*Modern English Education*, Vol. 14, No. 4, Winter 2013

# A Cross-Cultural Study of the Metacognitive Online Reading Strategies among EFL University Students*

**Yoo-Jean Lee****
Dankook University
**James Chamwada Kigamwa**
Indiana University
**Suphawat Pookcharoen**
Thammasat University
**Vichea In**
Indiana University

**Lee, Yoo-Jean, Kigamwa, James Chamwada, Pookcharoen, Suphawat, & In, Vichea. (2013). A cross-cultural study of the metacognitive online reading strategies among EFL university students. *Modern English Education*, *14*(4), 109-132.**

This cross-cultural study explores metacognitive online reading strategies used among university students in four non-native English speaking countries. 132 students in Cambodia, Kenya, Korea, and Thailand responded to an online survey of reading strategies (OSORS), and later two from each country were engaged in a think-aloud online reading task. The survey data was analyzed to examine whether there were any differences among the students from the four countries in their reported use of strategies. The think-aloud data was also analyzed to determine what strategies the students actually used as well as the ways and the reasons of using them. No noticeable differences were found between the overall students' reported use and actual use of strategies. Interestingly, Kenyan students showed some differences from Asian counterparts in their strategy use. Possible reasons and implications are discussed.

**[metacognitive online reading strategies/think-aloud/new literacies/
초인지주의적 온라인 읽기 전략/소리 내어 생각하기/뉴리터러시]**

---

* This is the revised version of the working paper included in the second volume of the *Working Papers in the Literacy, Culture, and Language Education (WPLCLE)* under the title of "Exploring metacognitive online reading strategies among university students in four non-native English speaking countries" (May, 2013). The WPLCLE, issued by the Department of Literacy, Culture, and Language Education at Indiana University, is an annual peer-reviewed online collection of papers which is providing a forum to publish research papers.

** First and corresponding author: Yoo-Jean Lee, Co-authors: James Chamwada Kigamwa, Suphawat Pookcharoen, and Vichea In.

## I. INTRODUCTION

As the opportunity of online reading has increased with the widespread use of the Internet, more attention has been drawn to online reading behavior. A number of studies thus have examined about the online reading of native English speakers, but not so many as about non-native English speakers (Coiro & Dobler, 2007; Corio, Knobel, Lankshear & Leu, 2008; Leu, Kinzer, Coiro & Cammack, 2004; Leu, et al., 2007). Though Anderson (2003) documented metacognitive online reading strategies among ESL and EFL students based on a survey, the study only relied on the students' self-reported data. The present study attempts to supplement self-reporting with think-aloud data, and to compare the use of strategies among college students from four non-native English speaking countries. Using the think-aloud data to triangulate with the self-reported survey data would provide new insights into metacognitive online reading strategies. This study seeks to answer the following two questions:

1) What metacognitive online reading strategies do students in different countries report using?
2) How and why do students in different countries actually use the metacognitive online reading strategies?

## II. LITERATURE REVIEW

An extensive body of research has established an inextricable relationship between readers' strategies and reading comprehension (Baker & Brown, 1984; Carrell, 1988; H. Lim, 2009; Palinscar & Brown, 1984; M. Song, 1998). These studies have come to the consensus that the effective use of reading strategies contributes to reading comprehension. Thus, what expert readers do has received a lot of attention from many research studies which argue that readers' high levels of reading comprehension are of particular relevance to their cognitive effort, referred to as metacognitive processing (Bazerman, 1985; Pressley & Afflerbach, 1995). Livingston (1997) defines metacognition as "higher order thinking which involves active control over the cognitive processes engaged in learning" (p. 1). During reading, metacognitive strategies are employed to plan, monitor, and evaluate one's own learning (Baker & Brown, 1984). Research suggests that the use of metacognitive reading strategies can help readers overcome problems they encounter and ultimately achieve reading comprehension.

Sheorey and Mokhtari (2001) developed the Survey of Reading Strategies (SORS) to discover metacognitive offline reading strategies used by post-secondary students. They compared ESL college students and native-English-speaking American college students in

order to find differences in metacognitive awareness of reading strategies. Gender and reading ability differences were also taken into account. However, not only metacognitive strategies but also other strategies such as cognitive and support strategies were considered in the study. Results revealed that both US and ESL students did not show much difference in that they reported to use cognitive strategies the most and support strategies the least. Also, it was found that the US high-reading ability students tended to consider support reading strategies more valuable, whereas ESL students, regardless of their reading ability, tended to give high value to support reading strategies. Nonetheless, the researchers simply interpreted students' self-reported survey data, but did not explicitly explain how similar or different they were in their use of metacognitive, cognitive, and support strategies.

Based on the SORS, Anderson (2003) developed Online Survey of Reading Strategies (OSORS) to examine the differences between ESL and EFL students in their use of metacognitive online reading strategies. It was found that both groups of the students used planning strategies the most and support strategies the least. The only difference between them was that the EFL students used problem-solving strategies more frequently than the ESL students. Even though the researcher attempted to investigate the role of strategies used by L2 readers within the context of online reading tasks, he merely presented the results of the OSORS (i.e. students' self-reported use of strategies), without considering either individual students' differences or their actual use of strategies. With this information, the research would have provided more detailed and valid explanation of how students actually employed the reported strategies.

In connection with new literacies perspective, Coiro and Dobler (2007) sought to discover the nature of online reading comprehension processes. Through the reading tasks, they explored the reading processes that 11 sixth-grade skilled readers used to search for and locate information on the Internet, and the recursive patterns of the readers' cognitive strategy use. They also conducted interviews and used think-aloud protocols. However, they included only a small number of advanced level readers as participants and described what they generally did while reading online. No specific reasons of why they used certain strategies were provided.

Y. Lee (2011) used Anderson's OSORS to investigate Korean university students' use of online reading strategies. Although additional online reading task was given to see how and why the students applied strategies, it was difficult to ascertain Korean university students' general use of online reading strategies since only cases of two students were analyzed. Also, no comparisons were made with other groups of students who were learning English as a L2 or FL in other countries.

It seems that there is limited information on the role played by metacognitive strategies in the online reading contexts, particularly in reading among L2 speakers of English. By finding the types, ways, and reasons of using metacognitive reading strategies of L2 English speakers in other parts of the world, this study will be able to provide useful

information for language teachers and researchers in non-native English speaking countries helping them understand similarities and differences in the use of the strategies among different countries, find out peculiarities of their own country students' strategy use, and plan effective ways of teaching reading strategies.

