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Metacognitive Awareness of Reading and Reading Strategy Use by Nonproficient College Readers

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Abstract

This research investigated what reading strategies Thai college EFL students who were identified as nonproficient readers are aware of and what reading strategies they use. Data were gathered from a questionnaire, think-aloud and interviews. The analysis identified 3 broad categories of 16 reading strategies employed by the nonproficient readers: text-based strategies, knowledge-based strategies and interactive strategies. Results also showed that the nonproficient readers viewed reading as a decoding process and that they were aware of different reading strategies. However, they could not regulate the strategies to construct meanings from texts effectively and solve reading problems. Their unsuccessful reading was due to the interplay of factors such as a lack of word recognition skills and necessary syntactic knowledge, and ineffective regulation of reading strategies.

INTRODUCTION

New challenges and rapid changes in the last decade have dramatically affected and transformed ways of life and life norms. The International Bureau of Education Council designated by UNESCO (2020) recommended that in the information and knowledge society, global citizens need to possess the 21st century skills and key competencies for lifelong learning to flexibly adapt themselves and appropriately respond to such challenges and changes. An ability to read and make effective use of information resources, mostly written and publicized in English, from both online and offline platforms is of utmost importance and is closely linked to such skills and key competencies.

Unfortunately, Thai students are not able to read English texts functionally and effectively at the expected level. Recently, the Program for International Students Assessment (PISA), assessing reading, sciences and mathematics of 15-year-old students around the world, shared alarming evidence that Thai students can only read and understand simple short sentences or short passages at the literal level and cannot process sophisticated texts (OECD, 2019; Schleicher, 2019).

Studies have demonstrated that reading strategy use is an important factor contributing to reading success (Ghaith & El-Sanyoura, 2019; Suraprajit, 2019; Guo, 2018; Sariçoban & Behjoo,

2017). Yet, less successful readers neither have an appropriate repertoire of reading strategies (Fotovatian & Shokrpour, 2007) nor have an accurate understanding about reading strategies and strategy use (Cotterall & Murray, 2009). To help less successful readers achieve reading success, there is a need for research investigating what reading strategies less successful readers are aware of, how they interact with texts, and how they solve reading problems. This will help teachers diagnose what reading strategies the readers are aware of and actually use (Carrell, 1989; Cohen & Hosenfeld, 1981) and be able to plan instruction accordingly to meet their specific needs and help them become strategic readers (Chumworatayee, 2012). Most researchers in second language (L2) reading have conducted research to investigate readers' metacognitive awareness of reading strategies but have paid less attention to the connection between the metacognitive awareness and strategy use (Zhang, 2010, 2001; Carrell, 1989).

Previous research in L2 reading has utilized one of the following research instruments to elicit the information about L2 readers' reported strategy use, such as metacognitive reading surveys (e.g. Ghaith & El-Sanyoura, 2019; Suraprajit, 2019; Sariçoban & Behjoo, 2017; Boonkongsaen, Sujinpram, & Verapreyagoon, 2016; Jou, 2015; Yaemtui, 2015; Zhang & Wu, 2009; Mokhtari, & Sheorey, 2002), interviews (Zhang, 2010,2001), or journals (Sudajit-apa, 2011). This draws skepticism about the findings since there is no guarantee that L2 readers actually utilize the strategies they reported when reading and interacting with texts (Zhang & Wu, 2009). Incorporating different types of research instruments such as questionnaires, interviews, and think-aloud have been suggested to investigate the actual strategy use and to obtain more valid and reliable results (Chumworatayee, 2012; Zhang & Wu, 2009; Fotovatian & Shokrpour, 2007; Salataci & Akyel, 2002). While questionnaires and interviews yield readers' reported strategy use, think-aloud helps see what strategies readers actually use and how they utilize the strategies. The present study was designed to use the mixed methods design with multiple instruments to investigate what reading strategies college EFL students, identified as nonproficient readers, are aware of and what reading strategies they actually use when they read English texts. The specific research questions are:

1. What do nonproficient college readers know about reading strategies?
2. What reading strategies do nonproficient college readers use when processing English texts?

LITERATURE REVIEW

Reading strategies and metacognition

The term of "strategies" is a somewhat problematic designation as a consensus among researchers, teachers, and educators about a concise definition is lacking (Afflerbach, Pearson & Paris, 2008; Paris, Wasik & Turner, 1991). Afflerbach, Pearson and Paris (2008) clarified the term 'reading strategies' as "deliberate, goal-directed attempts to control and modify the reader's efforts to decode text, understand words, and construct meanings of text" (p. 268). Yet, the definition appears not to address fix-up strategies or steps readers take when they fail to understand what they read. For the purpose of this study, reading strategies are defined as

purposeful, deliberate actions which readers employ to construct meaning or take voluntarily to improve their understanding when they struggle with reading problems.

Researchers (Zhang & Wu, 2009; Zhang, 2003; Paris et al., 1991, 1981) postulated that the effectiveness of readers' strategy use depends on metacognition. Metacognition is generally viewed as thinking about thinking and has two components: metacognitive knowledge and regulation (Baker, 2002; Garner, 1994; Flavell, 1976). Metacognitive knowledge includes self-knowledge as learners, task knowledge and reading strategies. Self-regulation involves the abilities to plan, monitor, evaluate, and repair reading comprehension. Both concepts are interconnected, tandem, and significant for reading achievement (Vacca, Vacca & Mraz, 2019). Research in L1 and L2 reading has demonstrated that skilled readers have a higher degree of metacognitive awareness when they process and regulate their reading, contributing to the effectiveness of their reading and reading achievement (Zhang, 2010; Mokhtari & Sheorey, 2002; Zhang, 2001).

