EFL Reading: Learning-to-Read and Test-Taking Strategies

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Several past studies of EFL learners' reading strategies have focused either on the strategies they used for learning to read or on those they used for taking tests. However, studies that distinguish the reading strategies used by EFL learners for learning-to-read purposes from those used for test-taking purposes in the target language, and that focus on the probable hierarchy of language learning strategies, have not been found. This study attempted to address these research gaps in the rarely studied EFL context of Thai undergraduates. One hundred and thirty-five Thai undergraduates were categorized based on reading test scores into high and low proficiency readers. Then, a questionnaire, five multiple-choice and 22 5-point Likert scale items, was administered to identify reading strategies for learning to read and for taking tests that distinguished the two groups. All significant learning-to-read and test-taking strategies were then ordered based on degrees of mean differences to determine the hierarchy. The data were analyzed with descriptive statistics and tests of statistical significance ($p < 0.05$). The results showed the top learning-to-read and test-taking strategies that significantly distinguished the high proficiency from the low proficiency readers were affective and cognitive strategies, respectively. The findings shed light on significant cultural consideration for EFL strategy-based reading instruction.

Keywords: EFL reading, reading test-taking strategies, learning-to-read strategies, strategy-based reading instruction, strategy hierarchy

INTRODUCTION

Of the four language skills, reading is considered the most important for EFL learners' academic achievement. As Eskey (2005, p. 563) stated, EFL learners rarely speak the learned language in their day-to-day lives but need to access the wealth of information recorded exclusively in the learned language through reading. However, this very skill poses a great challenge for EFL learners due to common problems like lack of grammatical knowledge and vocabulary, unfamiliarity with the text content, and

inability to read selectively. Reading deficiency can negatively affect EFL learners' academic as well as future professional performance. Appropriate data-informed pedagogical intervention is, thus, essential for development of the efficient EFL reading instruction that meets EFL learners' cultural needs.

Past studies have shown that successful language learners use numerous learning strategies which has been widely investigated in all domains of language skills; empirical findings of learning strategies in specific language skills will certainly contribute a great deal to effectively promote EFL learners' language performance.

Cohen (1996, p. 2) stated that second language learner strategies encompass both second language learning (L2-learning strategies) and second language use strategies (L2-use strategies). L2-learning strategies are actions adopted by learners to improve their language learning; L2-use strategies include learners' employment of their current interlanguage to engage themselves in speaking, listening, writing, and reading in a second language. Anderson (2005, p. 762) pointed out that currently no research has been conducted with L2 learners to determine the validity of the distinction between the strategies for L2-learning and L2-use strategies. Besides, McDonough (1999) also provoked the questionable possibility of a hierarchy of language-learning strategies (LLSs), which Anderson (2005, p. 766) hypothesized as: metacognitive strategies play the most significant role based on the belief that language-learning self-regulation should accelerate language acquisition. To fill these research gaps, adapting Oxford's Strategy Inventory for Language Learning (SILL) (1990) as the study framework, this research intended to investigate the hierarchy of reading strategies Thai EFL undergraduates applied to improve their reading skills (learning-to-read strategies) and to engage themselves in a contrived context of language use during a reading test (reading test-taking strategies). The study results will help inform EFL strategy-based reading instruction of essential cultural strategy priority that needs to be considered in an efficient instructional design. As Cohen suggested (1996, p.8) special care for strategy instruction lies in selecting strategic dimensions that are likely to be most relevant for the given learners in a given context.

Literature Review

The following sections review 1) a popular framework of language-learning strategy inventory, 2) research on reading strategies, 3) reading strategy-based instruction, and 4) study focuses.

Popular Language-Learning Strategy Inventory

Among several proposed models of LLS classification, Hsiao and Oxford (2002) showed that Oxford's (1990) SILL most consistently reflects L2 learners' actual strategy application. Grenfell and Macaro (2007) reported that by the mid-1900s, it was used as a strategy-assessment tool of more than 10,000 learners worldwide. Hsiao and Oxford (2002) and Mizumoto and Takeuchi (2018), comparing different models of LLS classification, similarly asserted its popularity as an LLS research tool. The popularity of SILL results from its high reliability and validity as a research tool (Oxford and Burry-Stock, 1995), its systematic and understandable structural design, and its user-

friendliness for L2 learners as well as for LLS teachers and researchers (Amerstorfer, 2018).

SILL includes six distinct LLSs: cognitive, memory, compensation, metacognitive, affective, and social. The first three are mental processes directly applicable to target language learning; the latter three function as indirect mechanisms supporting the language-learning process. This study applied Oxford's (1990) SILL to investigate how successful and unsuccessful EFL readers applied these strategies for the learning-to-read and for the test-taking purposes.