## III. THEORETICAL FRAMEWORK

The current study is guided by the notions of metacognition and learning (Anderson, 2003), theory of new literacies (Gee, 1999; Street, 1984), and cognitive flexibility theory (Spiro, Fletovich, Jacobson & Coulson, 1991; Spiro & Jehng, 1990).

Metacognition plays an important role in reading by helping readers plan, monitor, and evaluate their comprehension (Anderson, 2003; Thamraksa, 2005). Particularly in online reading, readers are required to question themselves; locate, assess, and synthesize information; and use new communication tools on the Internet (Leu, et al., 2007), all of which are metacognitive strategies. By using these strategies appropriately within given tasks, online readers can maximize their comprehension. The notion of metacognition will allow an investigation of how the participants in this study monitor and regulate their cognitive processes during online reading.

In new literacies theory, online readers engage with e-mail, blogs, chat rooms, World Wide Web browsers, multimodal texts, etc. with sweeping changes in technology (Larson, 2007). They thus need to interpret and interact with multimodal texts which contain the multiple modes of communication such as sound, graphs, pictures, video, written text, etc. (Hagood, 2000; Kress & Van Leeuwen, 2001). Also, new reading strategies, which are different from offline reading strategies, are required for them to successfully utilize and comprehend abundant information available on the Internet (Leu, 2000; Street, 2003). By using new literacies theory, this study will allow the researchers to specify what new strategies are used in online reading as well as how and why they are used.

Harnessing together the theories that address the notion of metacognition and new literacies is cognitive flexibility theory which focuses on fostering learners' ability to promptly and flexibly transfer and reconstruct knowledge, skills, or strategies to meet different learning demands. In order to have better understanding of online texts and acquire advanced knowledge, readers should construct meaning from online texts by adaptively reassembling prior knowledge (Spiro & Jehng, 1990; Spiro et al., 1991).

## IV. METHODOLOGY

### 1. Participants

Thirty three students from each of four countries; Cambodia, Kenya, Korea, and Thailand; for a total of 132 undergraduate students from 19 to 40 years of age (64 males and 68 females) were voluntarily recruited. The four researchers of this study contacted one of the universities located in each country's capital city and asked each of them for a permission to get a list of students' e-mail addresses. Through an e-mail, the researchers informed the students of the purpose and procedures of the study and requested for their voluntary participation. Regardless of their majors, only the first 33 students from each country who responded to the e-mail were recruited as the participants. 118 students out of 132 provided either TOEIC or TOEFL score results. Their TOEIC scores were between 600 and 900 (990 being the highest score possible), and their Internet-based test (iBT) TOEFL scores were between 73 and 100 (120 being the highest score possible). The other 14 students provided final grades of English courses since they had never taken either TOEIC or TOEFL. Their grades were between 'B' and 'A.' It was inferred that overall the students were at intermediate or advanced level.

## 2. Data Collection

Students were given the OSORS (Anderson, 2003), an adapted form of the SORS (Sheorey & Mokhtari, 2001), in order to identify online reading strategies they used. The SORS, which has 30 items, is designed to measure metacognitive offline reading strategies in academic reading contexts. It measures three categories of reading strategies: global, problem-solving, and support strategies. On the other hand, the OSORS is designed to measure metacognitive online reading strategies. It also contains the same three categories of reading strategies but has 38 items, each using a 5-point Likert scale for responses. The three subsections of the OSORS are shown in Table 1.

**TABLE 1**

Three Subsections of the OSORS

| Strategy Type | | Strategy |
|---|---|---|
| | 1 | I have a purpose in mind when I read on line. |
| | 2 | I participate in live chat with other learners of English. |
| | 3 | I participate in live chat with native speakers of English. |
| | 5 | I think about what I know to help me understand what I read on-line. |
| | 6 | I take an overall view of the on-line text to see what it is about before reading it. |
| | 8 | I think about whether the content of the on-line text fits my reading purposes before choosing to read it. |
| | 10 | I review the on-line text first by noting its characteristics like length and organization. |

| | | |
|---|---|---|
| Global | 14 | When reading on-line, I decide what to read closely and what to ignore. |
| | 17 | I read pages on the Internet for academic purposes. |
| | 18 | I use tables, figures, and pictures in the on-line text to increase my understanding. |
| | 20 | I use context clues to help me better understand what I am reading on-line. |
| | 23 | I use typographical features like bold face and italics to identify key information. |
| | 24 | I critically analyze and evaluate the information presented in the on-line text. |
| | 26 | I check my understanding when I come across new information. |
| | 27 | I try to guess what the content of the on-line text is about when I read. |
| | 30 | I check to see if my guesses about the on-line text are right or wrong. |
| | 32 | I scan the on-line text to get a basic idea of whether it will serve my purposes before choosing to read it. |
| | 33 | I read pages on the Internet for fun. |
| Problem-solving | 9 | I read slowly and carefully to make sure I understand what I am reading on-line. |
| | 11 | I try to get back on track when I lose concentration. |
| | 13 | I adjust my reading speed according to what I am reading on-line. |
| | 16 | When on-line text becomes difficult, I pay closer attention to what I am reading. |
| | 19 | I stop from time to time and think about what I am reading on-line. |
| | 22 | I try to picture or visualize information to help remember what I read on-line. |
| | 28 | When on-line text becomes difficult, I re-read it to increase my understanding. |
| | 31 | When I read on-line, I guess the meaning of unknown words or phrases. |
| | 34 | I critically evaluate the on-line text before choosing to use information I read on-line. |
| | 35 | I can distinguish between fact and opinion in on-line texts. |
| | 36 | When reading on-line, I look for sites that cover both sides of an issue. |
| Support | 4 | I take notes while reading on-line to help me understand what I read. |
| | 7 | When on-line text becomes difficult, I read aloud to help me understand what I read. |
| | 12 | I print out a hard copy of the on-line text then underline or circle information to help me remember it. |
| | 15 | I use reference materials (e.g. an on-line dictionary) to help me understand what I read on-line. |
| | 21 | I paraphrase (restate ideas in my own words) to better understand what I read on-line. |
| | 25 | I go back and forth in the on-line text to find relationships among ideas in it. |

| | |
|---|---|
| 29 | I ask myself questions I like to have answered in the on-line text. |
| 37 | When reading on-line, I translate from English into my native language. |
| 38 | When reading on-line, I think about information in both English and my mother tongue. |

As described by Huang, Chern and Lin (2009), global strategies are the actions that learners intentionally employ to plan and monitor their reading, problem-solving strategies are the actions that they apply particularly when a text gets difficult, and support strategies are what they do or use to enhance their reading comprehension. The survey was administered using Survey Monkey, an online survey tool. The 38 items and several background information questions such as age, major, hours spent reading online per day, interested areas in reading online, years of learning English, overall English proficiency level (e.g. TOFEL or TOEIC scores, or final grades of English courses), etc. were included. The students received an e-mail with the link to this survey. Later, a scoring guideline was provided so that they could interpret their scores (In the guideline, it is noted that the average score of 2.4 or below means low strategy use, 2.5 to 3.4 indicates moderate strategy use, and 3.5 or above demonstrates high strategy use.).

