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ASSESSING USAGE OF METACOGNITIVE ONLINE READING STRATEGY AND ITS RELATIONSHIP WITH STUDENTS' COMPREHENSION ACHIEVEMENT IN THE NEW NORM

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ABSTRACT

Online reading comprehension is increasingly becoming a high priority of education in the new norm. Thus, reading online texts without proper strategies would be challenging for students in an academic context. Students' success or struggle differs in their use of online reading strategies. This study aims to determine how students use the Metacognitive Online Reading Comprehension Strategies (MORCS) while reading online comprehension texts and whether there is any relationship between the MORCS and students' English language comprehension achievement. Ninety (90) students were sorted into three groups based on the types of training they received. The MORCS survey was distributed to students for feedback. A pre-test was administered before the training and a post-test was administered after the training was completed. Data were analyzed using SPSS (version 24) descriptive analysis. Pearson's correlation analysis was conducted to examine if there was any significant relationship between the two variables. Results showed that the support strategy ($M=3.97$) and problem solving strategy ($M=3.86$) were the most often used by respondents, followed by predicting strategy ($M=3.85$) and global strategy ($M=3.84$). The Pearson's correlation results showed a slight statistically significant relationship ($r=0.054$) between MORCS and the students' online comprehension achievement after the intervention. This article ends with discussion on pedagogical implications and suggestions for further research in a related field.

1. Introduction

In the new norm due to pandemic, the Internet has become the most popular platform for learners to gain knowledge and search for information to achieve their reading purposes (Ruan, Georgiou, Subjektif, et al., 2018). Hence, reading online comprehension has become an increasingly high priority in current education. In due course, students are required to read online materials and attempt exercises online. Past studies discovered that reading online text has become challenging especially for students with lower language proficiency or mixed ability (Coiro, 2018; Van Velzen, 2015). Therefore, challenges of online learning could affect students' comprehension achievement (Cao, Fang, Hou, Xu, Dong & Zheng, 2020). Due to the easy access of the Internet for learning, it is important to equip students and teachers with online reading strategies for a more beneficial reading (Guthrie & Wigfield, 2019). Teachers' role in digital literacies should be to work and learn side-by-side with students in gaining knowledge and experience to achieve the positive effects of reading from the Internet (Coiro, 2018). Coiro stated that if students are supported in becoming stronger online readers, the Internet is the perfect place to provide them with exciting opportunities to excel in their studies. In addition, Ruan et al. (2018), state that the Internet has invaded our lives and brought along many changes in our learning styles.

Previous studies have also discovered the benefits of metacognitive online reading strategies to help increase students' reading online comprehension achievement (Coiro, 2014; Jusoh & Abdullah, 2016, Omar, 2014). Hence, this study intends to determine whether there is a relationship between the use of metacognitive online reading strategy and the students' online comprehension achievement. This might help students who lack online reading strategies to improve. In this study, a think-aloud technique was utilized by students while reading online comprehension with MORCS. The think-aloud activities aim to determine students' actions when using MORCS to read online texts. According to White (2016) and Sönmez and Erkam Sulak (2018), Think-Aloud (TA) approach has potential to model the students' strategies, promote self-monitoring, and improve their reading comprehension.

2. Literature Review

At present students spent a lot of time reading online comprehension and communicating with online for academic purposes or for personal reading (Marboot, Roohani & Mirzaei, 2020). According to Ruan et al. (2018), the Internet has brought along many changes in students' learning styles. As reading online text has become challenging, students need to learn a more complex online reading strategies especially students with lower language proficiency or mixed ability (Coiro, 2018; Van Velzen, 2015). The challenges of online learning could affect students' comprehension achievement (Cao, Fang, Hou, Xu, Dong & Zheng, 2020). Brun-Mercer (2019), asserted that the ability to read in this digital era is not just the ability to master the skills of reading printed materials but also electronic reading materials. Therefore, it is crucial to equip students with complex online reading strategies for more beneficial reading (Guthrie & Wigfield, 2019). Previous studies revealed the benefits of metacognitive online reading strategies to help increase students' reading online comprehension achievement (Coiro, 2014; Jusoh & Abdullah, 2016; Omar, 2014). Other than that, past study stated that using metacognitive online reading strategies are essential to achieve a better understanding of the online texts (Taki, 2016). Previously, Metacognitive Reading Strategy (MRS) was believed to have a positive and direct relationship with reading comprehension achievement (Coiro, 2012; Coiro & Dobler's, 2007; Obilor & Amadi, 2018). Students who use MRS in their reading could possibly perform better in reading comprehension (Kummin & Rahman, 2010; Tavakoli, 2014; Yuksel & Yuksel, 2012). Thus, the MRS need to be developed in the area of teaching and learning of English language among students (Malmkjaer, 2017). Nevertheless, most young readers are not trained systematically on the strategies required for online text reading (Carioli and Peru, 2019). Therefore, metacognition continues to become a topic of interest in educational research among academicians and linguists (Coiro, 2018). Anderson (2002), linked metacognition to language learning context and claimed that metacognition is an essential skill that could be taught to the students. Hence, the Online Survey of