Research on Learning-to-Read and Reading Test-Taking Strategies

Past studies were found to focus either on learning-to-read or on reading test-taking strategies. Most studies both on learning-to-read and on test-taking strategies highlight the significant roles of cognitive and metacognitive strategies in the development of EFL learners' reading performance. To date, the authors have not found research that investigates both; the results from this study, therefore, fill this gap in the development of EFL reading.

Studies on Learning-to-Read Strategies

According to Eskey (2005, p. 564), reading is an active, purposeful, and creative mental process of meaning construction, through the complex integration of the decoding of new information and the reader's prior knowledge, feelings, and opinions. The leading role of the mental process of reading, besides other interacting individual preferences, obviously calls for cognitive strategies (Lee, 2018, p. 36). To facilitate learners' cognitive work during a reading process, reading researchers propose several reading strategies: skimming, scanning, activating schemata, recognizing text structure, using mental images, generating questions, monitoring comprehension, and evaluating strategy use (Zhang & Wu, 2009, p. 39).

Past studies have further shown a strong relationship between cognitive and metacognitive strategies and reading proficiency. Sheorey and Mokhtari (2001), in comparing reading strategies used among native and non-native learners, reported that the students with high-reading ability in both groups applied cognitive and metacognitive reading strategies at a higher level than students with low-reading ability. Zhang and Wu (2009) argued that successful readers in their study were better than their low-proficiency counterparts at planning for reading, monitoring their comprehension, and selecting appropriate strategies. Recently, Hamiddin and Saukah's (2020) qualitative study reported, similarly, that successful Indonesian undergraduate readers possessed more metacognitive knowledge, awareness, motivation, and behavior. However, Habók and Magyar (2019, p. 13), reporting a weak relationship between reading proficiency and strategy uses, argued that EFL reading proficiency was not related to strategy uses, but it was significantly related to learners' attitudes.

Studies on Reading Test-Taking Strategies

According to Lee (2018, p. 36), past studies investigating reading test-taking strategies have arrived at a conclusion that high-proficiency readers tend to use more global or

top-down strategies than less skillful readers. For instance, Yamashita (2003), investigating the relationship between reading proficiency and cognitive strategies applied by Japanese EFL students during a gap-filling reading test, found that while the more skilled readers were able to use the textual level information, the less skilled readers were stuck at the local grammatical level of reading comprehension. In parallel, Ghafournia and Afghari (2013) found that higher skilled post-graduate readers relied more on global comprehending and retrieval strategies than lower skilled ones, who focused on memory for local grammatical aspects. Shih and Huang (2018) claimed the high-proficiency readers were able to use metacognitive strategies more effectively and flexibly during a reading test.

To date, studies that examine a probable hierarchical order of strategies that are key elements of both learning-to-read and reading test-taking activities are not yet found. Therefore, results from this study will help fill these gaps.

Reading Strategy-Based Instruction

Past evidence of the positive relation between reading strategy application and reading proficiency brought about strategy-based reading instruction. Dabarera et al. (2014), for example, argued that metacognitive strategy training led to improved reading proficiency. Aghaie and Zhang (2012), likewise, showed that explicit instruction of cognitive and metacognitive reading strategies helped EFL learners in Iran improve their reading comprehension, promoted strategy transfer to reading in other languages, and contributed to learners' autonomy. Similarly, Alzubi et al. (2019), experimenting with a reading strategy training through smartphones, confirmed that the training promotes EFL learners' autonomy; however, its effect on reading performance was not significant. In the field of reading test taking, Lee (2019) confirmed that both high and low proficiency Taiwanese EFL students in her study obtained better scores after undergoing test-taking strategy training. She further elaborated that cognitive strategies (lexico-grammatical, sentence-based, and reading comprehension strategies) were employed more significantly than technical strategies (including metacognitive (time calculation for reading speed adjustment) and compensation strategies (skipping difficult questions, making educated guesses) and postulated that the latter may be mostly used by weak readers who were struggling with reading comprehension.

Currently, similar to the studies on learning-to-read and on reading test-taking strategies discussed above, reading strategy-based instruction focuses mostly on cognitive and metacognitive strategies. Anderson (2005, p. 763), however, cautioned various factors, including learners' cultural backgrounds, age, educational background, life experience, affective factors, and the learners' and teachers' beliefs about language learning, should be considered when strategy instruction is undertaken. Regarding learners' cultural backgrounds, Habók et al. (2021) reported that while Hungarians preferred cognitive strategies, Mongolian and Chinese students preferred affective strategies. The present study of learning-to-read and reading test-taking strategies in the EFL context of Thailand, therefore, can help add an additional light on cultural patterns of strategy priority. Diverse patterns of strategy use in different cultures from different studies

should help inform strategy-based EFL reading instruction of the significance of culture in its instructional design.