Previous research on strategy use in L2 reading

Research on reading strategies in L2 focuses on comparing strategy use by good readers and poor readers (Alkhaleefah, 2017; Sariçoban & Behjoo, 2017; Yaemtui, 2015; Ghavamnia, Ketabi & Tavakoli, 2013; Sudajit-apa, 2011; Oranpattanachai, 2010) and those by readers with different English proficiencies (i.e. advanced, intermediate and low) (Bakhshalinezhad & Nikou, 2015; Chumworatayee, 2012; Zhang, 2010; Malcolm, 2009; Zhang & Wu, 2009; Zhang, 2001). Some studies investigated similarities and differences between strategies used in L1 and L2 (Bakhshalinezhad, & Nikou, 2015; Jou, 2015) or examined and provided rich information about strategies used by L2 readers to process different genres of text (i.e. narrative and expository texts, literary texts, or academic and business texts) (Suraprajit, 2019; Alkhaleefah, 2017; Parera, 2006). Very few studies investigate strategy use of low proficiency readers.

Among the very few studies investigating strategy use of L2 low proficiency readers, Block's study (1986) primarily examined reading strategies utilized by nonproficient readers. An introspective think-aloud was used as a means of investigating reading strategy use. The study offered a taxonomy of reading strategies including 10 general reading strategies (top-down strategies) and 5 local linguistic ones (bottom-up strategies). The general reading strategies include comprehension-gathering strategies and comprehension-monitoring strategies, for instance, anticipating content, integrating information, questioning information in the text, and monitoring comprehension. The local linguistic strategies include those that are used to understand specific linguistic units in the text such as rereading, paraphrasing, questioning meaning of a word, a clause or a sentence, and solving vocabulary problems. The study also revealed that nonproficient readers rarely made connections between information, tended not to recognize text structures, relied heavily on their personal experiences, and directed their attention away from a text and towards themselves personally and affectively. Yet, the generalizability of the study is quite limited as the findings are dependent upon the verbal reports generated by only a small number of the nonproficient readers.

Research instruments used in previous studies

In this section, questionnaires and think-alouds, which have been widely used in the previous L2 studies, will be reviewed. One of the most widely used questionnaires is the Survey of Reading Strategies (SORS), a 5-point Likert-type scale developed by Mokhtari and Sheorey (2002) (examples of the studies utilizing SORS include: Ghaith & Sanyoura, 2019; Boonkongsaen et al., 2016; Chumworatayee, 2012). SORS is used to elicit L2 readers' metacognitive awareness of reading strategies. It consists of 30 items and is meant to measure 3 categories of reading strategies: global strategies, problem solving strategies and support strategies. Findings from the previous studies reveal similarities and differences, frequencies, and relationships between the strategy use and different reading proficiencies or different English proficiencies. However, caution should be exercised when this type of questionnaire is used to investigate strategy use of L2 readers. First, it may be argued that exclusively relying on SORS to investigate strategy use of L2 readers could limit the possibilities of gaining new insights of strategy use by L2 readers. Implementing other valid and reliable questionnaires would enable researchers to learn other strategies which are used by L2 readers and do not appear in SORS. Besides, utilizing self-reported questionnaires to examine readers' strategy use does not reflect the actual use and quality of strategy use. Although questionnaires allow us to learn what readers know about reading strategies, they do not ensure that L2 readers can implement those strategies effectively. Other research instruments providing qualitative information about strategy use are needed to triangulate with the information from the questionnaires.

Another reading strategy awareness questionnaire which will be discussed is the Metacognitive Questionnaire developed by Carrell (1989). It was used to elicit the participants' metacognitive conceptualizations of reading strategies in both L1 (English) and L2 (Spanish) reading. Using a 1-5 Likert Scale (5=Strongly Agree, 1=Strongly Disagree), the participants rated thirty-six statements regarding their reading strategies. Items on the questionnaire include: 6 items measuring confidence of their reading abilities; 5 items pertaining to fix-up strategies, 17 items concerning perception of effective reading strategies, and 8 items regarding perception of reading difficulties. Interestingly, besides the effective reading strategies and the fix-up strategies, the questionnaire also provides the information about confidence as reader in a particular language and about what the participants see as reading difficulties.

Research on strategy use of L2 readers has also used think-aloud or verbal report as a means of investigation (Alkhaleefah, 2017; Bakhshalinezhad, & Nikou, 2015; Ghavamnia et al., 2013; Anderson, 1991). Think-aloud gives a clear picture of how readers process texts and how they regulate reading (Pressley, & Hilden, 2004; Charters, 2003; Ericsson & Simon, 1996). Researchers in L2 reading (Alkhaleefah, 2017; Bakhshalinezhad et al., 2015; Ghavamnia et al., 2013; Anderson, 1991; Block, 1986) have widely used think-aloud in their research with empirical evidence to support its validity and reliability. There are two types of think-aloud: (a) retrospective and (b) introspective. Retrospective think-aloud, which is obtained after readers perform a reading task, requires readers to report what they remember thinking during the task. It is advantageous in keeping the process intact and freeing readers from memory overload but possibly yields inaccurate and distorted verbal accounts (Pressley & Afflerbach, 1995). In contrast, introspective think-aloud is obtained during a reading task. Readers report what they are thinking and

struggling with to construct meanings. Although introspective think-aloud may interfere with the actual reading process, it allows researchers to understand what is happening in readers' minds. While both types of think-aloud have advantages and drawbacks, it is apparent that introspective think-aloud has been used extensively in L2 reading.

When implementing think-aloud, researchers should be concerned about the language used as a means of expressing verbal reports and coding and analyzing strategies. Jimenez, Garcia and Pearson (1996) cautioned that students with low English proficiency encounter difficulty verbalizing their thoughts in English when they process a text. Giving the students opportunities to practice the think-aloud and express their thoughts in L1 will help them reduce a cognitive overload and lead to obtaining valid verbal reports with more elaborate descriptions (Poomarin & Adunyarittigun, 2020). In addition, most studies used one of the pre-determined taxonomies of reading strategies, developed by Oxford (1990) or Mokhtari and Sheorey (2002), as a framework to code and analyze reading strategies used by L2 readers. Alkhaleefah (2017) and Abbott (2010) commented that coding and analyzing strategies using a pre-determined taxonomy can limit insightful accounts of reading strategies. This prevents researchers from discovering a full range of reading strategies.