Based on the students' responses to the survey, the top three strategies in each of the three categories were identified according to the four countries. The students from each country who used the top three strategies the most in each of the three categories (They checked '*usually*' or '*always or almost always*' for the use of those strategies in the survey.) were identified. Then based on their willingness, diversity in majors, availability of time, and access to the Internet, two students from each country were selected for a think-aloud task. Think-aloud protocol is a one-to-one interview in which a student describes his/her thoughts verbally (Chamot, 2001). It has been used as a useful research tool to identify "the mental processes that [students] engage in while undertaking a learning task" (Anderson, 2008, p. 106) and also as a pedagogical tool to raise metacognitive awareness (Anderson, 2004, 2008). The eight selected students were asked to read an article about global warming from *National Geographic* (http://environment.nationalgeographic.com/environment/global-warming/gw-overview.html). The researchers of this study agreed that the students from different cultural backgrounds might be quite familiar with this topic as 'local and world news' was their area of interest. The article had less than 900 words with 20 paragraphs. It is also rated at the U.S. grade level 10.1 by the Flesch-Kincaid leveling using the MS Word text difficulty feature. A specific guideline for the think-aloud procedure was made by the researchers so that there would be some standardization of questions for each student in order to enhance validity and inter-rater reliability (See Appendix.). During the think-aloud interviews, the students were told to read the given text as they usually read texts online and then asked to talk about how they read it and why they used certain strategies.

Since the researchers and students were in different countries, communication was facilitated via Skype: "software that allows users to make telephone calls over the Internet" ("Skype," 2012, para.1). They used Pamela for Skype (http://www.pamela-systems.com) to record Skype call conversations. Each interview lasted about an hour to an hour and a half. Later, the conversations were transcribed, and member checks were conducted in cases where there was need to clarify specific issues in the transcripts.

### 3. Data Analysis

To answer the first research question, the researchers identified first means and standard deviations of the overall students' responses and then divided the students by country and examined means and standard deviations of their responses for the 38 items. The top three strategies in general and in the three subsections according to the four countries were identified. Also, ANOVAs were applied to examine whether significant differences existed among the four countries on the three subsections of the OSORS. To answer the second research question, the recorded think-aloud conversations were analyzed to see how and why the four country students used different online reading strategies. The most frequently used ones reported in each student's survey and the strategies actually used during the think-aloud task were also compared.

## V. RESULTS AND DISCUSSION

### 1. The Four Country Students' Reported Use of Metacognitive Online Reading Strategies

The first research question in this study focuses on identifying the metacognitive online reading strategies that are reported to be used by the students in the four countries. According to the students' response to the OSORS, the top three global strategies that the overall students in the four countries used are indicated with mean scores and standard deviations in Table 2.

**TABLE 2**

Strategies Used the Most by the Overall Students in the Four Countries

| Strategy Type | Strategy | M | SD |
|---|---|---|---|
| Global | #1 (*having a purpose in mind when reading online)* | 3.58 | 1.15 |
| | #6 (*taking an overall view of the on-line text to see what it is about before reading it*) | 3.70 | 1.10 |

| | | | |
|---|---|---|---|
| | #14 (*deciding what to read closely and what to ignore*) | 3.81 | 1.05 |
| Problem-solving | #13 *(adjusting one's reading speed according to what s/he is reading on-line*) | 3.48 | 1.06 |
| | #16 (*paying closer attention to what one is reading when it becomes difficult*) | 3.49 | 1.05 |
| | #28 *( re-reading on-line text to increase one's understanding when it becomes difficult*) | 3.55 | 1.04 |
| Support | #15 (*using reference materials to understand the on-line text better*) | 3.39 | 1.10 |
| | #21 ( *paraphrasing to better understand what one reads on-line*) | 3.28 | 1.23 |
| | #25 (*going back and forth in the on-line text to find relationships among ideas in it*) | 3.27 | 1.03 |

Next, the top three strategies that the students in each country used are presented with means and standard deviations in Table 3.

**TABLE 3**

Strategies Used the Most by the Students in Each Country

| Strategy Type | C | M | SD | Ke | M | SD | Ko | M | SD | T | M | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Global | #1 | 3.73 | 1.10 | #6 | 4.39 | .97 | #6 | 3.42 | .90 | #1 | 3.48 | 1.09 |
| | #14 | 3.76 | 1.20 | #14 | 4.36 | .99 | #14 | 3.64 | .90 | #6 | 3.58 | 1.09 |
| | #20 | 3.70 | 1.13 | #26 | 4.15 | .87 | #32 | 3.36 | .82 | #14 | 3.48 | .91 |
| | | | | | | | | | | #20 | 3.48 | 1.15 |
| Problem-solving | #13 | 3.73 | .84 | #28 | 3.70 | 1.16 | #11 | 3.42 | .83 | #16 | 3.52 | 1.03 |
| | #16 | 3.88 | .86 | #34 | 3.88 | 1.39 | #13 | 3.67 | .78 | #22 | 3.58 | .97 |
| | #31 | 3.97 | .98 | #36 | 4.15 | 1.15 | #31 | 3.42 | .83 | #28 | 3.45 | .91 |
| Support | #15 | 3.24 | 1.28 | #12 | 3.97 | 1.36 | #15 | 3.30 | .98 | #15 | 3.73 | .98 |
| | #21 | 3.09 | 1.01 | #21 | 3.91 | 1.18 | #25 | 3.18 | .88 | #21 | 3.55 | 1.09 |
| | #25 | 3.27 | 1.01 | | | | #38 | 3.03 | 1.02 | #25 | 3.33 | .99 |
| | #38 | 3.09 | 1.26 | | | | | | | | | |

*Note.* C: Cambodia, Ke: Kenya, Ko: Korea, and T: Tahiland

For Cambodia and Thailand, top four strategies were identified for a certain subsection since two strategies had the same mean score. In the case of Kenya, only top two support strategies; strategy #12 and #21; were identified. The reason is that four strategies (i.e. #4, #15, #25, and #29) tied for the third place each scoring a mean of 3.27, and it seemed to be too many to list all of them. In some cases, the strategies used the most in specific

countries matched the top three strategies used by all students in general, for example, global strategy #6 and #14 were used not only by Kenyan students but also by the overall students. However, there were some top strategies unique to specific countries, for example, the problem-solving strategy #11 (*trying to get back on track when losing concentration*) was used only by Korean students.