Research Focus

According to Cohen (1996, pp. 2–4), L2-learning strategies have an explicit goal of assisting learners in improving knowledge in a target language, while L2-use strategies have the main goal of verifying that the intended meaning was conveyed. L2-use strategies focus on learners' application of their interlanguage that may or may not have an impact on learning. Primarily rooted on communication skills, L2-use strategies, as Cohen (1996) suggested, include retrieval strategies (connecting learned forms for oral communication), rehearsal strategies (practicing learned forms to enhance oral proficiency), cover strategies (coping mechanisms employed to solve communication problems), and communication strategies (approaches to convey new meaningful information to a recipient).

Built on Cohen's (1996) conceptual definitions above, learning-to-read strategies, in this study, refer to observable actions or mental behaviors that are intended by the reading learners to improve their reading skills, such as memorization of coherence devices, consulting dictionaries to learn new words, rewarding oneself after finishing reading exercises, and discussing reading contents with peers. L2-use strategies, on the other hand, are limited to the actions or mental behaviors that reading learners apply during a contrived form of language use of test-taking, during which EFL readers retrieve learned forms, word knowledge, and paragraph organization knowledge, rely on compensation strategies to cope with unknown vocabulary and to actively construct meaning from reading texts. Therefore, during a reading test-taking experience in a close manner to everyday reading, EFL learners apply three aspects of Cohen's (1996) proposed forms of L2-use strategies: retrieval strategies, cover strategies, and meaning-constructing strategies. Moreover, in a test-taking situation, EFL learners do not focus on improving their reading skills; instead, they are attempting to illustrate how well they can use their interlanguage to construct the meanings of reading texts.

This study aimed at identifying a hierarchy of strategies EFL learners used for learning to improve their reading skills and for taking a reading test. Specifically, the study attempts to address the following three research questions:

1.   What strategies distinguish high-proficiency from low-proficiency EFL readers for the learning-to-read process?

2.   What strategies distinguish high-proficiency from low-proficiency EFL readers for the test-taking task?

3.   What is the hierarchical order of learning-to-read strategies and of reading test-taking strategies?

Insights gained from the study would help raise scholars' awareness of special care in selecting strategic dimensions that culturally meet EFL learners' LLS priority.

METHOD

Participants

135 third-year English major undergraduate participants were purposive samples from three universities in Thailand: 47 from two top-ten public universities and 88 from a non-top-ten public university (see best 10 universities & colleges in Thailand). Thai students in the top-ten universities are those with high entrance English proficiency scores, while those in the non-top-ten universities obtain lower scores. The inclusion of the participants from the top-ten and the non-top-ten universities, thus, would help, at the outset, validate the target subjects of the study, which aimed to identify reading strategies that distinguished the high-proficiency from the low-proficiency groups. The majority (84.44%) were females with an average age of 20.84. The participants had an average of 15.67 years of English education.

To conduct this project, the authors contacted the heads of the English departments of the participating universities to help recruit volunteers to complete a reading test and a reading strategy questionnaire. Due to the voluntary nature of the participant recruitment, the participant number in the top-ten and non-top-ten universities was out of the authors' control. Because the authors could recruit a low number of participants from a top-ten university, another one was, therefore, contacted to increase the top-ten university participant size. However, since the participants from the non-top-ten university were from the university where one of the authors work, the recruitment was easier and resulted in a higher number of participants. In respect of their privacy, the questionnaire did not elicit their names, and throughout this paper, no names were included. Before they consented to participate in the study, all the participants had been informed about the purpose of the study.

Instruments and Procedure

The research tools included a 45-minute multiple choice reading proficiency test (30 items) and a 20-minute reading strategy questionnaire in Thai (35 items).

The reading test was used to determine the students' levels of reading proficiency. Moreover, as Ghafournia and Afghari (2013, pp. 139–140) mentioned, learning and test-taking strategies are highly interrelated; separating particular strategies used in learning settings from the strategies merely used in test-taking settings is a highly complex process. Therefore, a fresh test-taking experience before the administration of the questionnaire survey should help the study participants remember their recently applied test-taking strategies for accurate rating of the test-taking strategy items in the questionnaire. To assure validity of the test items, they were selected from three online practice reading proficiency tests, with passages of 25 to 30 lines: the TOEFL junior tests: reading comprehension sample questions, TOEFL ITP: Level 1 Section 3 sample questions, and English Advanced Reading Comprehension Test 002. To gain an in-depth understanding of the students' different levels of reading proficiency, the authors adapted the test questions so that they contained an equal number of questions that tested the students' three levels of the reading proficiency (Pearson & Johnson, 1978): the literal understanding (10 textually explicit questions (TE)), the deep-structured

interpretation of semantic and syntactic interaction (10 textually implicit questions (TI)), and the analytical and critical thinking skills (10 scripturally implicit questions (SI)).

