METACOGNITION IN READING: EFL LEARNERS' METACOGNITIVE AWARENESS OF READING STRATEGY USE

Yen-Hui Wang[1]

[1]*Chihlee Institute of Technology, Taiwan*

ABSTRACT

The study investigated English as a foreign language learners' metacognitive awareness of reading strategy use. The participants were 12 Taiwanese college students who were required to read aloud and think aloud the eight designated texts. The collected data came from the pre-and post-questionnaires and an interview on metacognition in EFL reading as well as participants' think-aloud protocols. The findings showed that more perceived strategies were reported in the post-questionnaire, specific ways about how the think-aloud procedure enhanced metacognition were stated in the interview, and more reading strategies were actually used in the think-aloud tasks, suggesting that the participants benefited from the process of thinking aloud while reading in English specifically in terms of an increase in their metacognitive ability about reading. Pedagogical implications for developing metacognitive ability necessary for strategic reading were also discussed.

© 2015 AESS Publications. All Rights Reserved.

Contribution/ Originality

This study contributes to the existing literature on the metacognitive awareness in EFL reading.

1. INTRODUCTION

Metacognition plays an important role in the reading process. Metacognition in reading is concerned with readers' knowledge and use of their own cognitive resources (Garner, 1987). Metacognitive knowledge or awareness involves knowledge about oneself (personal knowledge), knowledge about the tasks performed (task knowledge), and knowledge about the strategies used

(strategy knowledge) (Baker and Brown, 1984). Two dimensions of metacognitive ability have been recognized: knowledge of cognition or metacognitive awareness and regulation of cognition (Brown, 1985; Carrell *et al.*, 1998; Wenden, 1998). The former refers to readers' knowledge of their cognitive resources, which contains three components of declarative knowledge ("knowing that"), procedural knowledge ("knowing how"), and conditional knowledge ("knowing when and why") for arising readers' awareness of appropriate strategy use (Paris *et al.*, 1994). The second aspect of metacognition, regulation of cognition, has to do with execution of various actions. Such executive skills as planning, monitoring, evaluating, testing and revising reading strategies utilized are important and necessary for proficient reading (Baker and Brown, 1984). Both knowledge of cognition and regulation of cognition are indicative of strategic reading.

Metacognitive strategies are conceived as conscious actions that involve readers' knowledge of their own cognitive resources, their awareness of their actual cognitive processing, as well as the ability to organize, control, elaborate and adjust the strategies they are using to be compatible for different reading purposes and situations (Carrell *et al.*, 1998). Issues about the relationship between reading strategies, metacognitive awareness of strategy use, and reading proficiency have been continually explored by many researchers. The work of Baker and Brown (1984) together with that of Garner (1987) in particular stresses the significance of metacognition and self-monitoring strategies on effective reading comprehension. They believe that to become a strategic reader, one must possess metacognition in the manner of comprehension-monitoring strategies, which helps her/him recognize the need to adjust strategy use to meet task demands and in turn leads to more conscious and active comprehension of written text. Carrell (1989) study investigated second language readers' metacognitive awareness of various reading strategies as they read in their native and second language, as well as the relationship between such metacognitive awareness and their first and second language reading comprehension ability. Two groups of university students (45 Spanish native speakers and 75 English native speakers) took both first language (L1) and second language (L2) reading comprehension tests and two metacognitive questionnaires about reading in their L1 and L2 respectively. The results of the quantitative analysis of these two measures revealed that for reading in the first language, the use of local strategies such as sound letter, word meaning, sentence syntax, and content details correlated negatively with students' reading performance. But the results for reading in the second or foreign language indicated some differences in terms of perceived strategy effectiveness between both groups. More specifically, for English as a second language (ESL) students at advanced proficiency level, their perceptions of effective reading strategies were apt to be more global or top-down, whereas less skilled Spanish-as-a-foreign-language students who relied mainly on decoding skills while reading in a foreign language were more local or bottom-up in their perceptions of effective reading strategies. In addition, Zhang (2001) studied metacognitive knowledge of reading strategy use of Chinese students of different English proficiency levels in their English as a foreign language (EFL) reading. Results obtained from an interview showed that the high scorers had greater awareness of strategy use in EFL text processing, especially global strategies (e.g., using context cues for