METHODS

Research design

In this study, an exploratory mixed methods design (Creswell, 2005) was used for broadening understanding of the nonproficient readers' conceptualization of reading strategies and their strategy use. The metacognitive questionnaire was used to collect the quantitative data revealing the participants' conceptualization of reading strategies. Then, think-aloud and semi-structured interview were utilized to collect qualitative data depicting how the participants actually use the reading strategies in more detail.

Participants

Six hundred second-year undergraduate students from different disciplines (both social sciences and humanities) who were enrolled in an intermediate reading course at a public university in Thailand joined the study. The Nelson-Denny Reading Test was administered to identify nonproficient readers. Those whose standardized score fell at 171 or lower (or at stanine 2 or lower) became possible candidates for the study. The test results showed that 82%, or 498 students, fell within this group. Thirty-seven participants were randomly selected from the pool to participate in the study. Ten participants were male and twenty-seven were female.

Materials

Reading Passages. Four reading passages were drawn from a series of Daily Comprehension Tests developed by Palincsar (1982). Each reading consists of 400-475 words and is considered comparable in terms of the readability. The reading passages were appropriate for Thai college

EFL students since they have been field tested and used in other studies (Adunyarittigun & Grant, 2000, 1999). One passage was used for demonstrating how to do the think-aloud and practicing the think-aloud, and the other passages were randomly selected for the participants to read and do think-aloud.

Instruments

1. Nelson-Denny Reading Test (Forms G). The Nelson-Denny Reading Test was used to assess the participants' reading ability and to recruit nonproficient readers. It includes a vocabulary subtest and a comprehension subtest. The former includes 80 multiple choice questions, and the latter consists of five short reading passages accompanied by 38 questions. Derived scores (grade-equivalent, standardized scores and stanines) were obtained.

2. Metacognitive Questionnaire. The questionnaire developed by Carrell (1989) was used to elicit the participants' metacognitive conceptualizations of reading strategies. The participants were asked to respond to the metacognitive questionnaire about reading in English. The questionnaire includes 36 items dealing with four main domains of reading strategies (i.e. confidence, difficulties, effective reading strategies, and fix-up strategies) by using a 1-5 Likert Scale (1=Strongly Disagree, 5=Strongly Agree).

3. Introspective think-aloud. The introspective think-aloud procedure was chosen because it has been successfully used to investigate L2 reading processes (Alkhaleefah, 2017; Bakhshalinezhad, et al., 2015; Ghavamnia et al., 2013; Anderson, 1990; Block, 1986) and was used to provide a direct view of reading strategies used by the participants while they were engaged in a reading task. While reading, the participants were asked to immediately give a verbal report of how they processed the reading, what problems they encountered and how they solved the reading problems. Probing questions, such as "What do you have in mind about this?", or "How do you solve the problem?" were given when the participants were silent or unable to verbalize their thinking.

4. Interview protocol. The interview protocol consists of seven questions taken from Jimenez, Garcia and Pearson's student interview protocol (1996) which was chosen because it provided a means for capturing the participants' view of reading and strategy use. The first two questions dealt with the participants' general view of reading and L2 reading. The next four questions were asked for their strategy use, and the last question was about their perception of reading difficulty.

Procedure

Six hundred participants were administered the Nelson-Denny Reading Test to identify nonproficient readers. Thirty-seven students were randomly selected from the pool of the nonproficient readers. Each participant met individually with the researcher, was informed of the purpose of the study, and was asked to complete the Metacognitive Questionnaire. The participants were asked to complete a participation consent form and were informed that they were free to withdraw from the study at any time. They received 30 minutes of individual

instruction and practiced the think-aloud method. The researcher modeled the think-aloud using a sample text and then allowed the participants to practice the think-aloud. The participants were encouraged to think about what they did and to vocalize what they were thinking while being engaged in reading. Since the participants were not fluent in English and using an L2 as a medium for expressing their thoughts could cause cognitive overload, they were allowed to use their L1 to produce think-aloud. Then, they were given another passage to read and to do the think-aloud. When they read continuously and did not verbalize their thinking, prompts would be given. Each think-aloud session was about 60-80 minutes in length. They were given a short break after the completion of the think-aloud. Then, the participants were interviewed to elicit their view of reading. They were encouraged to provide their responses in L1 as well. This took around 20 minutes. All of the think-aloud sessions and the interview sessions were audio-recorded for later analysis. The think-aloud and interviews were transcribed verbatim in Thai. Think-aloud and interviews were translated into English for this article and presented in italics.

Data analysis

1. The Metacognitive Questionnaire. The percentages of the responses to 36 five-point Likert scale questions were calculated to reveal the participants' conceptualizations of L2 reading in four specific areas: reading confidence, reading difficulties, effective strategies and fix-up strategies.

2. Think-aloud. The researcher decided not to limit himself to any existing taxonomy of strategies from previous studies when coding the think-aloud protocols. Strauss and Corbin's (1990) axial coding and Alasuutari's coding strategy (1995) were used for coding the think-aloud. The researcher took the insider's view and tried to understand how the participants read and made use of strategies to understand meanings from texts. He identified and assigned strategies used. Strategy assignment was not mutually exclusive. When the participants' verbal reports demonstrated characteristics reflective of more than one strategy, multiple codes were assigned. Subsequently, the identified strategies were organized and categorized.