The reading strategy questionnaire in Thai contained three parts. The first six items in Part 1 elicited the participants' background information: age, gender, GPA, length of English education, favorite English skills, and frequency of self-regulated reading practices.

Twenty-two questionnaire items in Part 2, identifying reading test-taking strategies, were designed based on SILL and were grouped into three reading stages: pre-reading, on-going reading, and post-reading. They included nine cognitive statements (mental mechanisms of meaning construction), three memory statements (information storage and retrieval techniques), two compensation statements (management of reading problems), five metacognitive statements (self-regulation, self-monitoring, and self-evaluation), two affective statements (emotional management), and a social statement (social resource management). Three statements in the pre-reading and a statement in the on-going reading were in the multiple-choice format; the rest were in the form of the five-point Likert scale.

The other 13 items in Part 3, focusing on learning-to-read strategies, included a multiple-choice item on the cognitive (choices of reading references) and the other 12 five-point Likert scale statements: five for metacognitive strategies, five for affective strategies, and two for social strategies.

To ensure the validity of the reading test, three university-level English instructors with a Ph.D. degree in teaching English as a foreign language, with a minimum of five years of experience in teaching English, helped check whether the included reading questions measured the literal understanding, the understanding of the semantic and syntactic integration, and the analytical and syntactic interpretation. They also helped check the internal consistency of Thai statements in the questionnaire, verifying whether they measured the intended strategic categories of SILL. Proper adjustments of the reading test and the questionnaire were then made based on their suggestions before both tools were piloted with a group of English major students in comparable settings, in Thailand. Cronbach's alpha reliability of the test and the questionnaire was 0.875 and 0.856, respectively, showing that both were reliable measuring instruments.

Data Analysis

First, the reading test raw scores, converted into percentage, were used to classify the participants into three proficiency groups: high (80–100%), intermediate (41–79%), and low ($\leq$ 40%). Next, to determine the statistical significance of the differences of the three proficiency groups, one-way analysis of variance (One-way ANOVA), with the Scheffé post hoc test, was applied. The decision to divide the participants into three groups as such was to clearly draw apart the high proficiency group from the low proficiency one, by moving the intermediate group out of the follow-up analysis so that the intended comparison of reading strategy use by the high and the low proficiency groups could be validly addressed.

The questionnaire included two types of questions: the multiple-response questions and the five-point Likert scale. Answers to the multiple-response questions were first counted for the frequency and the percentage before a z-test for two population proportions was employed to determine the statistical significance of the differences between the high and the low proficiency groups. Answers to the five-point Likert scale questions were first analyzed with descriptive statistics including mean (M) and standard deviation (SD). After that, independent sample t-tests were employed to determine the statistical significance. Finally, all the strategies with observed, and statistical significance ($p < 0.05$) were ordered from the highest degree to the lower ones based on the degree of mean differences (MD), to determine the hierarchy of the observed strategies with significant differences.

The statistical procedures applied in the study include descriptive statistics, Cronbach alpha formula, One-way ANOVA, Scheffé's test, and the independent samples t-test. All analyses for statistical significance were performed using IBM SPSS Statistics Version 25.0 (IBM Inc., Armonk, NY, USA).

FINDINGS

This section discusses the learners' proficiency levels, their background information, the hierarchy of strategies for the learning-to-read purpose, and the hierarchy of reading strategies for the test-taking purpose.

Proficiency Levels

Table 1 shows that 41 learners were at the high proficiency level, 65 at the intermediate proficiency level, and 29 at the low proficiency level.

Table 1
Reading proficiency levels

Proficiency levels	Raw scores	%	Means	SD	Total	%
High	24–30	80–100	26.27	1.91	41	30.37
Intermediate	13–23	41–79	17.52	2.8	65	48.15
Low	0–12	0–40	9.9	1.8	29	21.48
Total			18.54	6.35	135	100

The one-way ANOVA analysis shows that the three groups were significantly different ($F = 425.130$, $p < 0.0001$). Then, the post hoc Scheffé's multiple comparison, as displayed in Table 2, was applied to find the differences among the mean scores for the three sets of questions (ten TE questions, ten TI questions, and ten SI questions), of the three groups of students. The Scheffé's test confirms that the three groups differed from one another significantly at all the three levels of reading comprehension, with the high proficiency group always at the top and the low proficiency group always at the bottom. The significant test results, therefore, validate the measurement of the participants' reading proficiency.