Reading Strategies (OSORS) questionnaire was developed by Anderson (2003), as an instrument to determine the online reading strategies used by students to read online comprehension. According to Anderson (2003), Metacognitive Online Reading Strategies consist of three categories such as (i) Global strategies (plan), (ii) Problem solving strategies (monitor) and (iii) Support reading strategies (evaluate). The global reading strategies are aimed at setting the state for the reading act. The problem solving strategies repair the strategies used each time a problem develops in understanding textual instruction. The support reading strategies provide the support to sustain responses to reading (Cheng, 2016; Mokhtari and Shoerey, 2002). In the present study, OSORS was adapted to relate learning to the Metacognitive Online Reading Strategy (MORS) used within the context of academic reading to form metacognitive online reading comprehension strategy (MORCS). MORCS consists of four different strategies that are Global Reading Strategies (plan), Problem Solving Strategies (monitor), Support Reading Strategies (evaluate) and Predicting Strategies (predict). The Global Reading Strategies (GS) are aimed at the planning stage before reading online texts, whereas, the Problem Solving Strategies (PSS) focused on the texts and the strategies used each time a problem develops in understanding textual instruction. The Support Reading Strategies (SS) provide support via tools and apps used to sustain responses towards reading the online texts (Coiro, 2015). In addition, Predict Strategies (PS) was used to assess the students' expectations from what they read and what they understand in order to answer the tasks assigned to them. Since there were many studies in the past that discovered the benefits of metacognitive reading strategy for students, therefore, the present study aims to determine how do students use MORCS to understand online text. Results of past studies revealed that the Problem Solving Strategy(PSS) was most frequently used by students compared to Global Strategy(GS) and Support Strategy (SS) to understand and tackle online texts (Al-Mekhlafi, (2018; Panchu, Bahuleyan, Seethalakshmi et al., 2016). It was discovered that MORS could increase students' use of online reading strategies and improve their online reading comprehension achievement (Jusoh & Abdullah, 2016;Coiro, 2014;Manusson, Roe, & Blikstad-Balas, 2019 ;Omar, 2014). In the present study, think aloud protocol was used as an instrument to determine MORCS that encourage students to voice out loud their thoughts while reading online texts. Think-aloud is proven to be effective and this strategy has been used by many researchers (Sönmez & Erkam Sulak, 2018; White, 2016). Other than that, think-aloud plays an important role in educational research and as an instrument to study the students through the process of reading online comprehension (Foley, 2011). This study attempted at answering the following research questions;

Research Question 1

How do students use Metacognitive Online Reading Comprehension Strategies while reading online comprehension texts?

Research Question 2

Is there any relationship between Metacognitive Online Reading Comprehension Strategies and students' English language comprehension achievement?

3. Methodology

The population in this study consisted of four hundred and ninety-seven (497) students in one local Technical Skill Institute in Malaysia, involved Semester One (1) to Semester Six (6) students. There were one hundred and ten (110) first-semester students studying English and communication subject in the institute. Out of 110 students, ninety (90) students were selected for the experimental group based on the "Table for Determining Sample Size" of Morgan (1971). The ninety (90) students as samples were sorted into three groups based on the types of training they received. A treatment group (n=30) was taught the MORCS while reading online comprehension using the think-aloud technique, while control group 1 (n=30) and control group 2 (n=30) did not receive any specific training but attended normal classes.