To ensure reliability of coding and analyzing, the categories of the reading strategies obtained from the think-aloud were triangulated with the information from the Metacognitive Questionnaire. This aided in ascertaining whether the nonproficient readers actually applied the reading strategies that they reported in the questionnaire. In addition, inter-rater reliability of the coding scheme was performed. Five percent of the think-aloud data were randomly selected and coded by two independent raters who were experts in Applied Linguistics and experienced university instructors. Before coding the think-aloud data, the raters attended a training session at which time the coding scheme was explained and discussed extensively. At this point, the raters practiced coding some sample data and were later asked to code the selected data independently. The coded data were compared with those of the researcher. The correlation coefficients among the researcher and the raters range from .82 - .85, and the Cronbach's alpha coefficient (α) is .91, indicating that the coding among the three raters is strongly coherent and reliable.

3. Interview data. The researcher read and coded the data from the interviews using Alasuutari's coding strategy (1995) and tried not to confine himself to any predetermined scheme. Examinations and reexaminations of the data revealed the students' view of reading, their knowledge of reading, and strategy use.

RESULTS

1. Research question 1: What do nonproficient college readers know about reading strategies?

The results from the quantitative and qualitative analyses are integrated and reported in accordance with the following five aspects: view of reading, view of their reading confidence, view of effective reading strategies, view of reading difficulty, and awareness of implementing fix-up strategies.

1.1 View of reading

An analysis of the interview data reveals the participants' view of reading. It indicates that the participants conceptualized reading as a decoding process rather than a meaning making process. Texts being read consisted of prints or codes constructed by writers who intended to send messages via codes. Codes needed to be decoded by readers to get meaning, so readers needed to decode in order to understand certain code systems such as sound-symbol association and grammatical structures. To be able to do so, good readers needed to recognize words in the texts, used grammatical knowledge, grammatical cues and graphic cues to understand what writers wanted to say in the text. The following extracts illustrate these participants' view of reading.

> *Reading is an attempt to decode meaning from texts which writers try to send to us. It's a form of communications among humans. Writers create codes, and we have a duty to understand the codes in their code systems.*
>
> Participant 46

> *Reading is understanding meaning of texts. Readers should know word meaning, grammar and sentence structure in order to understand texts.*
>
> Participant 45

In addition, 50% of the participants viewed reading in L1 differently from that in L2. In relation to the linguistic ability, they conceptualized reading in L1 as a meaning making process but viewed reading in L2 as a decoding process. To illustrate, when competent L1 readers read a text in L1, the process of making meaning from L1 texts was done automatically but did not require translating texts. In contrast, when reading an English text, readers with low English proficiency needed to undergo the process of translating the text from English into Thai and then interpreting the meaning of the text. They, however, believed that when they were able to master the English language, reading English texts would become a meaning making process similar to that in L1. Their views on reading are illustrated below.

I think reading is … you want to understand the story that the writer wants to tell you. When reading an English text, reading is translating… I read in English and then translate it into Thai.

Participant 02

Reading an English text is translating the text from L2 into L1.

Participant 23

1.2 View of confidence in L2 reading ability

Table 1

Percentage of responses demonstrating the readers' confidence in their L2 reading ability

When reading silently in English, …	Percentage of responses				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. I am able to anticipate what will come next in the text.	4%	42%	44%	10%	0%
2. I am able to recognize the difference between main points and supporting details.	4%	30%	48%	18%	0%
3. I am able to relate information which comes next in the text to previous information in the text.	6%	52%	30%	12%	0%
4. I am able to question the significance or truthfulness of what the author says.	2%	36%	52%	10%	0%
5. I am able to use my prior knowledge and experience to understand the content of the text I am reading.	32%	50%	16%	2%	0%
6. I have a good sense of when I understand something and when I do not.	36%	42%	20%	2%	0%

Table 1 shows that 42% of the participants agreed that they were confident in their ability to anticipate the text they were reading; 30% to recognize the gist and supporting details; 52% to relate the known to the new information; 36% to question the significance of what the author says; 50% to use their prior knowledge to make sense of the text; and 42% to be metacognitively aware of their reading performance. Interestingly, 18% disagreed that they were able to recognize the main ideas and supporting details. From the analysis, the majority were confident in their ability to utilize most of the reading strategies to make sense of English texts. Only a small percentage of the participants were confident that they were able to make distinction between significant and insignificant information and to question the significance of what they read.

1.3 View of effective reading strategies

Table 2

Percentage of responses demonstrating the readers' view of effective reading strategies

The best reader I know is a good reader because of his/her ability to …	Percentage of responses				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
29. recognize words	28%	52%	16%	4%	0%
30. sound out words	10%	42%	32%	12%	4%
31. understand the overall meaning of a text	76%	20%	4%	0%	0%
32. use a dictionary	4%	24%	34%	34%	4%
33. guess at word meanings	52%	42%	6%	0%	0%
34. integrate the information in the text with what he/she already knows	56%	32%	12%	0%	0%
35. focus on the details of the content	40%	38%	20%	2%	0%
36. grasp the organization of the text	48%	36%	16%	0%	0%
When reading silently in English, the things I do to read effectively are to focus on …	**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
12. mentally sounding out parts of the words.	6%	38%	36%	20%	0%
13. understanding the meaning of each word.	14%	52%	28%	6%	0%
14. getting the overall meaning of the text.	42%	52%	6%	0%	0%
15. being able to pronounce each whole word.	4%	18%	40%	32%	6%
16. the grammatical structures.	4%	44%	34%	14%	4%
17. relating the text to what I already know about the topic.	22%	70%	8%	0%	0%
18. looking up words in the dictionary.	14%	46%	30%	8%	2%
19. the details of the content.	14%	52%	30%	2%	2%
20. the organization of the text.	12%	50%	34%	4%	0%

Table 2 illustrates the participants' view of effective reading strategies to process texts in English. 52% of the participants agreed that good readers should possess word recognition skills, and 42% also agreed that sounding out words is an important ability of good readers. A majority of the participants strongly agreed that good readers should understand the overall meaning of the text (76%), guess word meanings (52%), integrate the new with known information (56%), focus on the detail of the content (40%), and grasp the organization of the text (48%). Only 24% believed that good readers should possess the ability to use a dictionary.