Table 2
Comparison of sub-components in reading test scores: High, intermediate, and low groups

Question types	Group	Mean difference	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
					Lower Bound	Upper Bound
Textually explicit	High vs. Intermediate	2.01689	0.26736	0.0001*	1.3549	2.6788
	High vs. Low	5.13625	0.32528	0.0001*	4.3309	5.9416
	Intermediate vs. Low	3.11936	0.29937	0.0001*	2.3782	3.8605
Textually implicit	High vs. Intermediate	3.08931	0.28613	0.0001*	2.3809	3.7977
	High vs. Low	5.31371	0.34812	0.0001*	4.4518	6.1756
	Intermediate vs. Low	2.22440	0.32039	0.0001*	1.4312	3.0176
Scripturally implicit	High vs. Intermediate	3.63902	0.27868	0.0001*	2.9491	4.3290
	High vs. Low	5.92178	0.33905	0.0001*	5.0824	6.7612
	Intermediate vs. Low	2.28276	0.31204	0.0001*	1.5102	3.0553
Overall	High vs. Intermediate	8.74522	0.46803	0.0001*	7.5865	9.9040
	High vs. Low	16.37174	0.56941	0.0001*	14.9620	17.7815
	Intermediate vs. Low	7.62653	0.52405	0.0001*	6.3291	8.9240

* $p < 0.05$

As mentioned earlier, only the top and the bottom groups were included in the analysis.

Participants' Background Information

The participants' background information was based on three items in Part 1 of the questionnaire: their GPA, their favorite language skills, and the frequency of their English reading.

The high scorers' average GPA was 3.34 and the low scorers' average GPA was 2.27. Regarding their favorite English skills (speaking, listening, writing, reading, vocabulary, and grammar), the z-scores for two population proportions shows that a significant background difference between the high and the low proficiency groups lies in the higher proportion of the former's favor of grammar learning ($p = 0.035$).

Concerning the frequency of their English reading, including every day, 3–4 times a week, 1–2 times a week, and never or almost never, the results from the z-scores for two population proportion show that the significant differences between the high and the low group lie in the higher proportion of the high proficiency group's daily English reading ($p < 0.0001$) and the higher proportion of the low proficiency group's English reading at the frequency of once or twice a week ($p < 0.0001$).

EFL Learning-to-Read Strategies

The analysis for learning-to-read strategies was drawn from 13 questions in Part 3 of the questionnaire. One multiple-choice question focused on the type of references used to tackle cognitive obstacles during reading practice. The other 12 five-point Likert scale statements included five metacognitive strategies, five affective strategies, and two social strategies.

Regarding choices of reading references (online resources, English-English dictionaries, English-Thai dictionaries, Thai-English dictionaries, and talking dictionaries), the z-score for two population proportions comparison shows that the proportion of the high proficiency group who used monolingual dictionaries is significantly greater than the proportion of the low proficiency group ($p < 0.0001$). On the other hand, the proportion of the low proficiency group who used bilingual dictionaries (English-Thai ($p = 0.02$) and Thai-English ($p < 0.0001$) is significantly greater than the proportion of the high proficiency group.

The other 12 five-point Likert scale statements investigated how the participants planned their reading practices, how they tackled emotional conflicts, and how they made use of social resources during their reading practices.

Table 3 shows that the high proficiency group significantly differs from the low proficiency group in their high positive attitude toward reading (an affective sub-strategy), their high enthusiasm for daily self-regulated reading practice (a metacognitive sub-strategy), and their help seeking ability (a social sub-strategy), in that respective order. On the other hand, the low proficiency group applied two metacognitive sub-strategies significantly more frequently than the high proficiency group: fixed reading practice scheduling and disciplined follow-up of the fixed reading practice schedule. In Table 3, as well as in Table 4 and in Table 5, the report of strategy categories and sub-strategies are ordered based on the degree of mean differences (MD), displayed in the last column, between the high and the low group. Strategies and sub-strategies with the greater mean differences are presented first to help readers see the order of the gradual strength of strategy categories and sub-strategies in distinguishing the high proficiency group from the low proficiency group.