So far, what kinds of strategies in each subsection were used the most by the students was discussed. Now, let us turn our attention to what type of strategies among the three subsections was used the most and the least. The means and standard deviations for the three subsections of the strategies that the students in the four countries used are shown in Table 4.

**TABLE 4**
Means and Standard Deviations for the Three Subsections of the OSORS

| Strategy Type | Country | N | M | SD |
|---|---|---|---|---|
| Global | Cambodia | 33 | 3.32 | .64 |
| | Kenya | 33 | 3.53 | .61 |
| | Korea | 33 | 2.99 | .39 |
| | Thailand | 33 | 3.21 | .65 |
| | Total | 132 | 3.26 | .61 |
| Problem-solving | Cambodia | 33 | 3.43 | .57 |
| | Kenya | 33 | 3.45 | .86 |
| | Korea | 33 | 3.21 | .53 |
| | Thailand | 33 | 3.27 | .70 |
| | Total | 132 | 3.34 | .68 |
| Support | Cambodia | 33 | 2.99 | .76 |
| | Kenya | 33 | 3.01 | .77 |
| | Korea | 33 | 2.77 | .54 |
| | Thailand | 33 | 3.01 | .67 |
| | Total | 132 | 2.95 | .69 |

When considering 132 students in general, they used problem-solving strategies the most (M=3.34, SD=.68), global strategies the second most (M=3.26, SD=.61), and support strategies the least (M=2.95, SD=.69). The ANOVA results in Table 5 show that there is a significant difference among the four countries in the use of global strategies ($F=4.943$, $p<.05$) but not in problem-solving and support strategies, indicating that the students in the four countries varied only in their use of global strategies. This attributes to Kenyan students' use of global strategies with the highest frequency compared to the students in other countries.

**TABLE 5**
ANOVA among the Four Countries for the Three Subsections of the OSORS

| Strategy Type | Source | SS | df | MS | F | Sig |
|---|---|---|---|---|---|---|
| Global | Between Groups | 5.023 | 3 | 1.674 | 4.943 | .003* |
| | Within Groups | 43.356 | 128 | .339 | | |
| | Total | 48.378 | 131 | | | |
| Problem-solving | Between Groups | 1.360 | 3 | .453 | .987 | .401 |
| | Within Groups | 58.750 | 128 | .459 | | |
| | Total | 60.109 | 131 | | | |
| Support | Between Groups | 1.360 | 3 | .453 | .954 | .417 |
| | Within Groups | 60.801 | 128 | .475 | | |
| | Total | 62.160 | 131 | | | |

*$p$<.05

When considering the students in each country, all of them except those in Kenya used problem-solving strategies the most, global strategies the second most, and support strategies the least even though the mean scores of the three subsections used in each country varied. The strategy use of Kenyan students was unique. They used global strategies the most, problem-solving strategies the second most, and support strategies the least. No clear evidence was found in the literature, but the researchers assumed that the reason for this might be due to different English teaching methods in Asia and Africa. Whereas Asian students are generally taught to solve all the comprehension difficulties immediately before moving on to the next part of a text, African counterparts are taught to monitor and manage their overall reading processes rather than dealing with specific comprehension difficulties. Accordingly, Cambodian, Korean, and Thailand students in this study might have used problem-solving strategies more as these strategies are applied especially when problems occur for a deeper understanding of information in a text (Mokhtari & Sheorey, 2002; Monos, 2005). On the other hand, as Kenyan students tended to pay more attention to generally understanding the text content rather than focusing on all the details, they might have used global strategies more which are aimed at planning, monitoring, and directing one's reading such as setting a specific purpose or goal and predicting or guessing the text's meaning (Huang et al., 2009; Mokhtari & Sheorey, 2002).

## 2. The Four Country Students' Actual Use of Metacognitive Online Reading Strategies

The second research question focuses on exploring the online reading processes of the students in the four countries. How similarly or differently they used metacognitive online reading strategies during the think-aloud task, and whether or not their reported and actual use of strategies matched will be discussed. The background information of the eight think-aloud task participants is shown in Table 6.

**TABLE 6**
Background Information of the Think-Aloud Task Participants

| Student | Gender | Major | Age | Self-rated overall English proficiency level | TOEIC/TOEFL scores |
|---|---|---|---|---|---|
| C1 | Male | Computer Science | 19 | Fair | TOEFL 75 |
| C2 | Female | English & Medicine | 19 | Good | TOEFL 78 |
| Ke1 | Male | Mathematics | 22 | Good | TOEFL 88 |
| Ke2 | Male | Medicine | 21 | Excellent | TOEFL 95 |
| Ko1 | Male | Law | 27 | Good | TOEFL 104, TOEIC 900 |
| Ko2 | Female | Business | 22 | Good | TOEFL 100 |
| T1 | Male | Political Science | 22 | Poor | TOEFL 73 |
| T2 | Male | Economics | 24 | Excellent | TOEFL 103 |

*Note.* C: Cambodia, Ke: Kenya, Ko: Korea, and T: Tahiland

### 1) Cambodian Students' Actual Strategy Use in the Think-Aloud Task

When reading the online text about global warming, C1 used approximately half of the strategies he reported to use frequently in the survey. What he used was mostly problem-solving and support strategies. He read the text in a linear fashion from the top to the bottom. He adjusted his reading speed or re-read certain sentences to increase his understanding (problem-solving strategy #13 and #16). He guessed meanings of some difficult phrases while reading, hoping that the subsequent part of the text would clarify (problem-solving strategy #31). However, he also ignored them when his guessing did not work. "I am not sure with this phrase '*set into motion*?' but I want to read on because I think the later part will tell." In the middle of the text, he decided to use Webster online dictionary to check for the meaning of the verb '*enhance*' (supporting strategy #15). This was a tactical move since the verb was the main verb in the sentence. At one point, he critiqued the text for not giving enough information (supporting strategy #29). "The text

says the levels of greenhouse gases have been fairly constant for the past few thousand years. But why? The text doesn't seem to provide enough information." As he read, he kept this question in mind until he got the answer in third paragraph from where he asked. The online dictionary did not always help him. He checked the word '*mercury*' but was overwhelmed with so many different meanings, and nothing seemed to perfectly match the context.