Table 2 also reveals reading strategies that the participants agreed they implemented to help them read English texts effectively. As can be seen, 52% agreed that understanding meaning of each word and getting the overall meaning of the text were effective reading strategies. Most of them agreed that focusing on grammatical structures (44%), relating the text to what they already know about the topic (70%), looking up words in a dictionary (46%), and focusing on the detail of the content (52%) and the organization of the text (50%) were effective reading strategies. Only 38% and 18% of the participants agreed that mentally sounding out parts of the words and the ability to pronounce each word were effective reading strategies.

The analysis of the interviews discloses the participants' knowledge of reading strategies. They named 9 important strategies such as identifying main idea and supporting details, understanding

the writer's purposes, making context clues to guess word meanings, summarizing, etc. The majority believed that good readers must be able to recognize words, use grammatical knowledge and grammatical cues to decode the meaning of texts. 24% and 13% of the participants reported that reading experience and a pronunciation skill are attributes of good readers, respectively. Interestingly, 10% also reported that a positive attitude towards reading contributes to being good readers.

1.4 View of reading difficulties

Table 3
Percentage of responses demonstrating the readers' metacognitive awareness of factors causing reading difficult

When reading silently in English, things that make the reading difficult are …	Percentage of responses				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
21. the sounds of the individual words	4%	14%	40%	38%	4%
22. pronunciation of the words	8%	14%	34%	38%	6%
23. recognizing the words	18%	48%	26%	8%	0%
24. the grammatical structures	14%	46%	22%	16%	2%
25. the alphabet	0%	10%	30%	36%	24%
26. relating the text to what I already know about the topic	4%	46%	30%	20%	0%
27. getting the overall meaning of the text	18%	36%	36%	6%	4%
28. the organization of the text	12%	34%	42%	8%	4%

Table 3 shows that a majority of the participants agreed and strongly agreed that word recognition (48%, 18%) and syntactic decoding (46%, 14%) made English reading difficult. They agreed that background knowledge (46%), global aspect of textual meaning (36%) and textual organization (34%) made English reading difficult. Only 14%, 14% and 10% of the participants agreed that phonetic, pronunciation and the alphabetical aspects of decoding made reading English difficult, respectively.

The analysis of the interviews was in line with that of the questionnaire. A majority of the participants reported word recognition and complex syntactic structures as the two most important factors making them unable to decode and understand English texts. They admitted that they could not understand the text they were reading when it contained a large number of unknown words. Some of the participants also mentioned their difficulties in dealing with words with more than one meaning. Only one participant mentioned that pronunciation was bound to cause trouble to him as mispronunciation could make him misinterpret word meaning. Most of the participants reported that complex syntactic structures contribute to their failure to comprehend English texts.

1.5 View of fix-up strategies

Table 4

Percentage of responses demonstrating the readers' metacognitive awareness of implementing fix-up strategies

When reading silently in English, if I don't understand something, ...	Percentage of responses				
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
7. I keep on reading and hope for clarification further on.	0%	60%	10%	2%	28%
8. I reread the problematic part.	26%	48%	14%	12%	0%
9. I go back to a point before the problematic part and reread from there.	26%	54%	14%	6%	0%
10. I look up unknown words in a dictionary.	34%	38%	20%	6%	2%
11. I give up and stop reading.	0%	8%	34%	36%	22%

Table 4 summarizes the participants' awareness of implementing fix-up strategies for problem solving. The results reveal that a majority of the participants were familiar with fix-up strategies and were aware that they implemented certain fix-up strategies, including reading further for clarification, rereading the problematic part and looking up unknown words in a dictionary when reading English texts silently. In addition, 36% disagreed and 22% strongly disagreed with the statement that they gave up and stopped reading when encountering difficulties, whereas only 8% of the participants agreed with the statement. In other words, a very small number of the participants gave up reading when they encountered any difficulties.

2. Research question 2: What reading strategies do nonproficient college readers use when processing English texts?

In response to the research question 2, the data obtained from the think-aloud were analyzed. Findings indicate 3 main classifications of reading strategies: Text-based strategies, knowledge-based strategies and interactive strategies. Descriptions of the classifications follow. The individual strategies included in each category will be followed by examples.

2.1 Text-based strategies refer to the strategies that the participants employ to derive meaning from texts by focusing on sound-symbol relationship, words, clauses and sentence structures. This category includes the following strategies:

a. Translating texts from English into Thai (Tr). The participants paraphrase or change words, phrases or sentences from English into Thai. Translation is classified as reasonably accurate translation (Tr+) and inaccurate translation (Tr-).

Text: Most dolphins are very friendly animals. They usually live in a group called school. They eat together, sleep together, travel together in this school.

Protocol: *These animals are friendly* (Tr +). *They live in a group* (Tr+). *They eat together, sleep together, travel together in a group which is like situations in schools* (as institution) (Tr-).

b. Use of visual information (Vis). The participants make use of either a few pieces of information

or a whole context from texts to explain or clarify content or provide support for their interpretation.

Protocol: I think probably another fish helps the sick dolphin. I look at the words "another dolphin" *and the word* "nurse" (Vis).

c. Rereading (Re). The participants will reread either a sentence or a whole paragraph when they feel uncertain with their interpretation, when they fail to comprehend a certain part of the text, or when the interpretation does not make sense to them.

*Protocol: Well, I think when it (*dolphin*) breathes, it has to open the blowhole and take …* the gulp of air (Re). *I don't know what* "the gulp of air" *means*.

d. Using syntactic cues (Gram). The participants make use of a particular grammatical structure, typographical features (i.e. bold prints or italics) and punctuation (i.e. comma or dash) to predict, make inferences and/or identify key information.

Protocol: "Does not" *is the main verb of this sentence and comes with the subject* "a bird" *because that-clause is used to modify the subject* (Gram).

e. Solving vocabulary problems (Voc). The participants try to figure out word meanings of unknown words by using context clues. Otherwise, they either replace unknown words with referents in L1 (i.e. it, this, that, these, those, something, whatever, or that thing) or use a particular unknown word as appeared in the text to talk about.

