while *creating structures for input and output category* was the least frequently used by the students. Further, from the interview it was obviously seen that mostly cognitive strategies are beneficial strategies to comprehend the written text. By employing cognitive strategies, the students believe they become more comprehending to the text rather than the students who did not employ them. In terms of the connection between students' cognitive reading strategies and their reading comprehension, the correlation test shows a significant positive correlation between these aspects (.528 with p-value < 0.01). It indicates that students who employed a variety of cognitive reading strategies tend to have good reading comprehension. Based on the findings, it is recommended that teachers introduce cognitive reading strategies to the students and facilitate them with the appropriate task to explore their cognitive reading strategies.

**Keywords:** *Cognitive reading strategies, reading comprehension*

### 1. Introduction

Reading is an important skill for the second or foreign language learning (Grabe & Stoller, 2002). With sufficient knowledge on reading skills, as suggested by Anderson (1999: 21), the ESL/EFL students make great progress and attain great development in all academic tasks. Therefore, the students are expected to have good comprehension to deal with all reading aspects and difficulties in academic context.

Nevertheless, for foreign language students, reading comprehension is a difficult aspect to achieve (Cohen, 1998: 24). Cohen (1998: 24) also states that the difficulties of students in learning foreign language might be caused by three things. First, the students might not use any strategies in reading comprehension. Second, the kind of language learning strategies they use. Last, how they use those strategies. Thus, the strategies play a significant role in the foreign language acquisition.

Hence, students require effective strategies to make learning easier, faster, more enjoyable, more effective, and more transferrable (Oxford, 1990: 8). It is one of crucial components in leading the students to improve their reading comprehension especially for language learning (Brown, 2001: 208). In a nutshell, in order to make the students more

competent and effective in reading a text, they are expected to employ effective strategies in learning.

A branch of language learning strategies that plays an important role to students' reading comprehension is cognitive strategies. Cognitive strategies, among all reading strategies, are regarded as a part of the effective strategies that might enhance the students' reading comprehension (Santiana: 2009; Ismail: 2011). Moreover, Pei-Sui (2012: 230) states that high proficiency students use more cognitive strategies in their language learning process.

Cognitive strategies in this study refer to the steps or operations used in learning or problem-solving. These strategies more directly relate to individual learning tasks and entail direct manipulation and transformation of the learning material (Rubin, 1987: 23; Oxford, 1990: 43; O'Malley & Chamot, 1990; Brown, 2005: 134; and Oxford, 2003: 12).

## 2. Literature Review

Cognitive strategies are considered to play an important role in the process of learning new language, including a foreign language (Oxford, 1990: 43; Blakova, 2011: 22). These strategies enable the students to understand and produce new language (Oxford, 1990: 37; Oxford, 2003; Rokhsari, 2012: 2). This has been confirmed by the fact that these strategies, as cited by Williams & Burden (1997: 148) in Zare (2012), are defined as "mental processes directly concerned with the processing of information".

Cognitive reading strategies in this study refer to cognitive strategies, employed in the reading context. Cognitive strategies as a branch of language learning strategies are not only applied in reading skill, but also these strategies can be applied in all language skills (Wenden and Rubin, 1987: 19; O'Malley and Chamot, 1990: 1; Wenden, 1991: 7; Oxford: 1993; Oxford, 2003: 8; Cohen, 2001: 682). Therefore, not all the cognitive strategies are applicable in reading skills. As cited in Oxford (1990: 69), there are only 13 cognitive strategies in four categories used in reading activity.

First category is *practicing* involving repeating, recognizing and using formulas and pattern. Second category is *receiving messages* involving getting the idea quickly and using resources for sending and receiving messages. Third category is *analyzing and reasoning* involving reasoning deductively, analyzing expression, analyzing contrastively, translating, and transferring. Fourth category is *creating structure for input and output* involving taking notes, summarizing, and highlighting.