Compared to C1, C2 employed 14 out of 24 strategies he reported in the survey. She started to read the title first and went all the way to the bottom. However, she tended to re-read many paragraphs multiple times (problem-solving strategy #28). She questioned the accuracy of information in the text as it was not consistent with what she learned at school. Oftentimes, she complained about the writing style (e.g. long sentences and unnecessarily difficult words). When she hit the difficult part, she translated it into her L1 (support strategy #37). At the beginning, she skipped difficult words and phrases (problem-solving strategy #31), but soon became uncomfortable with the difficult words and began to use her cell phone dictionary to check for their meanings (support strategy #15). She expressed that the reading was getting boring for her. She wanted to jump to the last paragraph and read backwards paragraph by paragraph. She also tended to read aloud the difficult part because it slowed her down and gave her concentration (support strategy #7). In addition, she wrote down difficult words on her notes and got back to them later to learn those words (support strategy #4).

Both C1 and C2 reported their reading skill as good. Yet, they seemed to spend much time to read the text. Particularly, C2 was struggling with the texts a lot and spent much time to employ different strategies especially problem-solving strategies. Both used problem-solving strategies the most, but C2 depended more heavily on them. She employed almost all the problem-solving strategies she reported to use the most in the survey. For global and support strategies, even though the two students reported that they used global strategies more frequently, they used support strategies more in the think-aloud task. Due to unfamiliar vocabulary and unclear information, C1 questioned himself a lot and used an online dictionary which were all support strategies. C2 also used many supporting strategies such as checking meanings of new vocabulary, going back and force in the text, and translating difficult parts into L1 since she had difficulties with understanding the text. Both C1 and C2 tried to solve all the problems they faced in understanding the specific details of the text rather than trying to get a general understanding of the overall content.

2) Kenyan Students' Actual Strategy Use in the Think-Aloud Task

Ke1 used about half of the strategies he reported in the survey. He mostly used global strategies rather than problem-solving and support strategies. He said that he had heard a

lot about global warming and thus had much knowledge about it. He first took an overall view of the text (global strategy #6), and then tried to open the video link on global warming to watch a brief audiovisual presentation of the topic. Unfortunately, his Internet connection was not fast enough for him to do so. He said that he liked to start reading by looking at a video because it gave him a quick overview of the subject (global strategy #18). He stayed with the text in a more linear fashion going from the top of the page downwards. He also opened several links that were available in new windows to look at some other issues related to global warming (global strategy #26). He skimmed through those links to see if any information would help him understand about global warming better. One of the strategies which Ke1 did not use despite having reported it in the survey was problem-solving strategy #9 which has to do with slow and careful reading. He rather seemed to read through the text very quickly since he thought it was quite easy and interesting. In addition, support strategy #12 (*printing out the on-line text*) was not used because he did not have a printer.

Compared to Ke1, Ke2 used 11 out of 14 strategies he reported. Ke2 was a more critical online reader than Ke1; unlike Ke1 who approached the text with a desire to learn more about global warming, Ke2 was quick to state that he did not believe global warming was real, but it was the creation of a few individuals. He added that he had read a scientific article which indicated that 90% of the $CO_2$ emissions to the atmosphere were from the sea, and that a humans could do very little to significantly affect the overall levels of carbon dioxide in the universe. Ke2 read with a purpose in mind (global strategy #1) and was looking for information in the website which would disprove the theory of global warming. He, however, did not seek other sites that would give contradictory information (problem-solving strategy #36). He simply wanted to focus on the given online text and critically analyze the information presented in the text (problem-solving strategy #24). He read carefully to make sure he understood what he was reading (problem-solving strategy #9), but he did not employ paraphrasing strategy (support strategy #21) which he did only when reading for academic purpose.

It is interesting that neither Ke1 nor Ke2 depended on supporting strategies such as using an online dictionary, paraphrasing, and translating from English to L1. They thought that understanding the overall content of the text was much more important than grasping of details. Ke1 said,

> "I don't know exactly why, but I think I've been taught do so since I was young. I would say that I really understood a text if I can explain what it is generally about to other people after reading without referring back to it."

Accordingly, instead of dealing with the comprehension difficulties like Cambodian students did, Kenyan students gave greater attention to analyzing the information in the

text or looking for other sites to understand better about the text topic. They even tried to go beyond the text to develop further understanding.

3) Korean Students' Actual Strategy Use in the Think-Aloud Task

Ko1 used about half of the strategies he reported in the survey. He first checked the text length and started to read the first and last paragraph quickly. He then read from the second paragraph, and skipped several paragraphs which he did not think important. When reaching the very last paragraph, he re-read it to find the conclusion.

Ko1 used problem-solving strategies the most during the think-aloud task. He slowed down or read twice when sentences seemed to be important or unclear, but speeded up when sentences discussed what he had already known (strategy #13 and #28). He used context clues to guess the meaning of unknown words (strategy #31). He also used some global strategies such as taking an overall view of the text before reading (strategy #6) and constantly checking his understanding when encountering new information (strategy #26). However, he only used one supporting strategy: thinking about the content in Korean after reading each paragraph (strategy #38). He usually liked to print out a copy of an online text (strategy #12). Yet, since the given text was not difficult and he could not access a printer, he did not print it out. In addition, he did not use an online dictionary because he could easily guess the meaning of unfamiliar words. He mentioned that he would have used reference materials if the text had been difficult or if he had decided to read the text for an academic purpose.

Compared to Ko1, Ko2 used 13 out of 21 strategies she reported. Like Ko1, Ko2 also checked how long the text was before reading it. Yet, one big difference between them was that Ko2 always put her right hand on the mouse and moved the mouse cursor on the screen while reading; whereas, Ko1 read the text only through his eyes.

Ko2 greatly depended on problem-solving strategies. She adjusted her reading speed and read certain words or sentences again when confused (strategy #13 and #28). She also used many global strategies. She took an overall view of the text to see what it was about and focused more on words written in bold which seemed to be more important (strategy #6 and #23). In addition, she checked what kinds of visuals were on the page and whether they were relevant to the text (strategy #18). However, she rarely used support strategies. One of the support strategies she employed was strategy #25 which has to do with going back and forth in the text to find relationships among ideas. For example, she re-read several sentences to determine sequence. She finally concluded that '*global gas'* would come first, '*global effect*' next, and '*global warming*' last. For unfamiliar words, she never used a dictionary (strategy #15) because she thought the text was quite easy. Like Ko1, Ko2 mentioned that she would have used more support strategies if she had had to read the text for writing an academic paper or getting a grade.

Even though both Ko1 and Ko2 thought the text was not difficult and thus did not use reference materials, they applied problem-solving strategies the most as the two Cambodian students did in order to increase their understanding of the details in the text rather than applying global strategies to monitor their understanding and manage their reading.