guessing and inferencing, monitoring comprehension, skimming, anticipating). By comparison, the low scorers did not show awareness of strategy use in their EFL reading to create sense from text and resolve reading confusion. They appeared from their strategy reports to read English texts with much effort given to decoding every linguistic feature, looking up words in dictionaries, and translating into L1. Their deficiencies in L2 linguistic knowledge and schema knowledge undermined their L2 reading efficiency. In particular, their insufficient vocabulary was considered as the biggest obstacle which impacted a great deal on their comprehension. Similar to the findings of Carrell (1989), the Chinese EFL students' reports on their strategic knowledge in Zhang (2001) study seemed to show that readers' L2 proficiency correlated positively with their metacognitive knowledge of strategies.

The studies above have suggested that successful or good readers typically have higher language proficiency level and possess a larger repertoire of comprehension strategies at their disposal, allowing them to employ and adjust strategies flexibly, opportunistically, and strategically for making most sense out of text. They also have better metacognitive awareness of their use of strategies to monitor their ongoing cognitive activities for constructing textual meaning, identifying reading problems, and then taking corrective actions to repair reading breakdowns. Clearly, good readers realize what effective strategies to execute, how to use them, and when and where to apply and evaluate them to fit their reading purposes or demands of the specific reading texts. Consequently, it is needed that well-designed instruction, pedagogical support, sufficient opportunities should be provided in helping language learners to be efficient, interactive, and metacognitive readers.

The current study aimed to investigate English as a foreign language learners' metacognitive awareness of reading strategy use. In addition, participants' perceived strategy use and actual demonstration of strategy use were also examined to establish possible links between learners' knowledge and use of strategies in reading.

2. METHOD

2.1. Participants

The 12 first-year college students who were volunteers to participate in this study were from one technological college in Taiwan. Their English proficiency ranged from average to below average level. These participants were homogeneous ethnically and educationally. Ethnically, they were all native speakers of Mandarin Chinese at an average age of 18, and none of them ever lived in an English-speaking country for more than six months. Educationally, they all had been taught English as a compulsory subject through formal school education for eight years.

2.2. Research Procedure

Before the study, the participants were asked to fill in a self-completion pre-questionnaire related to their awareness and experiences of applying reading strategies in reading English texts. That is, the questionnaire contained one open-ended question to require the participants to make a

list of their perceived reading behavior in terms of the ways they comprehend an English text and overcome their reading problems. The goal of this was to tap the participants' awareness of strategies employed in their reading processes. Two examples were illustrated for this open-ended question so that the participants could have the gist of what they were expected to write down for the answers. It needs to be noted that the questionnaire was originally composed in English and translated into Chinese so that the students could respond to the self-completion questionnaires without any difficulties arisen by their ability to understand or use English.