Plenty of research has been conducted in order to investigate the use of language learning strategies in reading context (Cohen, 1998; Ozek & Civelek, 2006; Gernasih, 2006; Santiana, 2009; Ismail, 2011). These studies demonstrate that the students employed different reading strategies in comprehending the text. The high proficiency readers tend to employ more strategies rather than low proficiency readers. In other words, students who use various kinds of reading strategies have better reading comprehension (Santiana, 2009). Hence, it can be said that reading strategies have a great contribution to develop students' reading comprehension.

However, to the researcher's knowledge, research on cognitive strategies as a branch of language learning strategies in Indonesian context is still limited especially in high school (e.g. Ratna, 2011). In her study, Ratna (2011) has investigated the cognitive strategies employed by first year of university students in Garut. The data obtained from questionnaire and Thinking-Aloud Protocols (TAPs) have found that several cognitive

strategies; using the title to predict the content of the text, guessing the meaning of a word from context, using the dictionary, and considering other sentences in a paragraph to figure out the meaning, frequently used by the students. Unfortunately, in her study she has not integrated the students' reasons for employing cognitive strategies and the relationship between the use of cognitive strategies and their reading comprehension.

Therefore, this study aims to fill the gap by investigating cognitive reading strategies on one senior high school students in Bandung. This study was conducted to examine the use of students' cognitive reading strategies and their reasons for employing those strategies. Moreover, it attempted to investigate the correlation between those cognitive reading strategies and their reading comprehension.

### 3. Methods

This study utilized a mixed method which uses both qualitative and quantitative methods in a single study (Cresswell, 2008: 552; Fraenkel, Wallen, & Hyun, 2012: 556). This study was the combination between qualitative explanatory and correlation studies. The qualitative explanatory attempts to maintain 'deeper' understanding of social phenomena (Silverman, 2005: 10) about cognitive reading strategies used by the students and their reasons for employing those learning strategies. Meanwhile, correlation is designed to investigate the nature and the strength of existing relationship (Brown, 1990: 126; Fraenkel, Wallen, & Hyun, 2012: 331, Hatch & Lazaraton, 1991: 425) between students' cognitive reading strategies and their reading comprehension without any attempt to influence them.

The present study took place in one senior high school in Bandung. In order to choose the population, this research used convenient sampling in which drawing samples that are both easily accessible and willing to participate in a study (Tedie & Yu, 2007: 79; Fraenkel, Wallen & Hyun, 2012: 99). Meanwhile, the participants of this study were chosen by cluster random sampling. In cluster sampling, groups, not individuals are randomly selected (Gay, 2009:129). Therefore, there was one class consisted of 39 students get involved in this study.

In collecting the data required, the researcher utilized three data collection techniques. First, questionnaire was employed in this study in order to investigate the students' cognitive reading strategies. The questionnaire adapted from Oxford's (1990) Strategy Inventory for Language Learning (SILL) was intended to examine the cognitive strategies use and the questionnaire of strategy use. The questionnaire consisted of 20 items representing 13 cognitive strategies. Students answered each item statement using a 5-point Likert-scale that ranged from 1 (Never or almost never true of me) through 5 (Always or almost always true of me) (Oxford: 1990).

Second, reading comprehension test was intended in order to measure the students' reading comprehension. The test which was constructed accorded with Curriculum for second grade of Senior High School, thence the materials measured in this test consisted of Narrative, Hortatory Exposition, and Spoof text (BSNP: 2006). Besides, the test constructed was considered three levels of comprehension which are literal, inferential, and evaluative levels as the basic of construction the question items in this study. There are 30 multiple choice items was employed to measure the students' reading comprehension. The scores were used to analyze the relationship between the use of students' cognitive reading strategies and reading comprehension.

Third, interview that was intended to validate data obtained from the questionnaire and to gain the data on the students' reasons in employing cognitive reading strategies in their reading

activity. The type of interview in this study was a semi-structured interview. The semi-structured interview has a sequence of themes to be covered (Nunan, 1992: 149) wherein specific topic/agenda were totally predetermined (McMillan & Schumacher, 2001: 444). The interview which consisted of 13 questions was addressed to six students regarding cognitive reading strategies. The students were allowed to use *Bahasa Indonesia* to elaborate their explanations as it is their native language.