Table 3
Learning-to-read strategies: High vs. low groups

Strategy category	Sub-strategies #	Group	Mean	S.D.	t	df	Sig. (2-tailed)	MD
Affective		High	3.20	0.86	1.377	68	0.173	0.28
		Low	2.92	0.74				
	Having positive attitude towards reading practices	High	3.49	1.34	3.30	68	0.00*	0.9
		Low	2.59	0.95				
	Self-encouraging further reading practices in case of tiredness	High	3.49	1.05	1.75	68	0.08	0.46
		Low	3.03	1.09				
	Having relaxing mechanisms in case of reading stress	High	3.73	1.18	1.16	68	0.25	0.32
		Low	3.41	1.05				
	Self-rewarding after reading practices	High	2.02	1.15	-0.93	68	0.36	0.26
		Low	2.28	1.07				
	Self-congratulating after successful reading practices	High	3.24	1.36	-0.22	68	0.83	0.07
		Low	3.31	1.04				
Social		High	2.87	0.81	0.482	68	0.632	0.09
		Low	2.78	0.71				
	Practicing reading with peers	High	2.22	1.01	-1.41	68	0.163	0.1
		Low	2.55	0.91				
	Seeking help in case of reading problems	High	3.51	1.12	2.13	67.08	0.04*	0.51
		Low	3.00	0.89				
Metacognitive		High	2.54	0.59	-0.297	68	0.767	-0.05
		Low	2.59	0.66				
	Strictly sticking to the reading practice schedule	High	1.61	0.70	-3.73	68	0.00*	0.63
		Low	2.24	0.69				
	Always looking for reading practice opportunities	High	3.20	1.14	2.50	67.90	0.02*	0.58
		Low	2.62	0.78				
	Setting regular reading practice schedule	High	1.98	0.79	-2.35	68	0.02*	0.43
		Low	2.41	0.73				
	Performing self-evaluation after practices	High	2.80	1.08	0.57	68	0.57	0.14
		Low	2.66	1.08				
	Setting realistic plans for reading improvement	High	3.12	1.12	0.54	67.88	0.59	0.12
		Low	3.00	0.76				
Overall		High	2.87	0.59	0.74	68	0.46	0.11
		Low	2.76	0.59				

EFL Reading Test-Taking Strategies

The investigation of reading test-taking strategies, from Part 2 of the questionnaire, included test preview strategies, on-going test completion, and post-test reaction.

Three multiple-choice questions on test preview investigated the following strategies: skimming for main ideas (a cognitive strategy), previewing the overall test, and time management (two metacognitive strategies). A z-test for two population proportions does not show any significant difference between the two groups.

Next, the analysis of on-going test completion was based on 15 five-point Likert scale questions and a five-choice item on memorization tools. The former included eight items about cognitive strategies, two about memory strategies, two about compensation strategies, one about affective strategies, and two about metacognitive strategies.

An independent sample t-test results shown in Table 4 reveals that the high and the low proficiency groups differ significantly in their overall reported strategy application and

in the application of the following three direct strategy categories: cognitive, memory, and compensation.

Table 4
On-going test-taking strategies: High vs. low groups

Strategy category	Sub-strategies #	Group	Mean	S.D.	t	df	Sig. (2-tailed)	MD
Cognitive		High	3.76	0.52	8.08	68	< 0.001*	1
		Low	2.76	0.49				
	Understanding without translation	High	3.66	0.85	6.407	68	< 0.001*	1.28
		Low	2.38	0.78				
	Reliance on transitional words	High	4.15	0.79	5.188	68	< 0.001*	1.25
		Low	2.9	1.11				
	Comprehension of idea relationship	High	3.78	0.72	6.267	68	< 0.001*	1.06
		Low	2.72	0.65				
	Scanning ability	High	3.8	1.08	4.320	68	< 0.001*	1.04
		Low	2.76	0.87				
	Grammar knowledge application	High	3.71	0.87	5.173	68	< 0.001*	1.02
		Low	2.69	0.71				
	No need to understanding every word	High	4.17	0.97	3.745	68	< 0.001*	0.93
		Low	3.24	1.09				
	Ease of implication interpretation	High	3.24	0.89	4.536	68	< 0.001*	0.76
		Low	2.48	0.51				
	Structural breakdown of sentences	High	3.54	0.98	2.700	68	< 0.009*	0.64
		Low	2.9	0.98				
Memory		High	3.91	0.69	5.25	68	< 0.001*	0.87
		Low	3.04	0.67				
	Memory of keywords, main points and specific details.	High	4.15	0.76	5.355	68	< 0.001*	1.05
		Low	3.1	0.86				
	Background knowledge as memory enhancement	High	3.66	1.11	3.000	68	0.004*	0.69
		Low	2.97	0.82				
Compensation		High	3.44	0.66	2.84	68	0.01*	0.47
		Low	2.97	0.72				
	Meaning guesswork	High	3.98	0.76	6.646	68	< 0.001*	1.12
		Low	2.86	0.58				
	Omission of difficult parts	High	2.9	1.11	-0.641	68	0.538	-0.17
		Low	3.07	1.1				
Affective	No anxiety of the reading test	High	3.22	1.27	1.41	68	0.16	0.43
		Low	2.79	1.21				
Metacognitive		High	3.49	1.05	1.33	68	0.19	0.28
		Low	3.21	0.71				
	Quick review of answers after the test	High	3.32	1.27	1.233	68	0.22	0.35
		Low	2.97	1.02				
	Time tracking during the test completion	High	3.66	1.3	0.812	68	0.420	0.21
		Low	3.45	0.87				
Overall		High	3.56	0.47	5.68	68	< 0.001*	0.61
		Low	2.95	0.39				