The instruments used to collect data were think-aloud sessions using audio recording, MORCS survey, and pre-test and post-test questions. The MORCS survey consisted of forty-six (46) items of a five-point Likert scale, ranging in 1 ("Never"), 2 ("Seldom"), 3 ("Sometimes"), 4 ("Often"), and 5 ("Always"). A pilot test was conducted to establish the validity and reliability of the survey questionnaire. The proper reliability of each sub-strategy was calculated and the Cronbach's Alpha of Global Strategy was 0.908. The Cronbach's Alpha of Support Strategy was 0.904, Cronbach's Alpha of Problem Solving Strategy was 0.913, and Cronbach's Alpha of Predicting Strategy was 0.920. It was also validated by content experts and necessary corrections were made to items with errors. According to George and Mallery (2003) and Sekaran and Bougie (2000), a Cronbach's Alpha value of more than 0.70 or 70% is the standard reliable alpha often used for a research instrument. The data were analyzed using the Statistical Package for the Social Science (SPSS) version 24.0 software focusing on the descriptive statistical analysis frequency, mean, and standard deviation scores. Meanwhile, the students' recorded audios of thinking aloud were transcribed and the transcripts were analyzed focusing on coding using Atlas.ti 8.0 software.

3.1 Data Collection Procedure

Data collection procedure started with the distribution of the MORCS survey to all respondents in approximately thirty minutes to answer 46 items in the survey. After completing the MORCS survey, the respondents attempted a pre-test question and submitted their answers after they finished. Figure 1 illustrates the flow of data collection procedure of this study.

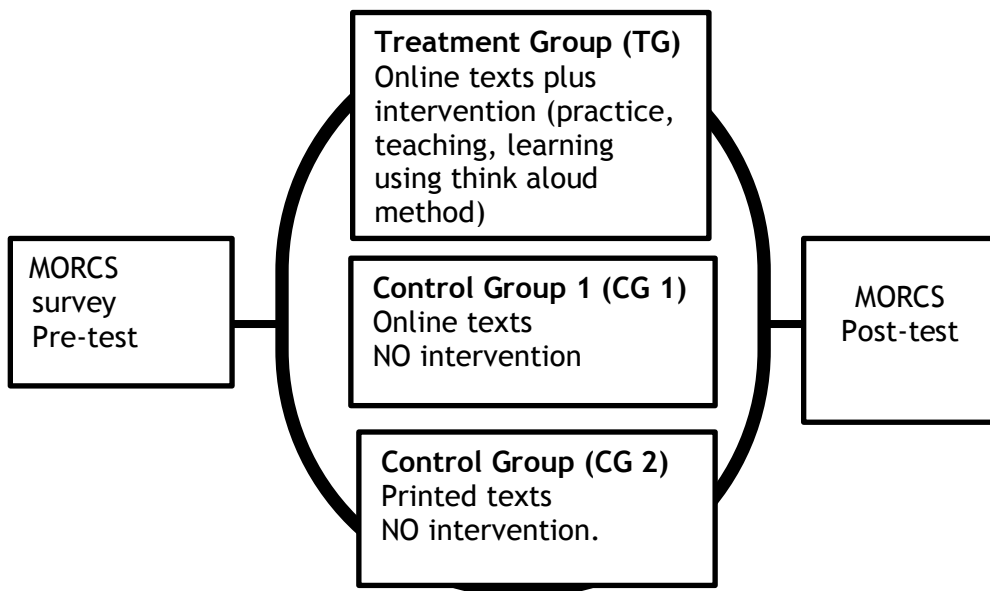


Figure 1: A data collection procedure of this study

There was a subsequent meeting with the students after completion of MORCS survey and pre-test. Students in the TG were then assigned to think-aloud sessions to practice MORCS while reading online texts. While thinking aloud, students recorded their voices using audio recorder as data for analysis. Meanwhile, students in CG1 and CG2 attended normal class sessions. The CG1 students attempted their tasks online and CG2 attempted their tasks on printed class forms. The rationale of doing this was to determine if there was any significant relationship between MORCS and students' reading comprehension achievement. Nevertheless, both students in CG1 and CG2 were not taught to use MORCS. Students in TG were taught to use MORCS items, discuss, and practice the strategies while reading online texts. Rationale of not training the students in CG1 and CG2 was to answer the research question on whether there was any relationship between the use of MORCS among students and their online reading comprehension achievement. After the last intervention session, a post-test consisted of two passages, and thirteen questions were distributed to all the 90 students from the TG, CG1, and CG2 to answer in one hour.