#### 4. Findings and Discussions

##### *Cognitive Reading Strategies Used by the Students*

In order to examine students' cognitive reading strategies, a questionnaire and interview were employed. The questionnaire was a main instrument in recognizing the students' cognitive reading strategies. Meanwhile, interview was done to validate the data obtained from the questionnaire. The detailed information, regarding the students' cognitive reading strategies displays in the following table. The criterion to assess the frequency was based on the Oxford's (1990) SILL criteria.

**Table 1:** Total Average Mean of Cognitive Reading Strategies

	Strategies	Average	Category
Practicing	Repeating	3.58	High
	Recognizing and using formulas and pattern	2.77	Moderate
	Practicing naturally	3.00	Moderate
	Total	3.17	
Receiving and sending messages	Getting the idea quickly	3.50	High
	Using resources for receiving and sending messages	3.28	Moderate
	Total	3.37	
Analyzing and reasoning	Reasoning deductively	3.55	High
	Analyzing expression	3.29	Moderate
	Analyzing contrastively	2.88	Moderate
	Translating	3.21	Moderate
	Transferring	3.30	Moderate
	Total	3.27	
Creating structure for input and output	Taking notes	2.21	Low
	Highlighting	3.06	Moderate
	Summarizing	2.29	Low
	Total	2.52	
<b>Total</b>		<b>3.08</b>	<b>Moderate</b>

Table 1 above reveals that the total average score of students' cognitive reading strategies is 3.08. This score is categorized into a moderate level which indicates that the students sometimes used (Oxford, 1990: 300) cognitive strategies in comprehending English written text. The finding was in line with Syafrizal (2000) and Santiana (2009) which found that cognitive reading strategies are sometimes used by the students in the range of 2.50-3.49. The use of cognitive strategies signified that these strategies play an important function in the process of becoming competent in using the new language (Oxford, 1990: 8).

The moderate frequency of cognitive strategies investigated in this study might be affected by two reasons. First, the students might encounter difficulties in accurately reporting their cognitive strategies since some of these strategies are unconscious or too complicated to remember (Cohen, 1998). Second, foreign language learners are smaller amounts used learning strategies comparing rather than second language learners or native speakers (Green & Oxford, 1995 in Oxford, 2003: 11). As a result of those strategies, cognitive reading strategies in this study are sometimes used by the students.

Moreover, table 1 also indicates that all of the categories were classified into moderate frequency in the range of 2.50-3.49. The most frequency used category employed by the students was *receiving messages* with average score being 3.7, whereas the least frequently used category of cognitive strategies was *creating structure for input and output* with average score being 2.52. It reveals that *receiving messages* was the most popular strategy of reading comprehension strategies employed by the students.

In this regard, there might be two reasons the students mostly employed receiving messages. First, receiving messages category consists of beneficial strategies which lead the students focus on getting essential information in learning (Oxford, 1990: 46; Sung, 2009: 75). Second, *using resources for receiving messages*, as one of strategy in receiving messages category, is supportive for both comprehension and production as it helps the students to take advantage of a range of resources (Oxford, 1990: 46).

Meanwhile, the least frequency category used in this study was *creating input and output* (2.52). This category includes three strategies, namely; taking notes, summarizing, and highlighting as ways to create structure (Oxford, 1990: 47). In the table above, it is obviously seen that there was significant different of average score between *creating input and output* with the other three categories. This evidence indicates that students were not quite familiar with taking notes, summarizing, and highlighting in reading activity.

The low frequency of creating input and output category might occur since this category, as cited by Oxford (1990: 45), does not only concerns to the comprehension, but also it stands for production in the target language. Students might find difficulties in producing target language. It is also linear with Sung's findings (2009) who found that creating input and output was in low level of frequency. Then, Sung (2009: 76) confirms that it is due to the fact that the participants in his study were still in the process of acquiring sufficient vocabulary and characters in order to take notes or make summaries in target language.

