

## ความท้าทายด้านระเบียบวิธีในการใช้เทคนิคการคิดออกเสียงเพื่อสำรวจกลวิธีความเข้าใจของผู้อ่านภาษาอังกฤษในฐานภาษาต่างประเทศ

### Methodological Challenges in Implementing Think-Alouds to Investigate EFL Readers' Comprehension Strategies

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#### Abstract

This study aimed to investigate methodological challenges in using the think-aloud method to assess EFL students' employment of reading strategies. The participants in this study consisted of 16 Thai EFL university students. Think-aloud and videotaped observations were used to collect the data. The data were analyzed by content analysis. The results of the study revealed that levels of text difficulty and topics of interest, familiarity with the think-aloud method and the observer, ability to verbalize thoughts, and cultural differences were major methodological challenges in the maximum utilization of the think-aloud method for collecting qualitative data. Based on the findings, some pedagogical implications

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were suggested for utilizing the think-aloud method in the English reading classroom.

**Keywords:** *Think-Aloud, Reading Strategy, Methodological Challenges*

## บทคัดย่อ

งานวิจัยนี้มีจุดประสงค์เพื่อสำรวจความท้าทายในการใช้ระเบียบวิธีการคิดออกเสียงที่จะประเมินกลวิธีการอ่านของผู้เรียนภาษาอังกฤษในฐานภาษาต่างประเทศ ผู้เข้าร่วมงานวิจัยนี้ ประกอบด้วย นักศึกษาไทยระดับอุดมศึกษาที่เรียนภาษาอังกฤษเป็นภาษาต่างประเทศ จำนวน 16 คน เก็บข้อมูลด้วยเทคนิคการคิดออกเสียงและการสังเกตด้วยการบันทึกวิดีโอ วิเคราะห์ข้อมูลโดยการวิเคราะห์เนื้อหา ผลของงานวิจัยนี้พบว่า ระดับความยากง่ายของบทอ่านและหัวข้อเรื่องความคุ้นชินกับเทคนิคการคิดออกเสียงและผู้สั่งเกต ความสามารถในการคิดออกเสียง และความแตกต่างด้านวัฒนธรรม เป็นความท้าทายด้านระเบียบวิธีการใช้เทคนิคการคิดออกเสียงให้ได้ประโยชน์สูงสุดในการเก็บข้อมูลเชิงคุณภาพ จากผลการศึกษาระดับนี้ ได้นำไปสู่คำแนะนำการใช้ประโยชน์จากเทคนิคการคิดออกเสียงในด้านการสอนการอ่านภาษาอังกฤษ

**คำสำคัญ:** เทคนิคการคิดออกเสียง กลวิธีการอ่าน ความท้าทายด้านระเบียบวิธี

## Introduction

Reading in a foreign language is considered a complex process as there are many factors (e.g. different ranges of language proficiencies, different linguistic knowledge, and unfamiliarity with the content of text) affecting readers' performance of the reading comprehension (Kasper, 1993; Grabe & Stoller, 2011). Reading strategies can be used to construct meaning from text during a reading process (Block, 1992). The readers can benefit from a number of strategies in order to understand what they read (Smith, 1994). The reading strategies (e.g. note-taking, using context clues, re-reading, and monitoring comprehension) can help them understand the text.

Using strategies which is a part of a reading process may be not observed because it is a mental process (Chamot, 2007). In other words, the process of reading is processed by readers in which the readers think of how they construct meaning from text in their mind. It is difficult to prove whether there is valid relationship between what they actually think and what they act. Their mental behavior cannot be observed directly. A collection of data that obtains information from thinking or mental processes seems complicated. However, one reading assessment activating metacognition and capturing their internal cognitive processes during reading comprehension is a think-aloud method.