Example 1
Protocol: The dolphin mothers call their babies by "whistling". *Maybe* "whistling" *means making noise or calling. I guess from the word* "communication". (Voc)

Example 2
Text: … the hypnotist would stick a needle in the person's hand …
Protocol: The hypnotist would "do something" in his hand. (Voc)

Example 3
Text: A dolphin can hear all sorts of faint noise in the water—pebbles rolling, sea grasses rustling …
Protocol: A dolphin *can hear … can hear noise …* sorts of faint noises (Voc) *and* pebbles rolling, sea grasses rustling (Voc).

f. Sounding out words (Sound). The readers try to sound out an unknown word with a purpose of figuring out its meaning.

2.2 Knowledge-based strategies refer to strategies that the participants initiate to bring their previously acquired knowledge to interact with the texts. These strategies are employed to monitor and assess their own comprehension.

a. Use of prior knowledge (P/K): The participants employ their prior knowledge or prior experience to provide examples to support their interpretations.

Protocol: I'm thinking about radar that dolphins send out to signal and communicate among themselves (P/K).

b. Predicting (Pred): The participants form predictions to guide their reading.

Protocol: From the title, the story's about dolphins (Pred).

c. Comprehension monitoring (Mo): The participants are aware of their understanding and assess their understanding while reading.

Protocol: Pebbles rolling. *I don't know what it means* (Mo)… sea grasses rustling *I don't know* (Mo).

2.3 Interactive strategies involve the way in which the participants use the information from the texts and their prior knowledge simultaneously to process texts and construct meaning of the texts.

a. Summarizing (Sum). The participants give the main points of texts.

Protocol: In the first paragraph, it's about hypnosis. (Sum).

b. Interpreting text (Interp). The participants employ both schema and text interactively to construct meanings and to draw inferences of texts. Interpretations were classified as reasonably accurate (Interp+) or inaccurate (Interp-).

Text: If a killer whale comes close to a school of dolphins, the dolphins make a circle with mothers and babies in the middle. The bigger male dolphins swim around the outside of the circle.

Protocol: *If a killer whale comes close to the dolphins' territory, they will make a circle with mother dolphins and their babies in the middle. The circle indicates to other fish that it is their territory* (Interp-). *Male dolphins will swim around the circle to protect mother dolphins and their babies from a killer whale and sharks* (Interp+).

c. Integration of previous information (Intg). The participants make a connection between new information and known information which previously appears in the text.

Protocol: A sick dolphin has a special problem because it is different from human beings. It can't sleep as long as it wants. The sick dolphin needs to sleep, but it can't. OK, I know from the first paragraph that it has to come to the top of the water to breathe every half minute (Intg).

d. Questioning the constructed meaning (Quest). The participants show their doubt of the accuracy of the meaning constructed from the text.

Text: They (dolphins) usually live in a group called a school. They eat together, sleep together, and travel together in this school.

Protocol: They live in a group or in a school (a place) *… They live in a group. Well, the author probably wants to make us think that the way they live is similar to the way we are in school. Am I right?* (Quest)

e. Reaction to text (React). The participants express their thoughts or feelings towards the text.

Protocol: A sick dolphin has a special problem because it can't sleep as long as it wants to (Tr+). *It's different from human beings. …The reason why a sick dolphin can't sleep wasn't explained* (React)*… That's why another dolphin will be its nurse.* (Interp+) *It's interesting* (React).

f. Self-correction (Correct). When the participants realize that meaning of the texts derived from translation or interpretation is inaccurate, they will make an alternate translation or interpretation in order to reconstruct meaning of the texts.

Protocol: Its teeth are used for eating or chewing. … (Tr-) *Oh, no. They are used for catching food, but not for chewing it.* (Correct).

g. Skipping problematic part (Skip). The readers encounter the presence of an obstacle to comprehension. They decide to skip it, read further and hope to get clarification.

To see a clear picture of how frequently the participants utilize each type of reading strategy in the think-aloud sessions, the occurrences of each strategy were quantified in Table 5.

Table 5

The frequency with which the students mentioned using each strategy during the think aloud sessions

Classifications of strategies	**Percentage of strategies use**		
Text-based strategies	Translation	Accurate translation 30.61%	
		Inaccurate translation 17.12%	
	Use of visual information	2.27%	71.02%
	Rereading	3.91%	
	Using syntactic cues	0.93%	
	Solving vocabulary problem	16.05%	
	Sounding out	0.13%	
Knowledge-based strategies	Prior knowledge	1.37%	
	Comprehension monitoring	4.61%	
	Predicting	0.43%	6.41%

Interactive strategies	Summarizing	0.43%	22.55%
	Interpretation	Accurate interpretation 7.61%	
		Inaccurate interpretation 5.77%	
	Integration	1.13%	
	Questioning	2.17%	
	Reacting to text	0.33%	
	Self-correction	2.34%	
	Skipping	2.77%	

As can be seen in Table 5, of all the strategies used, 71.02%, 6.41%, and 22.55% of them were the text-based strategies, the knowledge-based strategies, and the interactive strategies, respectively. The results reveal that the participants relied on text-based strategies in decoding meaning from texts more than the knowledge-based and the interactive strategies.

Among the text-based strategies, the participants utilized translation (47.73%) more than other strategies. Solving vocabulary problems, with 16.05%, was the next most frequently used strategy. Among the knowledge-based strategies, they used comprehension monitoring strategies (4.61%) the most frequently. Use of prior knowledge (1.37%) was the next most commonly used strategy after. Among the interactive strategies, interpretation was the most frequently used strategy (13.38%). The participants were able to make more accurate interpretations (7.61%) than inaccurate interpretations (5.77%). However, they made very few attempts to integrate the new information with prior knowledge and rarely expressed their thoughts or feelings toward the text.