4) Thai Students' Actual Strategy Use in the Think-Aloud Task

T1 used 15 out of 25 strategies he reported in the survey. Although the topic was not of particular interest to him, he already gained prior knowledge about the causes and effects of global warming through his initial exposure at school. This familiarity with the topic greatly facilitated his reading comprehension, particularly when he encountered certain problems related to the complicated concepts presented in the text. He used global and problem-solving strategies with similar frequency, but used the former a little more. Some of the strategies he frequently used included global strategy #23 (*using typographical features to identify key information*), problem-solving strategy #16 (*paying closer attention to difficult parts*) and #18 (*re-reading difficult parts*), and supporting strategy #15 (*using reference materials*) and #38 (*thinking about information in both English and Thai*). He said that he experienced difficulty with technical terms in the text due to his poor English proficiency. "The ideas in the text are not that difficult, but I saw a lot of unknown words ... that made me want to skip reading." In an attempt to decode word meanings, he consulted English-Thai online dictionary, which was found to be overwhelming and de-motivating since the text was full of unfamiliar words. He also often thought about the information on global warming in Thai when certain parts of the text did not make sense to him. He reported that even though he sometimes printed out a hard copy of the online text, he chose not to do so during this think-aloud task as he realized that it was not intended for an academic purpose. His choice of strategy use was determined largely by the purpose of reading as well as the complexity of the text.

Compared to T1, T2 used 13 out of 17 strategies he reported. Like T1, T2 also had a clear understanding of the topic as he previously learned about it from the class. One marked difference between these two students was that T2 appeared to feel much more familiar with a wide range of strategies that he selected to utilize. He realized the time constraint of the reading task, which obliged him to decide what to read closely and what to ignore (global strategy #14). In so doing, he used typographical features such as bold face to identify key information that was deemed necessary (global strategy #23). This explains the reason why he used global strategies a little more frequently than problem-solving strategies even though he reported using the latter more frequently in the survey. To learn more about the topic, T2 asked himself questions that he liked to have answered in the text (support strategy #29) since they would provide him with a clear intention when

navigating the webpage. Similar to T1's comment, T2 also pointed out that the purpose he had in mind when reading online would not only determine what strategies he would use, but also the frequency of strategy use during any reading task. Whereas reading for pleasure typically requires basic strategies, reading for academic purposes, for instance, calls for more sophisticated types of strategies which inevitably force readers to put more time and effort into the task.

Both T1 and T2 were slightly different from other Asian students (i.e. C1, C2, Ko1, and Ko2) in that they used global strategies more than problem-solving strategies (despite the fact the frequency differences between the use of those two types of strategies were not noticeable). However, like other Asian students, T1 and T2 focused more on dealing with difficulties in comprehension and put more emphasis on understanding the meaning of smaller units such as vocabulary, phrases, and sentences. These were the major differences that they showed in contrast to African students (i.e. Ke1 and Ke2) who mainly focused on having clear understanding of the topic, evaluating information in the text critically, thinking deeply about similar or different ideas about the topic, or looking for more information to expand their knowledge.

5) Summary of the Eight Students' Actual Strategy Use in the Think-Aloud Task

Through the think-aloud procedures, it was found that approximately 61% of the strategies reported by the eight students in the survey were actually used by them as shown in Table 7.

**TABLE 7**

Percentages of Actual Strategies Used by the Students in the Think-Aloud Task

| Strategy type / Student | Global | Problem-Solving | Support | Overall |
|---|---|---|---|---|
| C1 | 3/10 (=30%) | 5/7(=71%) | 2/4 (=50%) | 10/21 (=48%) |
| C2 | 3/9 (=33%) | 6/7 (=86%) | 5/8 (=63%) | 14/24 (=58%) |
| Overall | 6/19 (=32%) | 11/14 (=79%) | 7/12 (57%) | 24/45 (=53%) |
| Ke1 | 5/7 (=71%) | 2/4 (=50%) | 1/4 (=25%) | 8/15 (=53%) |
| Ke2 | 7/7 (=100%) | 2/4 (=50%) | 2/3 (=67%) | 11/14 (=79%) |
| Overall | 12/14 (=86%) | 4/8 (=50%) | 3/7 (=46%) | 19/29 (=66%) |
| Ko1 | 4/7 (=57%) | 3/4 (=75%) | 1/4 (=25%) | 8/15 (=53%) |
| Ko2 | 6/9 (=67%) | 5/7 (=71%) | 2/5 (=40%) | 13/21 (=62%) |
| Overall | 10/16 (=62%) | 8/11 (=73%) | 3/9 (=33%) | 21/36 (=58%) |

| | | | | |
|---|---|---|---|---|
| T1 | 7/11 (=64%) | 5/8 (=63%) | 3/6 (=50%) | 15/25 (=60%) |
| T2 | 7/9 (=78%) | 3/4 (=75%) | 3/4 (=75%) | 13/17 (=76%) |
| Overall | 14/20 (=71%) | 8/12 (=69%) | 6/10 (=63%) | 28/42 (=67%) |
| Total | 42/69 (=61%) | 31/45 (=69%) | 19/38 (=50%) | 92/152(=61%) |

The think-aloud results of Kenya and Korea matched with the survey results. However, the think-aloud results of Cambodia and Thailand revealed a slight difference from the survey results. More specifically, Cambodian students reported that they used problem-solving strategies the most, global strategies the second most, and support strategies the least in the survey while they actually used support strategies more than global strategies in the think-aloud task. Also, overall students in Thailand reported that they used problem-solving strategies the most, global strategies the second most, and support strategies the least, whereas the two Thai students used global strategies the most, problem-solving strategies the second most, and support strategies the least in the think-aloud task. It is important to note, however, that the difference between the average percentages of actual use of global strategies and problem-solving strategies during the think-aloud session for the two Thai students was very small (71% and 69% respectively). For Kenya, the think-aloud results matched with the survey results, and they revealed that global strategies were used the most and support strategies the least. For Korea, the think-aloud results also matched with the survey results and revealed that problem-solving strategies were used the most and support strategies the least.

Based on the survey results, Cambodian, Korean, and Thai students used problem-solving strategies the most. This was confirmed by the think-aloud results of Cambodian and Korean students but not perfectly for Thai students because they used more of the global strategies (e.g. *using typographical features*) to read faster. Also, both the survey and think-aloud results confirmed that the most frequently used strategy by the Kenyan students was global strategies.

The least frequently used strategies based on the survey were support strategies. This result was confirmed by the think-aloud results of Kenya, Korea and Thailand. However, for Cambodia, the least frequently used strategies in the think-aloud task were global strategies. The two Cambodian students used supporting strategies (e.g. *using reference materials*) more rather than global strategies to understand the online text better which they thought as somewhat challenging.