However, the think-aloud method plays less of a role in assessment of comprehension (Leslie & Caldwell, 2009). The think-aloud method used to assess reading strategies has some limitations in terms of implementation. One difficulty of verbal reports is articulation of thoughts (Walker, 2005). This means that nonverbal behavior may be difficult to be verbalized and explained in spoken words. Some people think faster than they can speak out, so some thoughts of mental activities may not be shown verbally (Bainbridge & Sanderson, 2005; Walker, 2005; Noyes, 2006). Moreover, this method may interfere with reading performance and time for task completion (Green, 1998). It may thwart automatic processing (Robinson, 2001) in which it may lose some information because of the length of the verbalization. Care and attention are required for analysis and interpretation of the protocol because some mental processes cannot be verbalized properly (Van Someren, Barnard, & Sandberg, 1994; Green, 1998; Noyes, 2006).

There is a need to understand the reading process and to learn more about what is happening in readers' mind and how readers regulate their reading behavior while they are reading. In order to understand the internal process, think-alouds have been used as a means of investigation. Methodological concerns about utilizing think-alouds to maximize the utilization of the think-aloud method should be addressed so that it will provide the most detailed and valid data on how EFL students employ reading strategies, and respond to the text.

### **Research Objective**

This study aimed to investigate methodological challenges in utilizing the think-aloud method to assess how EFL readers used reading strategies while they were reading expository text.

### **Scope of the Study**

This study focused on the utilization of the concurrent think-aloud method for assessing how EFL college students employed reading strategies. Students identified as native English speakers were not included in the study.

## **Conceptual Framework**

The think-aloud method can provide the data on a valid relationship between the actual action and the mental behavior for researchers because individuals' mental cognitive processes during task completion are verbalized rather than answered (Nisbett & Wilson, 1977; Green, 1998; Bainbridge & Sanderson, 2005). Researchers can benefit from the features of the think-aloud method (Ericsson & Simon, 1993; Afflerbach, 2002). For example, it is used to examine the use of reading comprehension strategies and cognitive processes that may be mental activities. It also provides variance in each

reader's focus on reading, use of strategies, emotional expressions, and responses to text and social context in the same study. The think-aloud method can provide the data on the interaction between readers and text that yields readers' constructively responsive reading comprehension strategies (Afflerbach & Cho, 2009). Therefore, researchers can obtain detailed data on how students employ language learning strategies, and gain insight into readers' cognition and response.

A think-aloud method is used in educational research regarding richness and validity of data gained (Branch, 2000; Leighton, 2004; Johnstone, Bottsford-Miller, & Thompson, 2006). There is a number of studies about utilizing a think-aloud method to investigate reading strategies. For instance, the California Department of Education's Strategic Teaching and Learning report (Pritchard & Breneman, 2000) identified reading strategies employed by L2 learners who were strategic readers. It was found that the key strategies included examination of the text as a whole, use of cognate vocabulary, identification of the important details, and involvement in extensive versus reflexive responses. Similarly, Kamhi-Stein (2003) used a think-aloud method to collect the data on what reading strategies four L2 college students employed when they read L2 passages. It was found that two of them translated the text from L2 into L1. Other students understood the meaning of words from pronunciation. Subsequently, Meeampol (2008) reviewed the theoretical and previous research studies about the think-aloud for assessing reading strategies and illustrated the data analysis of think-aloud method. The results imply that both types of the think-aloud method, concurrent and retrospective, have some limitations but they can generate valid and reliable data through training. The examples of the data analysis were provided with the coding of reading strategies gained from the think-aloud method.

In addition to the utilization of the think-aloud method to investigate reading strategies, the think-aloud method was evaluated and used by different groups of cultures. Kim (2002) studied how individuals' thoughts were related to cultural differences through counting the number of spoken words and the frequency of silence. Asian American participants and European American participants thought aloud to work on and solve the metrics problems, reflecting analytical skills. The results showed that think-alouds made Asian Americans' performance less effective, but European Americans could think aloud more effectively. To replicate the comparison of cultures, Albers (2015) investigated and compared how each participant of Dutch and Vietnamese thought aloud about entrepreneurial processes, analyzed by the number of words, the number of interruptions and the number of occurrences. The results indicated that people from Vietnam used fewer words and kept silence than those from the Netherlands. Vietnamese participants also used many words, indicating that they had

more difficulties in understanding questions during think-alouds. From these studies, it is indicated that Westerners produced more verbal manners and showed the closer relation between thinking and talking than Asians did. Regarding the comparison between the number of words thought by Asians and that by Europeans, it may be assumed that talking may interrupt thinking protocol in Asian cultures.

