THE IMPACT OF METACOGNITIVE AWARENESS ON ENGLISH READING COMPREHENSION ABILITY OF HIGH SCHOOL STUDENTS

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Abstract

The primary purpose of this study is to investigate the impact of metacognitive awareness on English reading comprehension ability of high school students. The explanatory sequential mixed methods design was used in this study. As the quantitative study, data were gathered from a total of 1241 Grade 10 students across Myanmar. The Metacognitive Awareness Inventory (MAI) developed by Schraw and Dennison (1994) and the English Reading Comprehension Ability Test (ERCAT) developed with the IRT calibration by the researcher were used as the research instruments. The results and findings of quantitative study pointed out the significant contribution of metacognitive awareness on the prediction of English reading comprehension ability. As the follow-up qualitative study, an appropriate metacognitive intervention program for the improvement of English reading comprehension ability was developed and conducted with a heterogeneous group of 30 high school students. The results pointed out that if the students became more metacognitively aware their reading process, they could plan, monitor and control their reading tasks better and consequently, their English reading comprehension ability have become improved after the intervention. This study highlighted the functioning of metacognitive awareness in improving cognitive processes including reading comprehension and thus, it can hopefully help educators and students in Myanmar by providing the innovative and effective ways of teaching and learning English as a foreign language to some extent.

Keywords: Metacognitive Awareness, Reading Comprehension Ability, High School Students

Introduction

The ability to read effectively in a foreign language is an essential and vital skill not only in education but also in life beyond the school years (Eason, Goldberg, Young, Geist & Cutting, 2012). Whenever a person reads a text written either in a mother tongue or in a foreign language, comprehension involves more than the ability to spell correctly or decode words. Fielding and Pearson (1994) defined comprehension as a complex process involving knowledge, experience, thinking, and teaching. They contended that comprehension inherently involves inferential and evaluative thinking and not just the literal reproduction of the author's words. According to them, how well a reader constructs meaning depends in part on metacognition or their ability to think about and control their own learning and thinking process.

As reading is a complex and purposeful act of meaning making, it involves the actions and interactions of perceptual processes, cognitive skills, and metacognitive awareness. Metacognitive awareness is important for comprehending a text because it allows the reader to identify and study the parts of the text that he or she did not understand and it also enables the reader to become an accurate judge of his or her own learning (Dunlosky & Lipko, 2007). Therefore, metacognitive awareness has received a considerable attention by language teaching theoreticians, psychologists and researchers.

In Myanmar, reading comprehension texts take a large portion of the content of the English curriculum in contrary to other language elements; listening, speaking and writing. Moreover, they are considered as the base for the other skills specially, vocabulary and structure. This calls for more attention to this important language skill. However, in Myanmar high schools, teaching English reading still almost focus on main ideas and retrieving facts with shallow understanding of the content. Future opportunities for quality educational programming after high school may be limited if high school students are unable to get meaningful comprehension in English reading.

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Komariah, et. al (2015) pointed out focusing on the product of reading, rather than the process itself, is considered to be a key reason why students lack the abilities in English as a foreign language reading comprehension. Teachers are noticing gaps in reading comprehension, but are unable to implement research-based strategies to address these skill deficits (Gill, 2008). Teachers require scientifically validated intervention methods to provide effective and efficient teaching for high school students. Thus, by examining the impact of metacognitive awareness on English reading comprehension ability of high school students, this study may offer valuable insights to the most effective and efficient strategies for teachers and students in their teaching and learning English as a foreign language.

Purposes of the Study

The main purpose of the present study is

- to investigate the impact of metacognitive awareness on English reading comprehension ability of high school students

  The specific objectives are

- to examine the metacognitive awareness of Myanmar high school students
- to explore the English reading comprehension ability of high school students
- to observe the relationship between high school students' metacognitive awareness and English reading comprehension ability
- to predict the impact of metacognitive awareness on the English reading comprehension ability of high school students.
- to evaluate the effectiveness of metacognitive training for the improvement of high school students' English reading comprehension ability.