In sum, no major discrepancies were found between the eight students' reported and actual use of strategies. However, the think-aloud data provided somewhat clear ideas of why Kenyan students showed differences compared to Cambodian, Korean, and Thai students. In learning English, Kenyan students reported that they were usually taught to focus on having a broad understanding of what they read rather than paying too much

attention to understanding all the meaning of unfamiliar words or expressions and the specific details. Once they got the gist of the text, they were encouraged to critically analyze and evaluate the information on the text or to seek other related texts to enhance their understanding about the topic. Accordingly, Kenyan students in this study might have used global strategies more than problem-solving and support strategies. In contrast, as most English teaching classrooms in Asia still adopt the Grammar Translation Method, Asian students are usually taught to primarily focus on vocabulary, grammar, and translation from English to L1 in reading (Chang, 2011). Thus, Cambodian, Korean, and Thai students in this study might have been obsessed with figuring out what certain words, phrases, or sentences meant by using reference materials, translating in L1, or thinking about ideas in L1. This might have made them rely heavily on problem-solving and support strategies. It is clear that different English teaching methods between Africa and Asia have greatly influenced the students in using metacognitive online reading strategies.

## VI. CONCLUSION

While conducting this research, some of the limitations were identified. First, the data from the online survey were self-reported by the participants. The problem with self-reported data is that the participants may not report what they actually do in reading, but the reported strategies are seen as inconstant and non-contingent. In actual reading, the participants may not use all the strategies they report in all cases of reading. What they choose to use depends on what they read and the context of the reading. The online survey data thus should be cautiously interpreted.

Moreover, the data from the think-aloud session were meant to be triangulated with the data from the online survey. However, the think-aloud data were limited to certain strategies only among the 38 strategies in the online survey; therefore, the think-aloud data do not check with all parts of the survey data. Also, due to the relatively small number of participants for the think-aloud session, the triangulation and generalizability value of the data were limited.

However, the results of this study provide implications for teaching and research. It was found that Asian students in general were not well aware of how to use global strategies which can help them manage their online reading processes and increase general understanding of online texts, whereas Kenyan students were not familiar with using problem-solving and support strategies. Therefore, through explicit instruction, teachers should encourage students in different cultural contexts to effectively utilize the three types of metacognitive strategies while reading online so that they can raise their

awareness of using different types of strategies and understand both overall contents and details of online texts.

Since it was revealed in the findings that the students, regardless of their language proficiency, used their background knowledge frequently when reading online, teachers should also consider students' interests and their English proficiency when selecting texts. Teachers can present from easier texts to more challenging ones that attract students, and promote student-centered and self-directed learning. In the same vein, teachers should begin with some metacognitive reading strategies that are easy for students in order to inspire their confidence and enhance academic achievement.

Furthermore, the findings demonstrated that the students adjusted their strategies to the type of text as well as to the purpose of their reading. For instance, they used context clues to decipher the meaning of unfamiliar words, and identified key information by means of such typographical features as bold face and italics. Thus, teaching students a repertoire of metacognitive reading strategies would facilitate their adjustment to the different types of texts.

This study suggests some important areas for further research. In an attempt to extend the scope of the current study, researchers may seek to further examine whether there are any similarities and differences in the use of online reading strategies between Eastern and Western students or ESL/EFL and English as L1 students. In addition, it would be worthwhile to investigate online readers' strategy use when they read for either academic or non-academic purposes.

## REFERENCES

Anderson, N. J. (2003). Scrolling, clicking, and reading English: Online reading strategies in a second/foreign language. *The Reading Matrix, 3*(3), 1-33.

Anderson, N. J. (2004). Developing metacongitive awareness. In J. Bamford & R. R. Day (Eds.), *Extensive reading activities for teaching language* (pp. 175-180). Cambridge: Cambridge University Press.

Anderson, N. J. (2008). Metacognition and good language learners. In C. Griffiths (Ed.), *Lessons from good language learners* (pp. 99-109). Cambridge: Cambridge University Press.

Baker, L., & Brown, A. (1984). Metacognitive skills and reading. In D. Pearson (Ed.), *Handbook of reading research* (pp. 353-394). New York: Longman.

Bazerman, C. (1985). Physicist reading physics: Schema-laden purposes and purpose-laden schema. *Written Communication, 2*(1), 3-23.

Carrell, P. L. (1988). Interactive text processing: Implications for ESL/second language reading classroom. In P. L. Carrell, J. Devine & D. E. Eskey (Eds.), *Interactive approaches to second language reading* (pp. 239-259). New York: Cambridge University Press.

Chamot, A. U. (2001). The role of learning strategies in second language acquisition. In M. P. Breen (Ed.), *Learner contributions to language learning: New directions in research* (pp. 25-43). Harlow, England: Longman.

Chang, S. C. (2011). A contrastive study of grammar translation method and communicative approach in teaching English grammar. *English Language Teaching, 4*(2). 13-24.

Coiro, J., & Dobler, E. (2007). Exploring the online reading comprehension strategies used by sixth-grade skilled readers to search for and locate information on the Internet. *Reading Research Quarterly, 42*(2), 214-257.

Coiro, J., Knoble, M., Lankshear, C., & Leu, D. J. (2008). *Handbook of research on new literacies*. Mahwah, NJ: Lawrence Erlbaum.

Gee, J. P. (1999). The new literacy studies: From "socially situated" to the work of the social. In D. Barton, M. Hamilton & R. Ivanic (Eds.), *Situated literacies: Reading and writing in context* (pp. 180-196). London: Routledge.

Hagood, M. (2000). New times, new millennium, new literacies. *Reading Research and Instruction, 39,* 311-328.

Kress, G., & Van Leeuwen, T. (2001). *Multimodal discourse: The modes and media of contemporary communication*. London: Arnold.

Huang, H., Chern, C., & Lin, C. (2009). EFL learners' use of online reading strategies and comprehension of texts: An exploratory study. *Computers & Education, 52*, 13-26.

Larson, L. C. (2007). *A case study exploring the "new literacies" during a fifth-grade electronic reading workshop*. Unpublished doctoral dissertation, Kansas State University, Kansas. Retrieved January 18, 2013, from the World Wide Web: http://krex.k-state.edu/dspace/bitstream/handle/2097/352/?sequence=1.

Lee, Yoo-Jean. (2011). Korean university students' use of metacogntivie strategies for online reading comprehension. *US-China Foreign Language, 10*(4), 1085-1097.

Leu, D. J. (2000). Literacy and technology: Deictic consequences for literacy education in an information age. In M. L. Kamil, P. B. Mosenthal, P. D. Pearson & R. Barr (Eds.), *Handbook of reading research* (pp. 743-770). Mahwah, NJ: Erlbaum.