From the mentioned research studies in the past, the think-aloud method was used to examine the internal processes of employing reading strategies and was utilized by different cultural backgrounds of the participants. Reading was considered a process of meaning construction and a process of linguistic decoding. These studies indicated that the think-aloud method was used to assess the readers' cognitive processes of reading comprehension strategies.

In a think-aloud method, readers are required to reflect and report their thinking processes verbally while completing a reading task. This type of think-aloud method is called a concurrent verbal report. It is current description of the content of working memory generated by individuals in which the individuals report the thoughts and mental activities that occur in their mind during task completion (Green, 1998; Afflerbach 2002; Leighton, 2004; Sasaki, 2008). Readers describe verbally what they think as they are reading text or dealing with problems. Ericsson and Simon (1993) explain that the think-aloud method depends on short-term and long-term memories, but a short-term memory can be kept in a limited amount and time. The information that occurred in the short-term memory can be exposed to an observer through their verbalization of reading processes, so this method is a useful instrument of data collection in which an individual can verbalize or report his/her thought during task completion (Ericsson & Simon, 1993).

Metacognitive awareness of the strategies found among readers is beneficial data on how they really used the strategies so that educators can use these data on instructional development. However, a few research studies investigate the methodological concerns about the implementation of the think-aloud method used by EFL students. To fill the gap, this study investigated how the think-aloud method was utilized in order to maximize its assessment of EFL reading strategies among Thai college students.

## Methodology

The implementation of the think-aloud method in this study examined what reading strategies the second-year EFL students at the university level used when they read expository text. The sample consisted of 16 voluntary undergraduate students who were second-year English majors at a university. There were male and the rest of

them were female. They were between 20-21 years old. They completed English foundation courses required by a university. In terms of grades on the English reading course and GPA required by a university, proficient readers and less proficient readers were determined. Nine of them had GPA and the grade of the course over 3.00 whereas other students had GPA and the grade of the course less than 3.00.

Before the think-aloud session, instructions, selection of text, and practice for the think-aloud method were prepared for participants. First, the participants were informed about the purposes of this study and instructions of the task. They were required to complete the task of the reading comprehension while they were verbalizing everything passing through their mind, for example, strategies for dealing with the text and difficulties with reading comprehension. The selection of the expository text, *A key to good health*, was based on an appropriate level of reading difficulty for them, a well-organized reading text, and a topic of daily life. The Flesch-Kincaid grade level (Flesch, 1979) indicated that the text in this study equaled 7<sup>th</sup> grade. The participants were required to give a short answer to each question. The questions were developed and categorized into explicit and implicit questions that required them to either locate information explicitly stated in the text or make inferences based on the text. Finally, the practice for the think-aloud method was given to individuals in order to know how to do during think-alouds and familiarize them with the procedures of the think-aloud used in the task completion.

During the think-aloud session, they were permitted to ask the researchers if they had questions about the verbalization. The think-aloud session was conducted in their native language in order to facilitate them to verbalize their thoughts and respond to the task. The researchers observed the participants' reading behavior and stimulated them to verbalize their thoughts when they fell silent for more than 8 seconds (Wu, 2016). A video was used to record their entire reading behavior and performance. The video files for each think-aloud session were reviewed to check the accuracy of transcription of the file in the same day with each participant. The data gained from the think-aloud session including participants' reading behavior was analyzed to identify the significant difficulties in utilizing the think-alouds when the participants read and responded to the text through observation.

The data for analysis in the think-aloud were taken from the observation and the video recordings. Then, all data were analyzed and grouped into categories of difficulties, and methodological concerns about utilizing the think-alouds through content analysis. Lastly, the inference of the think-aloud implementation was assessed in order to explain how individuals utilized this method. All categories of difficulties, concerns, interpretation and inference were presented.