Definitions of Key Terms

Reading Comprehension Ability. Reading comprehension ability is the ability to utilize lower order reading processes (including decoding and vocabulary knowledge) and higher order reading processes (including relation of text content to schema and conscious controllable processing) to understand concepts and ideas from text (Pressley, 2002).

Metacognitive Awareness. Based on the two-component model of metacognition, metacognitive awareness can be defined as the awareness of one's own knowledge, processes and cognitive states, i.e., knowledge of cognition, as well as of the regulation of those states which is in term as regulation of cognition (Balcikanli, 2011).

1. Knowledge of Cognition. Knowledge of cognition refers to what individuals know about their own cognition or cognition in general. It can be categorized into three different kinds of metacognitive awareness: declarative, procedural, and conditional knowledge (Brown, 1987).

2. Regulation of Cognition. Regulation of cognition refers to a set of activities which especially include planning, monitoring and evaluation in order to help students control their learning. It can be regarded as the control or executive aspect of the learning process as it can help the learners regulate and monitor their learning (Brown, 1987).

Related Literature Review

Metacognitive Awareness and Reading Comprehension

Predating the coining of the term "metacognitive awareness", metacognitive processes have been germane to reading comprehension with a very long history. Thorndike's (1917) study of reading as reasoning was among the first to document that the readers' awareness of their cognitive processes was the major emphasis in sense-making of reading text. Dewey (1910) and Huey (1968)

also accepted that comprehension of the text requires planning, checking, and evaluating activities, which are now labelled as component parts of metacognitive awareness (as cited in Baker & Beall, 2009). Since it was in the late 1970s and early 1980s, the perspective that the effective readers must have some awareness and control on their cognitive activities they engage in while they are reading has evolved.

Later, metacognitive awareness has become a relatively new label for a body of theory and research in the area of reading. Earlier research carried out by Baker and Brown (1984), for instance, had investigated several different aspects of the relationship between metacognitive awareness and effective reading. Then, the researchers gave special attention to readers' awareness during the reading process, i.e., their metacognitive awareness, that addresses the readers' knowledge and use of their own cognitive resources (Garner, 1987). Baumann, Jones, and Seifert-Kessel (1993) shared a similar perspective with Garner that metacognitive awareness involves the awareness of whether or not comprehension is occurring, and the conscious application of one or more strategies to correct comprehension.

Carrell (1998) asserted that reading comprehension depends on direct cognitive effort, referred to as metacognitive processing, which consists of both knowledge about and regulation of cognitive processes. Flippo and Lecheler (1987) argued that metacognitive awareness can be thought of as the readers' awareness of whether they understand what they have read or not and one way in which teachers can help the readers become metacognitively aware is by encouraging them to change their reading speeds and to direct attention levels according to what they perceive the difficulty of the text to be. Likewise, McNamara and Magliano (2009) who have studied reading processes and reading strategies for many years found that metacognitive awareness during the reading process can inform the readers about their progress, their insufficient comprehension levels, and whether they are unlikely to reach their reading goals.

According to Alexander and Jetton (2000), during reading, metacognitive awareness is expressed through the uses of strategy, which are procedural, purposeful, effortful, willful, essential and facilitative in nature. To sum up, when applied to the reading process, metacognitive awareness can be defined as the knowledge of the reader's cognition relative to the reading process and the self-control mechanisms they use to monitor and enhance comprehension. Through metacognitive strategies, a reader allocates significant attention to controlling, monitoring and evaluating the reading process (Sheorey & Mokhtari, 2001).

Metacognitive Practices in Reading Class

Consistent with Kintsch's (1998) words that reading comprehension is a complex and multifaceted ability, it certainly involves the reader's orchestration of a number of skills and strategies. It is metacognitive awareness that might be anticipated to help the reader aware and control their cognitive process while reading, i.e., become active, strategic and proficient comprehenders. Following Flavell's (1976) notion that metacognitive awareness is not innate and it can be acquired through learning, many researchers have focused on the practices of metacognitive awareness in reading classes and advocated some instructions that can be provided to develop students' metacognitive awareness and reading comprehension as well.