During the study, the researcher first gave an introduction of the concept of and rationale for thinking aloud, and briefly exemplified thinking aloud by problem solving a simple question which required a reading and a mathematical calculation. In addition, the participants were demonstrated how to process the think-aloud procedure to construct the meaning of texts and cope with comprehension breakdowns by one recorded think-aloud sample, and were given each copy of the trial reading passage. Subsequently, a brief discussion was provided for the participants to share their perceptions of the think-aloud method and discuss the cognitive, metacognitive and motivational domains of the English reading process. In specific terms, the researcher had the participants refer to the think-aloud modelling sample they had just listened to and discuss what comprehension strategies (cognitive strategies) the demonstrator employed to process a text and what particular comprehension-monitoring strategies (metacognitive strategies) they used to work out their reading confusion as well as how they felt about thinking aloud in reading. The researcher then wrote down the strategies the students could identify from the modelling sample on the board. On the whole, this stage was intended to raise participants' awareness about reading strategy use by emphasizing what reading strategies are, why they are important and helpful, how and when to use them in comprehension processing of English written texts. Afterward, every participant was distributed a short English text. The researcher carried out a think-aloud process for the first sentence, and then asked individual participants to try reading and thinking aloud for the subsequent sentences. It must be noted that considering that some of the participants' English oral proficiency was limited to be unable to reflect on their cognitive reading processes in English, the participants were allowed to use either English or Chinese or both while engaging in the task of thinking aloud. During this stage, the researcher monitored practice and provided feedback. If the participants reported very little, the researcher prompted them to talk more about what they had in mind with the focus on the ways they read, comprehended, and tried to solve their reading difficulties. If the participants' verbal reports were incomplete, unclear or equivocal, the researcher then asked them to clarify their production. Participants went on reading aloud and thinking aloud until they completed a few paragraphs of the text. Then, following the think-aloud procedure they had previously practiced, participants carried out eight think-aloud reading tasks to read the eight designated English texts within a 4-week period. In every reading task, the students were doing thinking aloud concurrently, and twelve MP3 machines were used simultaneously to audio record their think-aloud reports. Moreover, to minimize the disturbance caused by each other, the researcher arranged individual students to be at an appropriate distance from the others. What the

researcher did during this stage was to circulate and eavesdrop from a distance and check that the recording procedure did not suffer technical failure. It is important that the researcher did not intervene in any way so that the independence of the participants was maintained and the potential influence of the researcher was minimized.

After the study, a post-questionnaire using the same format and question as the pre-questionnaire was administered. The administration procedure remained unchanged for the post-questionnaire. Finally, an interview was conducted. The participants were individually asked about their views on the metacognition of strategy use through the think-aloud reading method. Participants' interview responses were also audio recorded.

2.3. Data Analysis

The data gained from both the pre-and post-questionnaires and the interview were categorized and compared to see whether the participants' awareness of strategy use was enhanced by listing and reporting their perceived use of reading strategies in their text processes. Moreover, such data derived from the post-questionnaire were further verified with the think-aloud data to examine whether participants' perceived experiences of applying reading strategies during reading were compatible with their real use of reading strategies as they thought aloud while reading. The researcher cross-validated the data from the participants' self-reported reading behavior in the questionnaire and the interview as well as their genuine use of strategies in the think-aloud reading tasks in the hope that such triangulation would provide more in-depth and accurate insights into the investigation.

3. RESULTS AND DISCUSSION

3.1. Results of the Questionnaires

To probe the changes on the participants' metacognitive awareness of strategic English text processing before and after the think-aloud reading activities, Table 1 presents the data from the participants' questionnaire responses. This tabulates their self-perceptions of effective strategies when reading English texts alone and compared the data from the pre-and post-questionnaires.

Table-1. Participants' perceived effective strategies in EFL reading in the pre-and post-questionnaires

Code No.	Strategy	Reported frequency	
		pre-questionnaire	post-questionnaire
S1	Translating	1	5
S2	Rereading	5	10
S3	Analyzing lexical clues		2
S4	Analyzing syntactical/grammatical structures	3	12
S5	Taking notes	1	3
S6	Skipping the unknown part and reading on	3	12
S7	Predicting from the title	2	9
S8	Marking a certain part of the text	4	8
			Continue

S9	Recognizing text structure		5
S10	Inferring	11	12
S11	Drawing on prior experience/knowledge	2	4
S12	Predicting text content		4
S13	Summarizing		3
S14	Paraphrasing	1	6
S15	Making tentative interpretation		5
S16	Looking backward for key words, topic sentences, related information		2
S17	Rhetorical question		2

It can be seen from the table that participants reported substantially more use of reading strategies in the post-questionnaire than in the pre-questionnaire. In terms of effective strategies employed in students' reading processes for meaning construction and repair of comprehension breakdowns, there were 17 categories (reported 104 times by the 12 participants) in the post-questionnaire, but only 10 categories (reported 33 times) in the pre-questionnaire. This showed clearly that there was a substantial increase in the type and noted number of participants' use of strategies after the completion of the eight think-aloud activities. Also, this enhanced ability to report strategy use further revealed that they benefited from the process of thinking aloud while reading to become more metacognitively aware of their use of reading strategies.