Leu, D. J., Jr., Kinzer, C. K., Coiro, J., & Cammack, D. (2004). Toward a theory of new literacies emerging from the Internet and other information and communication technologies. (5th ed.) In R. B. Ruddell & N. Unrau (Eds.), *Theoretical models and processes of reading* (pp. 1568-1611). Newark, DE: International Reading Association.

Leu, D. J., Zawilinski, L., Castek, J., Banerjee, M., Housand, B. C., Liu, Y., & O'Neil., M. (2007). What is new about the new literacies of online reading comprehension? In

A. Berger, L. Rush & J. Eakle (Eds.), *Secondary school reading and writing: What research reveals for classroom practices* (pp. 37-68). Chicago, IL: National Council of Teachers of English.

Lim, Hyejung. (2009). Effects of the reading task difficulty and students' achievement on the reading strategy use by Korean high school students. *Modern English Education, 10*(3), 242-266.

Livingston, J. (1997). Metacognition: An overview. Retrieved January 18, 2013, from the World Wide Web: http://www.josemnazevedo.uac.pt/pessoal/textos/Metaco gnition. pdf.

Mokhtari, K., & Sheorey, R. (2002). Measuring ESL students' awareness of reading strategies. *Journal of Developmental Education, 25*(3), 2-10.

Monos, K. (2005). A study of the English reading strategies of Hungarian university students with implications for reading instruction in an academic context. *Malaysian Journal of ELT Research*. Retrieved September 10, 2012, from the World Wide Web: http://www.melta.org.my/Doc/MonosK_ Eng_reading_strategies. pdf.

Palinscar, A., & Brown, A. (1984). Reciprocal teaching: A means to a meaningful end. In J. Osborn & P. T. Wilson (Eds.), *Reading education: Foundations for a literate America* (pp. 299-310). Cambridge, Massachusetts: Lexington.

Pressley, M., & Afflerbach, P. (1995). *Verbal protocols of reading: The nature of constructively responsive reading*. Hillsdale NJ: Erlbaum.

Sheorey, R., & Mokhtari, K. (2001). Differences in the metacognitive awareness of reading strategies among native and non-native readers. *System, 29*, 431-449.

Skype. (April 18, 2012). In Wikipedia, the free encyclopedia. Retrieved April 19, 2012, from the World Wide Web: http://en.wikipedia.org/wiki/Skype.

Song, Mi-jeong. (1998). Teaching reading strategies in an ongoing EFL university reading classroom. *Asian Journal of English Language Teaching, 8*, 41-54.

Sprio, R. J., Feltovich, P. J., Jacobson, M. J., & Coulson, R. L. (1991). Cognitive flexibility, constructivism and hypertext: Random access instruction for advanced knowledge acquisition in ill-structured domains. *Educational Technology, 31*, 24-33.

Spiro, R. J., & Jehng, J. C. (1990). Cognitive flexibility and hypertext: Theory and technology for the non-linear and multi-dimensional traversal of complex subject matter. In D. Nix & R. J. Spiro (Eds.), *Cognition, education, and multimedia: Exploration in high technology* (pp. 163-202). Hillsdale, NJ: Lawrence Erlbaum.

Street, B. (1984). *Literacy in theory and practice*. Cambridge: Cambridge University Press.

Street, B. (2003). What's "new" in new literacy studies? Critical approaches to literacy in theory and practice. *Current Issues in Comparative Education, 5*(2), 77-91.

Thamraksa, C. (2005). Metacognition: A key to success for EFL learners. *BU Academic Review, 4*(1), 95-99.

# APPENDIX

## A Guideline for the Think-aloud Procedure

1. Greeting
2. Explanation about the study and the think-aloud:
1) Tell the participant that you are interested in finding out some of the strategies the participant employ when navigating and reading web pages.
2) Tell the participant that you are interested in their thinking process as the participant navigates and reads web pages. Thus the participant is to speak out what they think while dealing with web pages.
3) Tell the participant that s/he is not limited to reading one page. S/he is free to open another window or tap and go to any web resource s/he thinks will be helpful for the reading.

3. Demonstrate how think-aloud should be done. Use a web page different from the one to be used in the task (http://electronics.howstuffworks.com/electronics-recycling.htm). When demonstrating, you should not suggest any reading strategy. The purpose of the demonstration is to tell the participant how to do it, not what to do.

4. Before the think-aloud:
1) Ask the participant what s/he knows about global warming.
2) When the participant is quiet or has no idea, give him/her prompts like list three things s/he heard most about global warming and questions such as what are the causes, effects and solutions?

5. During the think-aloud:
To stimulate the participant to speak, you may ask this question when s/he is silent: Do you have anything to say in your mind? The participant may slip into his/her silent mode of thinking. You need to constantly remind the participant.

6. After the think-aloud:
1) Ask the participant to tell you what new information they learned about global warming after the task.
2) Some questions to elicit his or her answers: 'List three new things you learned, additional information for the three things you listed before the think-aloud,' 'what are the causes, effects, and solutions you learned?'

7. The participant's reflection:
Ask the participant some questions as follows: 'What do you think about this reading experience?,' 'Was the task too difficult?,' 'Did you like the webpage and text?' Feel free to ask more to elicit their reflection of this whole experience.

**Examples in: English**
**Applicable Languages: English**
**Applicable Levels: Secondary/Tertiary**

Yoo-Jean Lee
School of Liberal Arts and Sciences, General Education Center
Dankook University
152, Jukjeon-ro, Suji-gu, Yongin-si
Gyeonggi-do, 448-701, Korea
Tel: (031) 8005-3765 H.P.: 010-5039-5340
Email: dabin8201@hotmail.com

James Chamwada Kigamwa
Department of Literacy, Culture, and Language Education
School of Education, Indiana University
W.W. Wright Education Building 201 N. Rose Ave., Room #3044
Bloomington, IN 47405-1006
Tel: (812) 856-8270
Email: jkigamwa@indiana.edu

Suphawat Pookcharoen
Department of English, Faculty of Liberal Arts, Thammasat University
2 Prachan Road , Bangkok 10200 Thailand
Tel: (6681) 753-7322
Email: suphawatoak@hotmail.com

Vichea In
Department of Literacy, Culture, and Language Education
School of Education, Indiana University
W.W. Wright Education Building 201 N. Rose Ave., Room #3044
Bloomington, IN 47405-1006
Tel: (812) 856-8270
Email: vicheain@gmail.com

Received 19 August 2013
Revised 5 November 2013
Accepted 16 November 2013