Previously, metacognitive awareness practices at schools have focused on two knowledge types: (1) knowledge in a specific domain, and (2) knowledge about self-as-learner (Lin, 2001). Other than general metacognitive strategies, Brown (1987) provided domain-specific metacognitive strategies for teaching reading such as clarifying the purposes of reading, identifying the important elements of the message, focusing on the main content, monitoring ongoing activities to determine whether comprehension is occurring, and recovering from disruptions and

distractions. Similarly, Pressley (2002) pointed out that in reading classes, practicing the metacognitive activities such as making predictions, generating questions, constructing mental images that represent the meanings of text, summarizing, monitoring understanding, etc., is essential for achieving reading comprehension.

A study conducted by Paris and Jacobs (1984) found that Informed Strategies Instruction (ISL) was effective in enhancing metacognitive knowledge and improving the comprehension monitoring of students, especially for the poor readers. At the same time, Palincsar and Brown (1984) were undertaking research on a different metacognitive approach, called Reciprocal Teaching (RT) which was designed to foster reading comprehension and to teach students to monitor their comprehension. Transactional Strategies Instruction (TSI) is another metacognitive approach that promotes the idea that students should be flexible users of various strategies available in order to enhance reading comprehension (Pressley, 2002). Klingner, Vaughn, Arguelles, Hughes and Leftwich (2004) developed Collaborative Strategic Reading (CSR) to teach multiple comprehension strategies alongside collaborative learning. Recently, Lam (2010) also suggested seven metacognitive strategies which placed special emphasis on language learning.

Besides, verbalizing self-questioning techniques and modeling the application of such questions can give the readers an idea of what metacognitive awareness looks like practically (TEAL, 2012). In addition, the recent study of Eluemuno and Azuka-Obieke (2013) suggested the direct explicit instruction of metacognitive strategies as an efficient way of promoting metacognitive practices in reading classes. The purpose of direct instruction is to provide explicit explanations on the notion and construct of metacognitive awareness so that students who used to be unaware of their own cognitive activities will become aware of their mental actions when they perform cognitive tasks.

Repeatedly, the literature has indicated the effective metacognitive practices including direct explanation, collaborative discussions, modelling, making predictions, questioning, summarizing and clarifying. The investigations of approaches have also revealed with strong empirical evidence that metacognitive and comprehension-related strategy instruction must be combined with effective teaching practices. While there is considerable evidence regarding the value of teaching individual strategies, it is also clear that the teaching of multiple strategies might be superior to the teaching of single strategies in developing reading comprehension (van Kraayenoord, 2010). It is suggested that metacognitive practices of multiple strategies allow students to develop a repertoire that they can learn to use flexibly according to the text type, task, and context.

Method

Research Method

In this study, explanatory sequential mixed methods research design was used and thus, this study was conducted with two phases: Phase (1) which was the quantitative study and Phase (2), the follow-up intervention as the qualitative study.

Firstly, to explore the metacognitive awareness and English reading comprehension ability of high school students, descriptive survey design and quantitative approaches were applied in the Phase (1) of the study.

In order to investigate whether English reading comprehension ability of high school students improved or not after the intervention, one group pre-test post-test experimental design was used in the follow-up study of the Phase (2).

Sampling

As the Phase (1) of the study, the participants were chosen by using stratified random sampling technique. Firstly, two states and three regions (30% of total states and regions) were selected. Next, from 10 high schools located in the selected states and regions, the participant students were randomly selected. Finally, 1241 students participated in the Phase 1.

And then, as the Phase (2), it was decided to conduct the intervention at School A since it possessed the heterogeneous group of students having different levels of English reading comprehension ability according to the quantitative results. By using purposive sampling method, 30 students from School A were purposefully selected as the participants in the intervention program. Specifically, 10 students from low ability group, 10 students from average ability group as well as 10 students from high ability group were participated in the follow-up qualitative study.