3.2. Findings from the Interview

The interview question required the participants to report the specific ways in which the think-aloud procedure had enhanced their metacognitive ability about reading. Participants' responses to the interview were categorized in Table 2, and actual examples from the interview transcripts are given in the discussion below.

Table-2. Participants' responses to the interview

Category	Frequency
① I can realize what I do not understand and what I do understand. (by Participants P1,P2,P3,P4,P5,P7,P8,P9,P10,P11,P12)	11
② It helps me realize my own reading process. (by Participants P1,P3,P4,P5,P6,P7,P8,P12)	8
③ I am more aware of applying strategies while reading English texts through the think-aloud procedure than through reading silently. (by Participants P1,P2,P3,P4,P5,P6,P7,P8,P9,P10,P11,P12)	12

The findings drawn from the interview question indicated that participants felt that the think-aloud process helped the activation of their metacognitive awareness (i.e., identifying what had been understood and what had not been understood, realizing one's own reading process, and being aware of using strategies in EFL reading). Participants noted them 11, 8, and 12 times for each of the individual categories. In terms of the category on how the think-aloud procedure helps readers with their realization of what they understand and what they do not understand, Particiapnt P2 said

that "*Reading aloud and thinking aloud help me much to distinguish the uncomprehended parts in the text from what I have understood*". Block (1986) argues that readers become more conscious of the section they do not comprehend by saying aloud the portion they know. Concerning the enhanced awareness of the use of strategies while reading through the think-aloud procedure, P9 stated that "*Previously when I read texts in English, I tend to skip what I don't know. But I found that when I read sentences aloud, instead of giving it up, I would try to sort out my reading problems by using strategies such as re-reading or marking problematic parts and reading on. And this helped my text comprehension*". P11's reflection was somewhat similar: "*I found myself able to apply more strategies when I read the texts aloud than when I read silently. For example, during the think-aloud process, I, many times, analyzed syntactical and grammatical structures of a sentence. On a few occasions, I guessed unfamiliar words from context clues. I hardly do this during silent reading*". It seemed that when participants thought out loud in reading tasks, they became metacognitively aware of using strategies to construct meaning, and the more they applied strategies in reading, the more likely those strategies were internalized and became more automatic. This may also further indicate that the articulation process itself can enhance readers' metacognition of strategy use and in turn, promote their comprehension performance. It is thus clear that the information gathered from the interview corroborated the findings derived from the questionnaire responses, both of which suggested that reading through thinking aloud increased participants' metacognition about reading strategy use.

3.3. Participants' Perceived Strategy Use and Actual Demonstration of Strategy Use

The data on participants' perceived strategy use were collected from the post-questionnaire, and evidence of their actual deployment of reading strategies was located in the transcripts of their think-aloud protocols. To help make a further comparison of participants' reported perceptions of strategy use and the strategies that participants employed in their real reading through thinking aloud while processing the eight designated texts, Table 3 was constructed.

Table-3. Participants' perceived and actual use of the strategies in EFL reading

Code No.	Strategy	Frequency	
		post-questionnaire	think-aloud task
S1	Translating	5	12
S2	Rereading	10	12
S3	Analyzing lexical clues	2	11
S4	Analyzing syntactical/grammatical structures	12	12
S5	Taking notes	3	7
S6	Skipping the unknown part and reading on	12	12
S7	Predicting from the title	9	9
S8	Marking a certain part of the text	8	8
S9	Recognizing text structure	5	6
S10	Inferring	12	12
S11	Drawing on prior experience/knowledge	4	12
			Continue

S12	Predicting text content	4	11
S13	Summarizing	3	7
S14	Paraphrasing	6	12
S15	Making tentative interpretation	5	12
S16	Looking backward for key words, topic sentences, related information	2	10
S17	Rhetorical question	2	10

Note: Frequency of each of the above actual reading strategies employed by participants during the eight think-aloud tasks was obtained from the coded think-aloud transcripts to indicate the number of participants who used each of the specific strategies across tasks with a potential maximum total number of 12 participants for each of them.