Table 5 indicates the translation as the most frequently used strategy and also demonstrates the high percentage of inaccurate translation (17.12%). It is notable that 30.16% of the strategies were translating text from L2 to L1 and the meaning was accurate whereas 17.12% of the strategies were translation and the meaning turned out to be inaccurate. Approximately one-third of the attempts at using the translation strategy to decode the text resulted in inaccurate meanings. Even though the participants utilized a variety of reading strategies to process the texts and to do problem solving, unfortunately they could not attain accurate meaning.

Besides translation, solving vocabulary problems is another high frequently mentioned strategy. Approximately 16.05% of the entire strategies were utilized to figure out word meanings or tackle with unknown words. However, the think-aloud protocols revealed that they could not make effective use of the strategy for solving vocabulary problems. Participant 15 is an exemplary case. She was asked to read an article about dolphins and kept using the word “dolphin” to talk about the text without knowing what the word meant.

In many cases, even though the participants were metacognitively aware that the meanings obtained were inaccurate, they did not know what needed to be done to meet the demands of texts effectively as can be seen from the case of Participants 12.

Text: Sometimes a dolphin is hurt or sick and needs help. A sick dolphin has a special problem because unlike a person, it cannot sleep as long as it wants to when it is sick, or it would be drown.

Protocol: Sometimes a dolphin is sick and needs help. The sick dolphin does something different from other dolphins. It cannot sleep as long as it wants to when it is sick. *It can't sleep when it's sick*. "Would be drown", *I don't understand. It seems like the dolphin cannot sleep. It's sick. I think other dolphins can sleep. It's confusing. I don't know what it means.*

Participant 12

The think-aloud protocol revealed that the participants over-relied on the text-based strategies (i.e. translating texts, solving vocabulary problems, and using syntactic cues). Over-reliance on decoding, as a result, interfered with their overall comprehension.

DISCUSSION

The objectives of this study were to investigate what the nonproficient readers know about reading strategies and what strategies they actually use. Data obtained from the questionnaire and the interviews clearly indicate that these nonproficient readers were familiar with the reading strategies good readers use to read effectively (Bakhshalinezhad, & Nikou, 2015; Yaemtui, 2015; Sudajit-apa, 2011; Zhang, 2010; Zhang & Wu, 2009; Fotovatian, & Shokrpour, 2007; Keene, 2002). They were also aware of reading difficulties and fix-up strategies. However, their strategy use in the think-aloud did not reflect their knowledge of reading strategies shown in the questionnaire. During the think-aloud, they hardly used any of the effective reading strategies they reported they knew, such as grasping the organization of the text and understanding the overall meaning of the text. It is obvious that there is a lack of correspondence between what the readers say they know and what they actually do while reading (Garner & Kraus, 1981-1982; Paris & Meyers, 1981).

A majority of the nonproficient readers were quite confident in their ability to utilize some reading strategies to read English texts, such as making predictions, making use of prior knowledge to make sense of texts, integrating the new with the known information, and being metacognitively aware of their reading. Yet, only a small number of the readers were confident in using a few important reading strategies such as making distinctions between main ideas and supporting details and questioning the significance of what they read. The readers realized that they were not proficient in English due to the fact that they did not have mastery of word recognition, had a small L2 vocabulary repertoire and had inadequate knowledge of grammatical structures to read English texts at a higher level. This was bound to cause difficulties for them (Zhang, 2010; Jimenez et al., 1995; Davies & Bistodeau, 1993). Their minimal control of word recognition and English syntactic decoding skills negatively affected their reading and caused them to approach the English texts by relying heavily on decoding.

Interestingly, a majority of the nonproficient readers had confidence in utilizing reading

strategies to decode meaning and to do problem solving. Research has shown that positive affective factors, such as reading confidence, self-perception and reading attitude, are important and exert a direct influence upon reading performance (Fives, 2016; Kaniuka, 2010; McKenna & Kear, 1990) and reading engagement (McKenna & Kear, 1999; Wigfield, 1997; McKenna & Kear, 1990). The readers reported that they did not give up reading when encountering reading difficulties. However, this does not guarantee that they have perseverance and persistence in the face of consistent reading setbacks. When they continuously encounter reading difficulties and fail to attain reading success, this can negatively influence what they decide to read and how they approach reading (Chapman, Tunmer & Prochnow, 2000; Guthrie & Wigfield, 2000; Morgan & Fuchs, 2007). They may end up with avoiding reading tasks if they doubt their own reading ability (Adunyarittigun, 2015; Bandura, 2004; Schunk & Zimmerman, 2007; Vacca et al., 2019).

The nonproficient readers viewed reading in L2 as a decoding process and were heavily engaged in decoding texts to obtain meaning more than other types of strategies, which is in line with the results of other studies (Ghavamnia et al., 2013; Fotovatian & Shokrpour, 2007; Salataci & Akyel, 2002; Zhang, 2001; Upton, 1997; Kletzien, 1991; Carrell, 1989). As shown in the think-aloud, the text-based strategies were most frequently used by the nonproficient readers, such as translating text from L2 to L1, solving vocabulary problems, and rereading.

Among the text-based strategies, translation is the most frequently used strategy by the nonproficient readers in this study, which is in line with the findings in other studies (Osuji, 2017; Ghavamnia et al., 2013; Malcolm, 2009; Chatupote, Qingquan & Teo, 2008). They perceived that readers with low English proficiency needed to translate texts into L1 and that the decoding process could become automatic without translation when the readers attain their mastery of English. The nonproficient readers who are not competent enough in their L2 need to rely on L1 more than other strategies (Osuji, 2017). This leads to inaccurate translation and inaccurate interpretation. This is in line with the studies conducted by Chatupote and her colleagues (2008) in China and Ghavamnia and his colleagues (2013) in the Iranian context. That is, less-proficient/unsuccessful language learners heavily depend on L1 and had a strong need to translate English texts.