Research Instrumentation

In the Phase (1) of the study, the Metacognitive Awareness Inventory (MAI) developed by Schraw and Dennison (1994) and the English Reading Comprehension Ability Test (ERCAT) (Form A) developed by the researcher were used as the research instruments to collect the required data. The MAI was a Likert-scale instrument composed of 52 items and the ERCAT (Form A) was the 40-items ability test developed with IRT calibration method by utilizing BILOG-MG 3 Software.

In the follow up study of the Phase (2), the instruments used for the collecting data included K-W-L chart, The Reading Process Checklist, and English Reading Comprehension Ability Test (Form B) for post-test. The K-W-L chart (what I "Know", what I "Want" to know, and what I have "Learned") is one form of self-assessment instruments used to develop students' metacognitive skills (Shepard, 2000). The Reading Process Checklist developed by El-Koumy (2002) was a checklist for self-assessment of one's own cognitive task. The ERCAT (Form B) was the parallel test form of ERCAT (form A) and it also included 40 items selected by IRT calibration method.

Data Collection Procedure

For the Phase (1) of the study, Preliminary testing and field testing were conducted with the permissions of administrative personnel. Preliminary testing was completed with 316 Grade 10 students in July, 2019. The actual data collection was done with 1241 Grade 10 students across Myanmar during 2020-2021 Academic Year.

As the Phase (2), based on the quantitative results, a follow-up study was continued with 30 students within the period of January, 2022 to February, 2022 and the data were collected before, during and after the intervention by using the pre-determined instruments.

Data Analysis and Research Findings

Results and Findings of Quantitative Study (Phase 1)

Descriptive Statistics of High School Students' Metacognitive Awareness

High school students' metacognitive awareness was measured by Metacognitive Awareness Inventory (MAI) which included 52 items and divided into eight dimensions. The descriptive statistics corresponding to the eight dimensions and overall performance of student's metacognitive awareness were reported in the following Table 1.

Table 1 Descriptive Statistics of High School Students' Metacognitive Awareness

Variables	*N*	Mean	Mean%	*SD*
Declarative Knowledge (8 items)	1241	20.05	62.7%	5.09
Procedural Knowledge (4 items)	1241	9.33	58.3%	3.13
Conditional Knowledge (5 items)	1241	12.6	63%	3.63
Planning (7 items)	1241	17.77	63.5%	4.39
Information Management (10 items)	1241	25.71	64.3%	5.98
Comprehension Monitoring (7 items)	1241	17.94	64.1%	4.47
Debugging (5 items)	1241	13.20	66%	3.56
Evaluation (6 items)	1241	15.32	63.8%	3.85
Metacognitive Awareness (52 items)	1241	131.91	63.4%	28.89

From descriptive analyses, it was revealed that the mean percentage of overall metacognitive awareness was 63.4% and thus, the metacognitive awareness of high school students in this study seemed to be satisfactory.

Descriptive Statistics of High School Students' English Reading Comprehension Ability

High school students' English reading comprehension ability was measured by the English Reading Comprehension Ability Test (ERCAT) (Form A). In order to identify the comprehension ability of high school students, the raw scores were firstly converted to the ability scaled scores. After transforming the raw scores to corresponding ability (θ) scaled scores, descriptive analyses were done and reported in Table 2.

Table 2 Descriptive Statistics of High School Students' English Reading Comprehension Ability

Variable	*N*	Mean	*SD*	Minimum	Maximum
English Reading Comprehension Ability	1241	0.013	1.195	-4.00	+4.00

According to Table 2, the mean value of high school students' English reading comprehension ability was 0.013 with standard deviation of 1.195. Since this ability mean value was nearly identical to the average ability score of 0, it may be concluded that Myanmar high school students had average ability to comprehend the text written in English.