Although the analysis of participants' perceived strategic reading behavior illustrated in Table 1 indicated, as mentioned above, that participants' metacognitive awareness was enhanced to allow them to report greater use of strategies in both type and frequency in the post-questionnaire, the quantitative data presented in Table 3, however, revealed that there was a discrepancy in frequency between participants' perceived experiences of applying these categorized strategies listed in the post-questionnaire and their real employment of the same strategies demonstrated in the think-aloud data. More specifically, several participants failed to report their use of most of these 17 strategies despite using them during the tasks. Only 5 perceived strategies S4, S6, S7, S8, and S10 were reported by all the participants who had used them in their think-aloud tasks. In all other cases the strategies actually used were under-reported. Thus it was found that in general participants actually demonstrated greater use of these strategies in their EFL text processing to comprehend texts and overcome reading problems than they perceived. Such inconsistency of readers' reported reading behavior and what they seem to be doing as they engage in a reading task through verbal reporting is one of the potential limitations found in self report or verbal report measures (e.g., written questionnaire and oral interview). It is because such measures as metacognitive questionnaires require respondents' conscious thinking about their reading behavior but their metacognitive perceptions of reading strategy utility may not reflect the true pattern of their reading. Baker and Brown (1984) point out that quite often readers do not use a particular strategy that they report is effective. On the contrary, sometimes they do not report a specific strategy that they use in their reading. Their argument is that metacognitive strategic knowledge in the former case seems to precede strategy use, while in the latter case, it appears to follow strategy use. Results from those participants' perceived effective strategies used to make sense of texts and repair comprehension breakdowns seemed to concur with the latter case (i.e., some participants reported only certain elements of their actual strategic activities involved in their reading processes). The fact that they under-reported their strategy use actually implies that they were not so metacognitively aware of the effective strategies they employed in their EFL reading although, as shown above, their awareness did still rise when compared with the pre-questionnaire. The possible explanations for such inconsistency that participants actually used more strategies than they reported may be simply that they did not remember to report some strategies. It could also be that they lacked metacognitive awareness of their cognitive processing, either because they did not have metacognitive knowledge of all of their cognitive resources or because they were using some strategies more automatically due to stronger focus on meaning construction and problem solving in such a think-aloud context. In other words, failure to report a particular strategy may indicate a lack of metacognitive awareness of that strategy but does not necessarily result in an inability to apply that specific

strategy when needed. The automation of strategy use may in fact therefore be a sign of improved reading. Clearly, a metacognitive awareness of strategy use while reading is a desirable quality which could offer ongoing enhancement of reading and should therefore be on the teacher's agenda for development, but it is not in itself the only factor in successful reading.

To sum up, the results that addressed EFL Taiwanese students' metacognitive awareness of strategies while reading were positive. Although a gap between participants' self-perceptions of strategy use (on the basis of the self-report data) and real demonstration of strategy use (based on the think-aloud data) existed at the time when the investigation was conducted, this gap was a positive one with more strategy use than reported. Additionally, awareness grew (i.e., more perceived strategies were reported in the post-questionnaire, and specific ways about how the think-aloud procedure enhanced metacognition were stated in the follow-up interview). It could be concluded that having students make strategies overt through think-aloud reading activities over a period of time may enable them to become more consciously aware of effective strategy use which functioned in the EFL reading process to help them employ appropriate strategies to make meaning from the texts and cope with the obstacles in comprehension and that this greater awareness of the use of strategies would enhance reading comprehension.