## Results and Discussion

Every research instrument has some limitations when it is used to collect the data. Although the think-aloud method provided invaluable data on how each of the students used reading strategies differently from the same text, this study found some concerns about implementing the think-aloud. It included the four major methodological challenges: 1) levels of text difficulty and topics of interest, 2) familiarity with the think-aloud method and an observer, 3) ability to verbalize thoughts, and 4) different cultures. Also, this study discussed how the methodological challenges should be addressed to maximize the valid data gained from this method.

### Levels of text difficulty and topics of interest

The task used to elicit the verbal reports was especially difficult for less proficient readers although the text difficulty in this study was based on the difficulty of text level of resources in the English foundation courses required by the university. The reading task was about a key to good health which was close to their daily lives. However, they had trouble reporting their cognitive processes of the reading comprehension task verbally. Prompts were often used to stimulate them to verbalize their thoughts, but they sometimes replied that they were thinking or kept silent for more than 8 seconds. When they faced difficult words such as *phytochemicals* and *nutrients* in the text, they were quiet many times and could not report on how they solved problems. One of them rushed to answer the questions by guessing and stopping the task. After finishing the think-aloud method, she said that she did not know the meaning of many words, so she could not answer some questions. Although the topic of the text was beneficial for some participants, they thought that they were not interested in the topic or good at English. They were not confident of their English reading ability to complete the reading comprehension questions. Therefore, both difficulty of text level and topic interests for readers were found and considered important concerns that affected the quality of the think-aloud method in this study.

Appropriate text means to make readers become a part of controlled cognitive processing in which the readers can use knowledge and strategies intuitively and really solve problems of reading (Leighton, 2004). The text should be moderately difficult for the data collection of verbal reports within a range of topic interests for the readers (Ericsson & Simon, 1993). The reading task should be challenging but not too challenging for the readers. A too difficult task thwarts the automatic processes of reading, causing the readers to have difficulties in verbalizing their thoughts (Leighton, Rogers, & Maguire, 1999). The text may make them get into trouble and abandon their reading completion. If the text is too easy for readers, the researcher will not elicit much data on how the readers employ reading strategies to deal with their reading comprehension. Too easy

tasks are not good for data collection since these tasks do not need controlled processing for their solution to the tasks in which the readers may be unaware of how the reading problem is solved (Kurtz, Gentner, & Gunn, 1999). The appropriate text tends to support them to express their working memory and verbalize the things while they are completing the task in the think-aloud method well (Pressley & Afflerbach, 1995). The text encourages them to use their knowledge and strategies constructively and responsively in controlled cognitive processing, so it can be traceable that readers learn to employ reading strategies for reading comprehension. For example, readers tend to explore the overall meaning of the appropriate text for identifying a main idea, be eager to respond to text, and use their background knowledge to predict their understanding and responses to the text constructively and responsively (Pressley & Afflerbach, 1995). Researchers can elicit what reading strategies the readers employed during the think-aloud. Likewise, readers' topic interests influence their engagement, perseverance, and use of reading comprehension strategies when they complete a reading task (Renninger, 2000; Schraw & Lehman, 2001; Ainley, Hidi, & Berndorff, 2002). The researchers should consider using reading tasks that possess qualities of topic interests (e.g. fashion, technology, and cartoon) to increase their interests in reading during the think-aloud method. Alternatively, a selection of topics should be provided for them.

In order to prepare appropriate text for readers, a questionnaire should be used to ask about readers' interest in reading (e.g. topics, text types, and duration of reading). The information gained from the questionnaire will help a researcher select text in order to serve the readers' interest in reading. Choices of different text should be provided for them in which they can choose to read and verbalize their thoughts during the think-aloud. Additionally, the text difficulty is an important factor influencing the quality of the think-aloud procedures. The text difficulty in this study determined by the grade of the English foundation course is not enough. To determine readers' English ability, the readers should also take an English proficiency test or a reading test (e.g. Nelson-Denny Reading Test, TOEIC, IELTS, TOEFL, CU-TEP, and TU-GET) before doing the think-aloud so that the difficulty level of the reading text will be provided for readers appropriately (Adunyarittigun, 2012). The researchers can also select reading text for each group of the readers who have different English reading abilities. Therefore, the selection of text is an important material used to assess readers' reading comprehension strategies in the think-aloud method.