Relationship between Metacognitive Awareness and English Reading Comprehension Ability of High School Students

Pearson product-moment correlations were calculated to examine the relationships between the variables (see Table 3).

Table 3 Correlations between the Metacognitive Awareness and English Reading Comprehension Ability of High School Students

	DK	PK	CK	P	IMS	CM	D	E	ERCA
DK	1	.651**	.647**	.666**	.683**	.642**	.654**	.674**	.576**
PK		1	.698**	.645**	.658**	.644**	.637**	.604**	.572**
CK			1	.684**	.717**	.682**	.686**	.649**	.556**
P				1	.736**	.711**	.664**	.627**	.542**

	DK	PK	CK	P	IMS	CM	D	E	ERCA
IMS					1	.733**	.701**	.694**	.584**
CM						1	.695**	.649**	.544**
D							1	.651**	.525**
E								1	.553**
ERCA									1

Note. ** *p* < .01

DK = Declarative Knowledge, PK = Procedural Knowledge, CK = Conditional Knowledge,
P = Planning, IMS = Information Management Strategies, CM = Comprehension Monitoring,
D = Debugging, E = Evaluation, ERCA = English Reading Comprehension Ability

Regression Analysis for the Prediction of English Reading Comprehension Ability of High School Students

To test the predictive contributions of the dimensions of metacognitive awareness to English reading comprehension ability, the standard multiple regression analysis was conducted.

Table 4 Summary of Regression Analysis for the Predictive Contributions of Metacognitive Awareness to English Reading Comprehension Ability

Predictors	B	β	t	R	R^2	$Adj\ R^2$	F
Constant	3.257			.667	.445	.441	123.25***
1. PK	0.296	0.181	5.434***				
2. DK	0.162	0.164	4.828***				
3. CK	0.099	0.072	1.984**				
4. E	0.157	0.121	3.622***				
5. IMS	0.113	0.135	3.450***				
6. CM	0.064	0.057	1.570*				
7. P	0.050	0.044	1.228				
8. D	0.016	0.011	0.323				

Note. **p* < .05, ** *p* < .01, *** *p* < .001

DK = Declarative Knowledge, PK = Procedural Knowledge, CK = Conditional Knowledge,

P = Planning, IMS = Information Management Strategies, CM = Comprehension Monitoring,
D = Debugging, E = Evaluation

Then, the resultant model can therefore be defined as in the following equation:

ERCA = 3.257 + 0.296PK + 0.162DK + 0.157E+ 0.113IMS + 0.099CK + 0.064CM

where, ERCA = English Reading Comprehension Ability, PK = Procedural Knowledge,

DK = Declarative Knowledge, IMS = Information Management Strategies, E = Evaluation, CK = Conditional Knowledge, CM = Comprehension Monitoring

Intervention-based Data Analysis and Results (Phase 2)

Intervention Plan for Follow-up Study

Based on the findings of the field testing, the metacognitive intervention focusing on reading was performed with 30 Grade 10 students (15 males and 15 females) as the follow-up study. The summarized account on planning the intervention procedure for six-week metacognitive training was described in the following table (see Table 5).

Table 5 Summarized Account on Planning the Intervention

Intervention	Method	Strategy Oriented	Time Allowed per Session
English Reading Comprehension Ability Test (Pre-test)			2 hours
Week 1	Detached Strategy Training	Teaching 12 Metacognitive Reading Strategies	2 hours
Week 2	Blended Strategy Training	Predicting, Underlying, Consulting an external source, Self-questioning	2 hours
Week 3		Skimming, Focusing on understanding, Underlying, Note-taking, Self-questioning	2 hours
Week 4		Previewing, Slow Down and reread, Note-taking, Summarizing	2 hours
Week 5		Self-questioning, Making educated guess, Consulting an external source	2 hours
Week 6		Practicing all Strategies provided in the intervention	2 hours
Recap all the metacognitive knowledge and strategies			2 hours
English Reading Comprehension Ability Test (Post-test)			2 hours

After that, the intervention was carried out according to the intended intervention plan and specific lesson plans. The lesson plans were combined with reading passages, metacognitive strategies, worksheets, group work activities, self-assessment checklists, discussions, as well as question and answer method.