*p < 0.05

A further comparison of the sub-strategies of each category with significant differences also confirms that the high proficiency group applied all the relevant sub-strategies significantly more frequently than the lower proficiency group, with the exception of one of the compensation strategies, namely omission of difficult parts. In comparison to the low proficiency group, the high proficiency group significantly applied the strategy

of meaning guesswork during the test (p < 0.0001) but not the strategy of skipping difficult parts (p = 0.54).

The five-choice item, asking the participants to select memorization tools they applied during the test: keywords, text marking, mental images, note taking, and sounds. A z-test for two population proportions shows that the only significant difference is the higher proportion of the low proficiency group's reliance on mental images as a memorization tool (p = 0.008).

The analysis of three post-test strategies (social, affective and metacognitive) in Table 5 reveals that the only significant difference lies in the high proficiency group's post-test confidence (p < 0.001).

Table 5
Post-test strategies: Higher vs. lower groups

Strategy category	Sub-strategies	Group	Mean	S.D.	t	df	Sig. (2-tailed)	MD
Affective	Confidence of reading skill	High	3.24	1.04	3.45	67	< 0.001*	0.69
		Low	2.55	0.63				
Social	Emotional exchanges with peers	High	3.66	1.20	0.90	68	0.37	0.25
		Low	3.41	1.02				
Metacognitive	Analysis of strength and weakness for improvement	High	3.12	1.12	-0.87	68	0.39	-0.22
		Low	3.34	0.97				
Overall		High	3.34	0.77	1.39	68	0.17	0.24
		Low	3.10	0.60				

*p <0.05

To conclude, the high and the low proficiency groups do not differ in terms of the test preview strategies. The distinction between the two groups lies in the high proficiency group's significant exercise of three strategies during the on-going test completion (cognitive, memory, and compensation), among which cognitive strategies are at the top of the hierarchy, and in the high proficiency group's post-test confidence.

DISCUSSION

This section starts with an overview of the study findings, followed by discussion about learning-to-read strategies, test-taking strategies, and implication for strategy-based reading education.

In response to Anderson's (2005) suggested research gap regarding the distinction between strategies for L2-learning and those for L2-use (Cohen, 1996) and to McDonough's (1999) question about a hierarchy of LLS, this study shows that in the Thai context the hierarchy of learning-to-read strategies starts with positive attitude towards reading (affective), followed by daily reading practice (metacognitive), and help seeking (social), while test-taking strategies, a contrived form of L2 use, starts with cognitive, followed by memory, and compensation strategies.

The hierarchy of learning-to-read strategies among the EFL Thai undergraduates in this study, with the affective strategy at the top of the metacognitive and the social strategies, runs against the current hypothesis which entrusts the most significant role to metacognitive strategies, which are believed to accelerate the language acquisition once

a learner understands how to regulate the learning process (Anderson, 2005, p. 766). The fact that the lower proficiency group in this present study claimed to be using metacognitive strategies, unsuccessfully, should indicate that effective use of metacognitive strategies depends on other factors one of which could be culturally dependent. As Habók et al. (2021, p. 1) showed, preference of learning strategies varies in different cultures; the Hungarian participants in their study significantly preferred cognitive strategies, while the Mongolian and the Chinese students employed affective strategies significantly more frequently. Besides, EFL readers' proficiency level can also influence effective use of metacognitive strategies; Lee (2018, p. 56), for example, showed weak EFL readers in her study applied more metacognitive strategies, albeit ineffectively, as a compensation for their lower cognitive competence for the reading comprehension task. Rochmawati et al. (2022, p. 595) further added successful application of metacognitive strategies, though promoting learners' autonomy, takes time and highly depends on EFL learners' ability to self-regulate. The precedence of positive attitude in the learning-to-read process among the Thai undergraduates in this study supports Habók and Magyar's (2019) proposal of attitude as an essential cultural factor in EFL reading education. Habók and Magyar (2019, p. 13) further suggested EFL learners' attitude to English is the direct product of general English proficiency.