#### **Familiarity with the think-aloud method and an observer**

The second challenge was readers' familiarity with the think-aloud method. The readers were required to have a better understanding of the procedures of the

think-aloud method. Sometimes a reader followed the instructions more seriously than usual. The following excerpt showed how a reader tried to verbalize her thought all the time. The time of pause in seconds in the reader's verbalization was also presented.

Fon: Each of us should eat five to nine servings of fruits and vegetables a day [0.10]..*rao gin kao ponlamai lae puk*..In fact, one-third of all the things we eat should be fruits and vegetables [0.3]. ..um.. *nueng tungmod rao gin kuan ja ponlamai lae puk*.. This may seem like a lot [omitted]. [0.10] However, if you can do it, your body will thank you..[0.4]..*Kun tum dai rang-gai ja khob kun*..

She tended to be worried about their verbal reports in which she translated it into Thai all the time. Some segments of the text were omitted or translated into ambiguous meanings. She tried to keep talking about what the text was meant in Thai, but from her verbal report, it might be difficult to trace what reading strategies she really used except translation. Such readers who translate almost every sentence and use ambiguous words (e.g. *um* and meaningless words of translation) may not be traceable to assess reading strategies.

On the contrary, some readers frequently kept silent for more than 8 seconds. The researchers stimulated the readers with prompts (e.g. *what are you thinking?* and *please keep talking*) to verbalize their thoughts, but they replied '*thinking or yes*' and kept silence. Less proficient readers spent especially a longer period of time processing the text, and hardly reported what they did through the think-aloud session.

Apart from the data gained in the think-aloud session, the data gained from the observation and the session of the transcription checked by the researchers and the participants showed interesting points. All of them said that they normally read and understood text quietly. When they faced the difficulties, they forgot to verbalize their thoughts because they were thinking in mind. Additionally, some participants said that they felt uncomfortable when reporting how they read because they were not familiar with the researchers who observed them. They were afraid of mispronouncing some English words through the verbalization of thought.

The concern here involves understanding the think-aloud method and the observer. Some readers may be familiar with the nature of quiet reading completion. They are not familiar with the method that requires them to think out loud during the completion. Additionally, the relationship between a reader and an observer affects the quality of the verbalization. If the reader does not become familiar with the presence of the researcher, he/she does not verbalize his/her thought as much as he/she can. Regarding emotional factors (e.g. uncomfortable, embarrassed, and nervous), he/she is afraid of articulating his/her thought because of wrong answers. It is very

important to make readers familiar with the method and the observer because they will verbalize the valid and useful data on reading strategies.

In order to make the students more confident of verbalizing their thoughts, a set of purposes and instructions of the think-aloud method should be explained to readers clearly. A purpose of the task should be emphasized in order to reduce their anxiety about task completion. For example, the purpose is to assess the readers' strategies used to read text in which the readers are required to read text with their own strategies. The task has no effect on their grades, and their results of the task will be kept in confidence. Then, the instructions should be explained orderly by the procedures for completing the task and verbalizing their thoughts. The purposes and the instructions are important to make the readers clear and relaxed with the requirement of the task. Also, training has to be provided for them to make them familiar with the method and the observer. Training will be explained in the next section.

### **Ability to verbalize thoughts**

Although it is possible to observe readers' response and reading strategies used in a reading comprehension task, a researcher cannot obtain all data that the readers thought during the think-aloud method. Sometimes some readers could not verbally report everything occurred in their mind while they were completing the task. They had to think first when dealing with some difficulties. They could verbalize what happened in their mind later, but their thoughts might be not presented completely. Thinking may be faster than verbalization and some mental activities may not be reported verbally (Bainbridge & Sanderson, 2005; Walker, 2005; Noyes, 2006), so the quality of verbalization may influence the validity of reading strategy assessment. In think-aloud protocols, the researchers found that some reading strategies could not be known and assessed directly from verbalization and nonverbal behavior. The difference between the cognitive processes and the articulation of thoughts was found in the following excerpt. The time of pause in seconds in the participant's verbalization was also presented.