Results of K-W-L Chart

Students' response to K-W-L chart carried much information about their knowledge of cognition, i.e., their knowledge of what, when, and how to use strategies. Therefore, students' responses to K-W-L chart before and after the intervention were recorded as in Table 6 (see Table 6).

From the results of K-W-L chart, it can be concluded that most students showed some improvement in all forms of metacognitive knowledge, i.e., declarative knowledge, procedural knowledge and conditional knowledge, related to reading strategies after the intervention. Hence,

after the intervention, students can be expected to perform their reading comprehension tasks better than before as they were likely to possess a larger repertoire of strategies.

Table 6 Summarized Account on Students' Responses to K-W-L Chart

Metacognitive Knowledge		Number of Strategies in Students' Responses	Before Intervention	After Intervention
			What I "Know"	What I have "Learned"
			Number of Students (Percentage)	
Declarative	To describe the name of strategies they know	No response	13 (43%)	-
		1 – 3	11 (37%)	6 (20%)
		4 – 6	4 (13%)	17 (57%)
		7 – 10	2 (7%)	5 (16%)
		10 – 12	-	2 (7%)
Procedural	To describe their knowledge of how to use a particular strategy correctly	No response	21 (70%)	1 (3%)
		1 – 3	7 (23%)	15 (50%)
		4 – 6	2 (7%)	12 (40%)
		7 – 10	-	2 (7%)
		10 – 12	-	-
Conditional	To express their knowledge of when to use a particular strategy correctly	No response	18 (60%)	1 (3%)
		1 – 3	11 (37%)	9 (30%)
		4 – 6	1 (3%)	14 (48%)
		7 – 10	-	5 (16%)
		10 – 12	-	1 (3%)

Results of the Reading Process Checklist

Within each blended training period of intervention, the students were requested to check on the specific behaviour they were doing or they have done before, while and after reading the text passages. By making the comparison of the frequency of students' responses to the Reading Process Checklist, it could be examined whether there was any progress on the students' engagement in metacognitive processes. The percentage of the average response rates of students to the metacognitive skills, i.e., planning, self-monitoring, and evaluation strategies, within five weeks of blended intervention were illustrated in Figure 1.
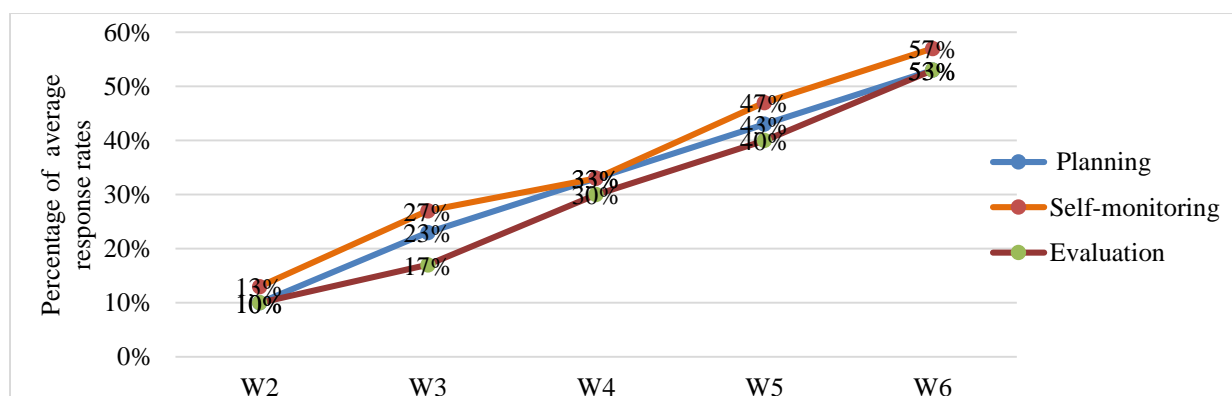
Figure 1 Percentage of Average Response Rates of Students to the Metacognitive Skills