Additionally, the high proficiency group was also keen on self-directed social engagement, the ability to identify problems and to wisely seek help from others to develop reading competency. Volet and Karabenick (2006) called high achievement students who seek help "adaptive help seekers," whose action is not indicative of dependency; in fact, they become less rather than more reliant on others when future difficulties arise. Regarding benefits of social strategies on EFL readers' performance, Muhassin et al. (2021, p. 266) suggested reading practice in groups and in pairs helped improve Indonesian readers' performance.

The high proficiency readers' significant application of cognitive test-taking strategies reported in this study supports Lee's findings (2018), which showed that even though both the high skilled and less skilled readers in her study similarly applied mechanical approaches (focusing on important parts, monitoring time during the test), the former outperformed the latter as a result of the former's significant higher use of cognitive strategies (automatic word recognition and global comprehension competence). Likewise, Ghafournia and Afghari (2013, p. 147), exploring the relationship between three reading comprehension cognitive strategies (including comprehending, memory, and retrieval strategies) and reading performance, argued that the reading test score in their study reflected both learners' language ability and the skillful readers' use of the comprehending level of cognitive test-taking strategies. On the other hand, the low proficiency readers in their study were struggling with memory strategies. Regarding the use of compensation strategies, Lee (2019) claimed that they may be mostly used by weak readers. This study showed that the proficient EFL readers differed from the weak ones in their ability of wise meaning guesswork.

Even though several past studies have supported benefits of metacognitive strategy instruction in the reading class, Dabarera et al. (2014, p. 471), for example, reported that

the link, though statistically significant, is still moderate. In fact, Shang (2010) and Mehrpour et al. (2012) reported dissociation between reading strategy instruction and reading achievement. Fathi and Afzali (2020), exploring the impact of L2 reading strategy instruction on young Iranian EFL learners' reading performance, asserted that strategy-based instruction may be more suitable to younger learners, not to older learners. In this present study, metacognitive strategies were not found to be the leading strategies either for learning-to-read or for test-taking purposes.

As Masterson and Webb (2014, p. 587) suggested, students will learn to understand their reading better in classrooms if it offers them culturally relevant and responsive instructions. Strategy-based EFL reading instruction in the Thai context, therefore, should probably focus on the initial nurture of the affective impact, which was shown to be the top factor in the proficient EFL readers' hierarchy of the learning-to-read process. As Sainsbury (2004) stressed, reading education should focus on increasing positive attitudes toward reading, an important determinant that influences readers' regularity of independent reading. Regarding strategies that could help enhance EFL readers' positive attitude, Habók and Magyar (2019, p. 13) suggested teachers need to pay close attention to carefully planned learning lessons and motivating tasks as well as to mentally support EFL learners' sense of feasible achievement.

CONCLUSIONS

This study confirms past studies that cognitive strategies, working in tandem with memory strategies and a compensatory strategy of wise guesswork, are the most significant reading test-taking strategies for EFL learners. However, for EFL learning-to-read strategies, this study provided a data-informed pedagogical insight for strategy-based EFL reading instruction on the more substantial role of affective strategies than that of the generally assumed significance of metacognitive strategies. As it is said, "Don't put the cart before the horse." In the EFL context before learners are trained to manage and monitor their reading activities, they may, in fact, first and foremost need help with the development of the positive affect towards the reading task. Habók et al. (2021) cautioned strategy-based EFL reading instruction may not be a one-size-fits-all approach; students in different EFL contexts had different LLS priorities. The revealed cultural patterns of Thai EFL readers' LLS priorities for the learning-to-read and for the test-taking purposes implicated an effective strategy-based reading instruction needs to consider culturally sensitive strategic dimensions relevant to diverse contexts of EFL learners in different countries.

A final note of present study limitations should be addressed here. As Amerstorfer (2018, p. 515) mentioned, strategic L2 learning is complex and flexible. Investigation of EFL learning and test-taking strategies based on the SILL-driven questionnaire tool alone provided a limited picture of EFL reading strategies. Future research should, therefore, include other research methods such as open-ended questions, interviews, think-aloud protocols, classroom observations, or reflective journals to draw EFL learners' rich informative accounts regarding their actual activities during test-taking and learning-to-read practice. Furthermore, various contexts of EFL learners' L2-use, besides the contrived L2-use during a test-taking event, should also be added in future

research to obtain a full range of the interaction between different language use contexts and correlating strategic patterns. Moreover, to help develop better reading performance among weak EFL readers, a more in-depth analysis of low proficiency readers can also bring out to light causes of reading problems; such findings will be beneficial to enhancement of more efficient EFL reading instruction.

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