Nan: Smoothies can provide important nutrients....*what does it mean?* [0.5]..  
*Maybe* [0.6] *no, it is not..*[0.4].. *yes I got it..* and taste delicious.

Nan was questioning an unknown word which she read and stopped by uttering 'What does it mean?', 'may be', 'no, it is not', and 'yes'. She did not show a further possible way to understand the text or deal with the problem. She used ambiguous words (e.g. *maybe*, *yes*, and *no*) that did not show anything about reading strategies. In a session of transcription checked by the readers and the researchers, some readers said that they could not verbalize 100 percent of what passed in their mind. They

could not verbalize their thoughts completely while they were thinking. On the contrary, some proficient readers were successful in completing the reading task through their articulation of thoughts. They employed more reading strategies (e.g. guessing meaning from the context, underlining important information, and finding a topic sentence from text) in order to solve problems in the reading task. They had less frequent long pauses than the less proficient readers did.

The training is required to make readers familiar with and understand the process of the think-aloud method before the method is implemented (Taylor & Dionne, 2000; Afflerbach, 2002; Noyes, 2006). A demonstration of the method is given to them so that they can figure out how they should perform during the think-aloud session. When they know how to do in the think-aloud method, they should have an opportunity to practice verbalizing their thoughts on how they employ reading strategies or how they comprehend the text. They practice verbalizing their thoughts on a reading task which is similar to the task in the actual think-aloud session so that they can be familiar with the particular context and how procedures are supposed to be during the think-aloud session (Van Someren, Barnard, & Sandberg, 1994). It is important to give them enough time to practice until they feel ready for the method. After the practice, a researcher should discuss results, feedback, or any points occurred in the think-aloud session with each reader so that some problems (e.g. ambiguous words and long pause) can be prevented in the actual task. Moreover, the training session helps both the observer and the reader feel more relaxed and comfortable when he/she performs with the presence of the observer in the actual think-aloud. This study did not provide the discussion for the participants, so they did not have any opportunities to share their opinions or questions with the researcher.

The training including a demonstration and a practice can help readers clearly understand the process of the think-aloud method. The researcher demonstrates how the readers are supposed to do in the actual think-aloud in which both of them spend time on practice together. Training in the think-aloud method is very important to encourage the readers to verbalize their reading comprehension processes as much as possible (Taylor & Dionne, 2000; Noyes, 2006) and the training can compensate for many of the think-aloud problems. In this study, some statements such as "I am thinking" and "I can't understand" suggest that the researcher had to stop prompting since they were not ready to report their thoughts, and they needed to stop their task in that time. Frequent prompts used to urge readers' verbalization of their thoughts are sometimes not effective because the data obtained are meaningless. The training can improve their degree of verbalization, resulting in the reduction of prompting during the think-aloud method. Moreover, some readers who have characteristics (e.g. self-

presentation and taciturnity) influence the ability to verbalize their thoughts. The training can improve their performance of the verbalization if the appropriate training is provided for them.

The findings supported that proficient readers' ability to verbalize their thoughts tends to be better than less proficient readers' (Pressley & Afflerbach, 1995; Bainbridge & Sanderson, 2005). It means that less proficient readers may not provide much beneficial data for a researcher because their degree of ability to verbalize their thoughts was limited. The ability to verbalize thoughts may be also caused by characteristics of individual readers (Bainbridge & Sanderson, 2005). For instance, some who are cooperative tend to say what an observer wants to hear. Some readers who are taciturn are not likely to verbalize their thoughts much. Ability to verbalize thoughts tends to affect the data gained in which the cognitive processes and the articulation of thoughts are not consistent, and individual characteristics affect articulation of thoughts. Although the degree of verbalization can be caused by readers' proficiency and characteristics, training and practice will help them improve their implementation of the think-aloud method.