It is evident that there was a high percentage of inaccurate translation and inaccurate interpretation although the nonproficient readers were aware of reading strategies used by effective readers, and also utilized some reading strategies shown in the think-aloud. The ineffective regulation of reading strategies could account for the high occurrences of inaccurate translation and inaccurate interpretation. The strategies used by the nonproficient readers were quite similar to those used by good readers in other studies (e.g. Ghavamnia et al., 2013; Pritchard, 1990; Block, 1986). Yet, there is a strong possibility that the nonproficient readers knew neither how to use reading strategies effectively (procedural knowledge) nor when to use them (conditional knowledge). As can be seen in the think-aloud, they unsystematically and unsuccessfully used the strategies to process texts (Ghavamnia et al., 2013), could not take further steps to meet the demands of the text when encountering reading difficulties, and were excessively engaged in the text-based strategies (decoding) (Fotovatian & Shokrpour, 2007; Salataci & Akyel, 2002). They were not aware that reading in L2 demands readers who

are capable of implementing a myriad of reading strategies to process texts and to do problem solving (Zhang, 2001). The excessive use of certain text-based strategies could interfere with their comprehension process (Fotovatian & Shokrpour, 2007). As a result, they were unable to solve their reading problems and could not attain the reading success.

LIMITATIONS

There is a need to note limitations in this study. First, generalizability of the results of this study is confined to participants with the same characteristics as those represented in the sample. The participants were college students enrolled in an intermediate EFL reading course. These participants were proficient in their first language reading but had difficulty in English. The participants came from a variety of academic disciplines. Therefore, the results obtained from this study should be generalized to similar college students.

Second, the small sample size in this study also limits the generalizability of the results. The researcher initially planned to have a sample size of 50 participants for the think-aloud session, which could have allowed for more think-aloud data for further analysis. Unfortunately, the data sampling was limited to 37 participants, which made the attrition rate exceed 20 percent (Gall, Gall, & Borg, 2006). Therefore, the researcher cannot be certain that the findings would be extended to other EFL populations in different contexts.

Third, the reading materials used for the think-aloud procedure in this study were expository texts and were chosen based on certain characteristics such as length, topic appeal to the readers and a level of difficulty which is challenging to EFL readers. The researcher realized that different genres of reading materials such as argumentative texts or literary texts would produce different results. In other words, the participants might have utilized different types of reading strategies with different frequencies when reading different genres of text.

PEDAGOGICAL IMPLICATIONS

The findings of this study reveal that the nonproficient readers to some extent are active and have a repertoire of reading strategies to deal with English texts. Their unsuccessful reading is due to the interplay of their ineffective regulation of reading strategies and low language proficiency. The findings suggest important pedagogical implications for the nonproficient readers. First, the nonproficient readers should be given explicit instruction on how to implement a myriad of reading strategies effectively (Tolongtong & Adunyarittigun, 2020). The nonproficient readers lack knowledge of how to implement them properly and how to orchestrate and monitor the use of different strategies to process texts effectively (Fotovatian & Shokrpour, 2007). It is important for reading teachers to provide the nonproficient readers with declarative knowledge, conditional knowledge and procedural knowledge of different types of reading strategies that promote comprehension monitoring and comprehension fostering (Ghaith & El-Sanyoura, 2019; Zhang & Wu, 2009; Fotovatian & Shokrpour, 2007; Chamot, 2005; Snow, Griffin & Burns, 2005; Zhang, 2003,). They also need to learn to avoid using less effective

strategies that could reduce their reading speed, cause cognitive overload, and interrupt their comprehension (i.e. translating text and sounding out) (Fotovatian & Shokrpour, 2007). This will make them well equipped with a variety of effective reading strategies and ready to handle different demands and challenges of texts.

Second, think-aloud is suggested as an alternative and effective means of explaining and modeling how to use reading strategies (Tierney & Readence, 2004; Oster, 2001; Baumann, et al., 1993). Think-aloud helps make invisible cognitive processes visible to the readers (Wilheim, 2001). Then, teachers should implement think-aloud to model, demonstrate and explain how to use reading strategies to process texts and to do problem solving. When the nonproficient readers use the strategies, teachers will be able to visualize how they process texts, provide scaffolds and give feedback to help the readers learn and improve their strategy use. Besides, think-aloud can make the readers develop their own ways of dealing with texts and comprehension difficulties (Baumann et al., 1993). The readers can see how they process texts, make meaning from text, and solve reading problems on their own. Subsequently, they plan, act and assume responsibility for their comprehension.

Third, word recognition and language lessons should be taught and integrated into a reading class for the nonproficient readers. The findings suggest that the nonproficient readers not be able to make use of reading strategies effectively because of both reading problems and language problems (Koda, 2007; Bernhardt, 2005; Bernhardt & Kamil, 1995). The readers need to reach a threshold level of English proficiency where they have adequate amount of vocabulary and syntactic knowledge to process text automatically. Lessons on developing vocabulary and complex syntactic structures should be taught in context (Adunyarittigun, 2002). This will help the readers have mastery of English language and support reading strategy use more effectively.

Last, teachers should encourage discussions as a part of the reading process. Development of reading ability is mediated and takes place through a dialogic process (Vygotsky, 1978). Through discussions, the nonproficient readers will be provided with opportunities to learn how more capable readers utilize reading strategies, process and construct meaning from texts. It is suggested that the readers' first language should be used as a tool for the nonproficient readers to express their thoughts in order to reduce their stress and anxiety when dealing with English texts. The nonproficient readers will gradually internalize strategy use and learn how to deal with texts successfully.

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Appendix
Interview Questions

1. What is reading?
2. Why do people read?
3. What should you do in order to be a good reader?
4. What is the difference about the reading of the people who have learned a foreign language compared to some who have learn a first language?
5. Do you ever translate from your language to the other when you are reading English?
6. What does a person need to know to be a good English reader?
7. What makes reading an English text difficult?