#### *Students' Reasons for Employing Cognitive Reading Strategies*

The data from the interview found that the students tended to employed receiving messages rather than creating structure for input and output in reading activity. It is

supported the data from the questionnaire which found that receiving messages are the most frequently used by the students in their reading activity. This finding might occur since the students seldom explored English material. They tended to read English materials only in the classroom during the learning process.

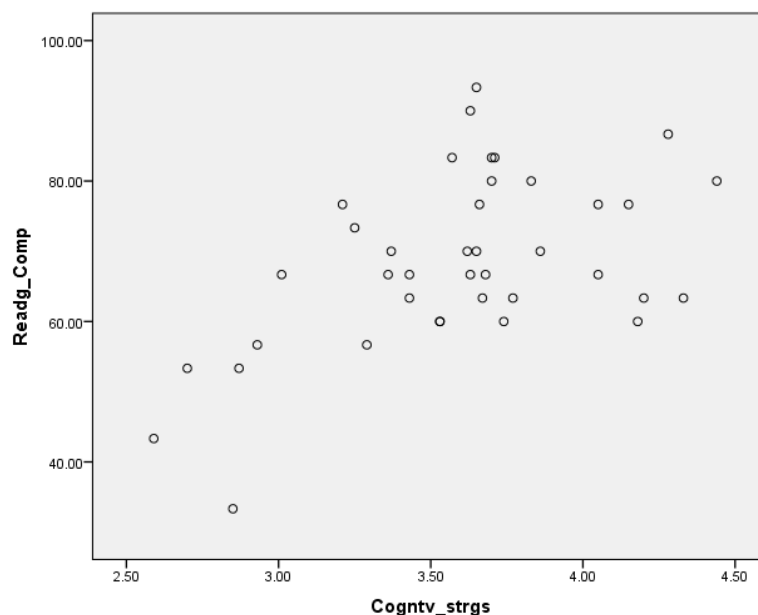
Students exposed their English reading ability only in the classroom when their teacher gave them written texts. The teacher has given some questions related to the text in order to measure the students' reading comprehension. The students hence preferred to use strategies that help them to answer those questions automatically, for instance repeating, skimming, scanning, and using dictionaries which is parts of receiving messages strategies rather than taking notes, highlighting, and summarizing.

#### *Correlation between Cognitive Reading Strategies and their Reading Comprehension*

This section describes the correlation between the students' cognitive reading strategies and their reading comprehension on the second grade of senior high school students in Bandung, West Java. This analysis provides the answer of third research question in this study whether there is a significant correlation between the students' cognitive reading strategies and their reading comprehension.

There were two methods the researcher has done to describe the relationship between the students' cognitive reading strategies and reading comprehension by using IBM SPSS 22.0. The first method was utilizing the scatter plot which is the easiest way to see the relationship through graph (Hatch & Farhady, 1982; Williams, 2014). The following figure shows the scatter plot of the distribution of scores to show clearer and positive correlation of the scores.

The scatterplot below reveals that the points clustered in a band running from lower left to upper right. The points cluster in the scatterplot indicates the relationship between two variables (in this case, students' cognitive reading strategies and reading comprehension). When both variables tend to move the same direction; one variable increases, the other tends to also increase, a positive correlation appears in the scatterplot (Freedman, et al., 2010; Williams, 2014). Thus, it can be assumed that there is a positive correlation between students' cognitive reading strategies and reading comprehension.



**Figure 1:** The scatter plot of the distribution of score

The second method in describing the relationship between the students’ cognitive reading strategies and their reading comprehension was statistical analysis for correlation study. It was required the statistical analysis for correlation studies to measure the degree of relationship between students’ cognitive reading strategies and reading comprehension by using quantitative data (Hatch & Farhady, 1982; Hatch & Lazaraton, 1991: 434). From the computation by using the computer statistical analysis package program “IBM SPSS 22.0 for Windows”, a Pearson correlation was implemented due to the data being in forms of interval. The result of the correlation can be seen in the following table.