### **Cultural differences**

The last challenge considered in this study is the aspect of different cultures that is a factor in the ability of verbalizing internal working processes. Most East Asians think that high thinking is resulted from silent states and introspection. The belief and the way of life are influenced by religions like Buddhist and Taoist through meditation in which the practices of silence, concentration, and management of breathing are taught to find truths and a solution to a problem (Odier, 2003). Evidence indicated by Kim's (2002) and Albers's (2015) previous studies that the think-aloud method tends to hinder Asian participants' performance of think-alouds, but Western participants can think aloud more actively. Implicitly, silence is likely to reflect that most Asians have the negative relation between talking and thinking in which they remain quiet when they do not know how to respond to questions. Asians have some difficulties when verbalizing their internal higher-level thinking that is a barrier to understanding internal processes and truths (Markus, Kitayama, & Heiman, 1996). However, Europeans tend to start talking what they are making something clearer, showing the positive relation between talking and thinking. Typically, Asians remain more indirect and non-verbal communication, as well as producing less verbal languages than Westerners do (Kim & Markus, 1999; Kim, 2002). Consequently, some people who are not familiar with verbal thinking are likely to limit the relation between talking and thinking. Other people who are familiar with the expression of thoughts by talking are likely to be beneficial for thinking aloud. In the present study, it is assumed that Thai students need to think

and do not tend to verbalize their thoughts when he/she finds something difficult during the think-aloud method. It is also reflected that talking interrupts thinking in which the typical Asian nature influences the level of the relation between talking and thinking. This concern could affect an ability to verbalize thoughts and the familiarity of the think-aloud method. The obvious evidence from one participant in this study shows that she was not likely to verbalize their thoughts because she often kept silence to think a question and find an answer.

The methodological challenges about implementing the think-aloud method found in this study should be considered in terms of the effects on the usefulness of the think-aloud method in future research. These concerns can be addressed to maximize the valid amount of data gained from the procedures for the think-aloud method through text selection, familiarity with an observation, demonstration, training, and readiness of participants with care.

## Conclusion

The think-aloud method is a useful instrument of the data collection used to assess reading strategies for constructing meaning from text that is happened in readers' mental cognitive processes. Think-aloud protocols present different aspects of the reading process related to the development of self-awareness and metacognition (Kucan & Beck, 1997). Readers' articulation enables researchers to understand their thoughts on how each reader really works with the task.

This study found the major methodological challenges - text, readers' familiarity with the method and an observer, ability to verbalize thoughts, and different cultures. These concerns can be addressed to plan on conducting appropriate procedures including clear explanation of purposes and instructions, training, demonstration, practice, readiness of participants, and provision of appropriate text. Regarding these concerns, researchers can use this method with careful attention to gain the useful and valid data in future studies. This study focuses on the qualitative instrument; however, it is the best way to collect data from multiple instruments to reach the triangulation of data sources such as questionnaires and interviews.

## Implications of the Study and Recommendations for Further Research

The findings from this study will be useful for teachers to assess how individual readers employed EFL reading strategies and deal with reading problems through a think-aloud method. Teachers can benefit from the information gained from this method to adjust and organize the instruction for each group of students. Teachers may need to revise grouping techniques in class. Group revision is needed because students can

share different reading strategies with other students in their groups. Teachers should ask proficient readers to demonstrate their reading performance through the think-aloud method in their groups. This method provides direct access to the readers' mind allowing other students to observe how the readers' understanding of texts happens. The think-aloud method is a valuable way of making the readers' thinking visible to others (Keene & Zimmerman, 2007). Other students within groups can learn how to deal with the reading texts through their peer modeling. This social comparison increases their confidence of the reading ability as well as improving their reading skills. Additionally, the recommendation is made for further research on the utilization of the think-aloud method for measuring EFL students' learning. The think-aloud method can be used to measure students' other skills. The method can be used to understand how successful and less successful students use their techniques for developing their writing. Educators or teachers can use this information to improve the students' writing skills.

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