4. CONCLUSIONS AND IMPLICATIONS

In this study, participants' overall metacognition about the reading process grew during the think-aloud activities. As shown in the interview, the think-aloud procedure was thought to be useful for English as a foreign language reading by most participants in the way that it had heightened their metacognitive awareness of the reading process, for example, in identifying what had made sense and what had not been understood, in realizing their own reading processes, and in becoming aware of how they were applying strategies in EFL reading. In addition, the results displayed in Table 1 showed that more perceived strategies were reported by the participants in the post-questionnaire than in the pre-questionnaire. Also, the results presented in Table 3 concerning the comparison of participants' perceived and actual use of the reading strategies indicated that they used more strategies when performing the think-aloud tasks than they could report in response to the post-questionnaire. This gives the conclusion that participants could read the texts through using reading strategies, but without being able to report as many strategies as they used. Accordingly, it is not a must that a learner has to be able to talk about their use of reading strategies in order to become an effective reader although clearly knowledge of what and why a reader is doing during reading is always useful to better reading. This finding also reassures teachers that students may not always talk about how they read or report their strategy use, particularly when some of their available strategies are operated more automatically as in the case of expert readers. Ultimately, what learners need to be is more strategic readers, and what teachers need to address through teaching instruction is how to make their students better readers by equipping them with effective strategies to use flexibly when trying to comprehend challenging texts in their independent reading. Part of the change needed is then for focused attention on these issues with an instructional methodology integrating the think-aloud technique for strategy acquisition and gradually increasing metacognitive awareness of strategy use, so promoting learners' reading performance in both their reading for meaning and learning from reading. Exposing students to thinking aloud while reading is a beneficial

metacognitive activity (Block, 1986), particularly for those less successful or novice readers, because it brings some of readers' metacognitive awareness to the surface to help them have a better understanding about what they are doing when they are reading and to give ideas about how to process a text more successfully, and therefore facilitates reading comprehension. In addition, it would be possible for students to listen to and even occasionally transcribe their own think-aloud recordings and keep a learner diary about their responses to what has been read and the problems they have confronted in reading. This will make students more conscious of their own strengths in reading performance and more aware of their strategy use. Their increased metacognitive awareness will then further help them more strategically control a repertoire of reading strategies to read efficiently and effectively, and will in turn lead to reading success.

REFERENCES

Baker, L. and A.L. Brown, 1984. Metacognitive skills and reading. In P. D. Pearson, R. Barr, M. L. Kamil and P. Mosenthal (Eds.). Handbook of reading research. New York: Longman. pp: 353–394.

Block, E., 1986. The comprehension strategies of second language readers. TESOL Quarterly, 20(3): 463–493.

Brown, A.L., 1985. Metacognition: The development of selective attention strategies for learning from text. In H. Singer and R. B. Ruddell (Eds.). Theoretical models and processes of reading. 3rd Edn., Newark, Del.: International Reading Association. pp: 501–526.

Carrell, P.L., 1989. Metacognitive awareness and second language reading. The Modern Language Journal, 73(2): 121–134.

Carrell, P.L., L. Gajdusek and T. Wise, 1998. Metacognition and EFL/ESL reading. Instructional Science, 26(1-2): 97–112.

Garner, R., 1987. Metacognition and reading comprehension. Norwood, NJ: Ablex.

Paris, S.G., M.Y. Lipson and K.K. Wixson, 1994. Becoming a strategic reader. In R. B. Ruddell, M. R. Ruddell and H. Singer (Eds.). Theoretical models and processes of reading. 4th Edn., Newark, Del.: International Reading Association. pp: 788–810.

Wenden, A.L., 1998. Metacognitive knowledge and language learning. Applied Linguistics, 19(4): 515–537.

Zhang, L.J., 2001. Awareness in reading: EFL students' metacognitive knowledge of reading strategies in an acquisition-poor environment. Language Awareness, 10(4): 268–288.