As it can be seen in Figure 1, the most frequently used metacognitive skill of students when they conducted their reading process was self-monitoring strategies, beginning with 13% in week 2, rising slightly to 27% in week 3. It experienced nearly about 10% increase from week 3 to week 6 and the percentage of students who responded that they self-monitored their reading process became 57% in week 6. The second most frequently used metacognitive skill was found to be planning strategies, which began 10% in terms of percentage response rate, going up more than 40% in week 6. Regarding the percentage response rate of evaluation strategies, it rose slightly from 10% to 17% within the first two weeks, then steeply to 30% in week 4 and continued with the regular increase of about 10% in the remaining weeks. Although it got the lowest percentage of response rate compared to the other two metacognitive skills in the first four weeks, it recovered with 53% of response rate in week 6. From the results, a regular increase was found in the average response rate of students to their metacognitive skills while reading indicating that the students can become more aware of their cognitive tasks and can properly monitor and control their processing within their participation in intervention.

Results of English Reading Comprehension Ability Test

To examine the students' English reading comprehension ability before and after the intervention, the paired samples *t*-test was conducted. According to the results of statistical analysis, the mean scores differed prominently at $p < 0.001$. Therefore, it can be said that English reading comprehension ability of students after the intervention was significantly higher than that of students before the intervention as it can be observed in Table 7.

Table 7 Paired Samples *t*-test Results of English Reading Comprehension Ability Before and After Intervention

Intervention	Mean	*N*	*SD*	Mean Difference	*t*	*df*	*p*
Before	-0.715	30	1.79	-0.876	-6.125***	29	.000
After	0.160	30	1.74				

Note. ***$p < .001$

Discussion and Recommendations

Metacognitive awareness plays an important role in educational settings, and consequently has been the subject of a great deal of research in educational psychology. Research has consistently shown that metacognitive awareness is positively related to academic achievement and it is one of the greatest influences on academic performance (Schraw, 1998; van der Stel & Veenman, 2010; Wang, Haertel, & Walberg, 1990). While related to the reading comprehension

process, many researchers pointed out that metacognition-based instruction was more beneficial than traditional reading and instruction (Hilden & Pressley, 2007; Huff & Nietfeld, 2009; Jacobs & Paris, 1987; Moely et al., 1992; Ramdass & Zimmerman, 2008; Veenman, 2013).

Therefore, this study was primarily intended to explore the impact of metacognitive awareness on high school students' English reading comprehension ability since high school students are those who may be supposed to operate formal operational thinking in performing their cognitive tasks. Firstly, English reading comprehension ability test and metacognitive awareness of high school students were examined. Then, the relationship of metacognitive awareness and English reading comprehension ability was investigated. Finally, it was also analyzed how high school students' metacognitive awareness has an impact on their comprehension ability.

As the Phase (1) of the study, a total of 1241 Grade 10 students (male = 586, female = 655) from the selected basic education schools across Myanmar participated in this study. English Reading Comprehension Ability Test (ERCAT-Form A) and Metacognitive Awareness Inventory (MAI) were used as research instruments. According to descriptive analyses, it can be concluded that the metacognitive awareness of high school students seemed to be satisfactory and Myanmar high school students had average ability to comprehend the text written in English.

Again, Pearson product-moment correlation was executed to find out the relationship between metacognitive awareness and English reading comprehension ability of high school students and the criterion $p < 0.05$ was used to determine statistically significant correlations. The results of bivariate correlations showed that the higher levels of the dimensions metacognitive awareness were significantly correlated with higher levels of English reading comprehension ability. Particularly, there was a relatively strong correlation between information management strategies and English reading comprehension ability ($r = .584**, p < 0.01$) and similarly, between the declarative knowledge and English reading comprehension ability of high school students ($r = .576**, p < 0.01$).