**Table 2:** The correlation between the students’ cognitive reading strategies and reading comprehension

		Correlations	
		Readg_Comp	Cogntv_strgs
Readg_Comp	Pearson Correlation	1	.528**
	Sig. (2-tailed)		.001
	N	39	39
Cogntv_strgs	Pearson Correlation	.528**	1
	Sig. (2-tailed)	.001	
	N	39	40

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 4.7 above shows that the Pearson correlation coefficient between the students’ cognitive reading strategies and their reading comprehension is 0.528. It reveals a positive correlation between these variables which indicates that when high scores on one variable tend to go with high scores on the other variable (Sugiyono, 2006: 257; Fraenkel, Wallen, & Hyun, 2012: 340). Hence, based on the data obtained, it can be assumed that the students who employed cognitive strategies in reading activities tend to have good comprehension in reading and vice versa.

Besides, the figure above shows the p (0.001) was lower than 0.01, it reveals that the null hypothesis of this study is rejected; as a result, the alternative hypothesis is accepted. In other words, it can be stated that the students’ cognitive reading strategies had a significant correlation with their reading comprehension. This is consistent with previous research conducted by Santiana (2009) who found that a positive correlation between the third grade Junior High School students in Ciamis students’ reading strategies, including cognitive strategies and their reading comprehension.

These findings validate data obtained from questionnaire (see Section 4.3) which found that the students frequently used cognitive strategies with the average score being 3.08 in reading activity. Besides, it can be assumed that the students were familiar with these cognitive reading strategies and those strategies affected their reading comprehension. It is due to the fact that these cognitive strategies more directly relate to individual learning tasks and entail direct manipulation or transformation of the learning materials (O’Malley & Chamot, 1990). Moreover, it was explicitly stated in the students’ interview that cognitive strategies affect their reading comprehension.

Furthermore, the positive correlation between the students' cognitive reading strategies and their reading comprehension is relevant with the previous studies (e.g Santiana, 2009; Oxford, 2003; Rokhsari, 2012). The more students employ learning strategies in reading activity, the higher reading comprehension achieved. Furthermore, many studies demonstrated that high proficiency readers employed more strategies rather than low proficiency readers (Cohen: 1998; Ozek and Civelek: 2006; Gernasih: 2006; Ismail 2011).

## 5. Conclusion and Recommendations

This study investigated the cognitive strategies used by the second grade of senior high school students on reading activity, encompassing the use of cognitive reading strategies, their reasons for using those strategies, and the correlation of their cognitive reading strategies and reading comprehension. In the light of the research findings presented in Chapter IV, the study draws some conclusion which relates to the three research questions.

First, cognitive strategies were sometimes employed by the students in comprehending the written text. The data were obtained from SILL questionnaire and were validated by interview. *Receiving messages* (include skimming, scanning, and using resources) emerged as the most frequently employed categories of cognitive reading strategies. However, *creating structure for input and output*, which consists of taking notes, highlighting, and summarizing, emerged as the least frequently employed category.

Second, from the interview it was obviously seen that mostly cognitive strategies are beneficial strategies in comprehend the written text. By employing cognitive strategies, the students become more comprehending to the text rather than the students who did not employ them.

Third, there was a positive correlation between students' cognitive reading strategies and their reading comprehension. Students whose score were high in cognitive reading strategies tended to achieve higher reading comprehension and vice versa. These findings affirmed the theories and suggested by some experts and researchers that cognitive strategies have a great contribution in comprehending the text.

Based on the findings of this study, recommendation for classroom practice and future studies are provided. Firstly, for the classroom practice, two recommendations are given. First, teachers are expected to teach learning strategies especially cognitive strategies which help their students in comprehending the text explicitly. Teachers bring information about the benefits of employing cognitive reading strategies in comprehending the text. Thus, the students will understand a lot about the learning strategies and how to use them effectively (Anderson, 1999; Koda, 2007)

Second, the teacher should provide an environment; tasks and exercises which might encourage students to explore their cognitive reading strategies. The students hence should attempt to use cognitive reading strategies in order to improve their reading comprehension.

Secondly, for the future studies, two recommendations are given. First, it is important for the future research to have a larger number of participants in order to be more credible. Second, future studies are necessary to examine the relationship between the students reading comprehension with all language learning strategies.



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