To test the predictive contributions of the dimensions of metacognitive awareness to English reading comprehension ability, the standard multiple regression analysis was conducted. According to the standard multiple regression analysis, the results pointed out that the six out of eight dimensions of metacognitive awareness made a significant predictive contribution to English reading comprehension ability, $F(8, 1232) = 123.25, p < 0.001$, and explained for 44.1% (adjusted R^2) of the variance in English reading comprehension ability.

Based on the findings of quantitative study, in order to examine whether metacognitive training on reading can enhance the comprehension ability of high school students, the follow-up intervention was conducted as the Phase (2) of the study. The follow up study was conducted with 30 students by using one group pre-test post-test experimental design. After six-week intervention, the results pointed out that the metacognitive knowledge and regulation of students over their reading process was seen to improve. According to the results of the paired samples *t*-test, it was observed that English reading comprehension ability of students after the metacognitive training with special focus on reading was significantly higher than that of students before the intervention at $p < 0.001$.

Therefore, it can be concluded that results and findings of quantitative analysis in this study have pointed out the significant contribution of metacognitive awareness on the prediction of English reading comprehension ability of Myanmar high school students. In addition, the metacognitive training for reading implemented in this study was found to make significant improvement in the high school students' English reading comprehension ability. Accordingly, the teachers and educators should consider to make their students become more metacognitively aware

to their cognitive tasks including reading comprehension so that they can maximize their performance in academic settings.

Conclusion

Reading comprehension is a deliberate action, requiring self- invoked plans, cognitive skills, awareness and deliberate use of before, during and after-reading comprehension monitoring and regulation strategies. For efficient reading, readers need to not only use their cognition but also benefit from their metacognitive awareness. However, all students still need to monitor and regulate their own reading process for better comprehension. When deciding how to and what to train students with, it is important to be aware of what they possess and what they need (Veenman et al., 2006). The results of the study revealed that students showed some variations in their level of metacognitive awareness. Because of the differences in students' metacognitive knowledge and skills, it is always beneficial to know about the characteristics of target group to be trained.

In fact, training students with metacognitive strategies to enhance their reading comprehension had better be done by teachers who are knowledgeable enough about metacognition and its training. In such instructional environments, students can progressively hand over the strategy use, experience whole-class discussions, work in small groups, and finally work at individual levels to build up their metacognitive knowledge and skills repertoire. Thus, it should be noted that it is necessary for the preservice and in-service teachers to be instructed with metacognitive strategies and guided how to teach them.

In Myanmar, it would also be suggested that teacher education institutions including Yangon University of Education, Sagaing University of Education, and all the Education Degree Colleges across the country should take the responsibility of training the pre-service and in-service teachers to become metacognitively aware and to engage in higher level cognitive processing activities so that they can become more innovative and effective in teaching their students. It can be expected that the more metacognitively aware the teachers, the more efficient they can be in helping their students to improve their academic performance.

Based on the quantitative and qualitative findings of this study, it should be suggested that training students with metacognitive strategies requires a well-designed intervention program, as well. This is because, teachers' being well-informed about metacognitive awareness and metacognitive strategies may not be enough to reach the ultimate goal. As learning emerges from the interaction of learners, materials and strategies, by paying attention to each component children's metacognitive strategy development can be supported as much as possible. So, training children with familiar texts can be helpful, because they not only activate children's background knowledge, but also lessen the mental load.

As a final recommendation, since this study spotlighted the current situations of high school students' metacognitive awareness and English reading comprehension ability, the findings of this study can be used as the knowledge base for teachers, educators and curriculum developers. This study could be beneficial to the students by providing the metacognitive ways of improving their comprehension ability. Additionally, the findings of this study could also help teachers by reminding them to adopt teaching methods that can promote the metacognitive awareness of their students. To sum up, this study could hopefully help high school teachers and students in Myanmar by providing the innovative and effective ways of teaching and learning English as a foreign language to some extent.

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