4. Results

4.1 Research Question 1 (RQ1). How do students use Metacognitive Online Reading Comprehension Strategies while reading online comprehension texts?

In this study, the MORCS items were used by the students while reading online texts. The classifications of students' ways of reading online texts were made based on the Mean Score Range by Wiersma (2002).

As illustrated in Table 1, a majority of the students in this study 'Often' use GS item 10, 'Student checked understanding when he/she comes across new information' (M=4.09), item 1, 'Student read the online text of his/her interest' (M=4.08), and item 7 'Student thought of what he/she knew when reading online text' (M= 3.98). The students also use quite often item 9 (M= 3.96), item 12 (M= 3.93), and item 8 (M= 3.92). Of all the 12 items, item 2 and item 4 are the least used as they record the lowest mean score with item 2 'Student read the online text for academic purposes' (M=3.60) and item 4 'Student had a purpose in mind when reading text.' (M=3.54).

Table 1
Students' ways of using the MORCS items

Item	GS	M	Item	PSS	M	Item	SS	M	Item	PS	M
10	Check understanding on new information	4.09	19	Read slowly/ carefully to understand and Use Page up/page down for meaning	4.08	29	Translate	3.96	38	Predict exact answer	3.98
1	Read for Fun	4.08	23		4.03	34	Use online material as reference	3.95	40	Expect to understand and better	3.92

7	Use prior knowledge to understand online text	3.98	18	Re-read for understanding	4.00	26	Read aloud	3.89	45	Expect to increase reading speed	3.87
9	Guess reading content	3.96	15	Scroll through text	3.96	31	Paraphrase	3.89	37	Online text lead to answer	3.84
12	Boldface and italic	3.93	24	Adjust reading speed	3.86	30	Use thesaurus as reference	3.86	41	Identify key information	3.84
8	Asking questions	3.92	20	Distinguish fact and opinion	3.85	32	Go back and forth	3.83	43	Expect to understand better	3.8
6	The content fits the reading purpose	3.82	17	Stop and think from time to time	3.84	27	Click on key words	3.81	46	Expect to get correct meanings	3.8
3	Look for a site that covers both sides of an issue	3.78	22	Read back and forth	3.8	28	Taking notes	3.79	42	Guess right and wrong	3.78
5	Decide what to read closely and what to ignore	3.78	16	Guess the meaning of unknown words/phrases	3.77	35	Use dictionary	3.79	39	Expect to find correct answers	3.76
11	Evaluate what is read	3.63	21	Evaluate text before use	3.76	25	Look for materials in English	3.68	44	Expect to identify new words	3.75
2	Reading for academic purpose	3.6	13	Get back on track	3.69	33	Ask questions	3.68	38	Predict exact answer	3.98
4	Reading for purpose in mind	3.54	14	Pay closer attention	3.69	36	Read print/online text	5.53	40	Expect to understand better	3.92
Average total Mean		3.84			3.86			3.97			3.85

GS - Global strategy, PSS – Problem solving strategy, SS – Support strategy, PS – Predicting strategy, M=Mean score

The students 'Often' resort to the use of PSS with three items under this category recording a mean score of 4.0 and above, namely item 19, 'Student read slowly and carefully to understand online text' (M=4.08), item 23, 'Student used page-up and page-down to get the meaning' (M=4.03), and item 18, 'Student re-read the online text to understand the meaning of difficult words, phrases, and sentences' (M=4.00). Meanwhile, the least three items used by the students are item 21 (M=3.76), item 13 (M=3.69), and item 14 (M=3.69).

The SS items that record the highest mean scores are item 29, 'Student translated words from English into his/her native language for better understanding' (M=3.96) and item 34, 'Students used reference materials like pictures, visual aids, and sound to understand online text' (M=3.95). The results show that the SS items least used by the students include item 33, 'Student asked himself/herself questions to answer the task given online' (M=3.68), and item 36, 'Student read printed online text' (M=3.53).

The PS used the most often by the students with mean scores between 3.5 and 4.0 involves item 38, 'Student predicted that online text leads to the exact information to complete the tasks' (M=3.98), item 40, 'Student predicted that scrolling the text will lead him/her to understand the online text' (M=3.92), and item 45, 'Student expected to increase the online reading speed when using caret to navigate reading pane' (M=3.87). The last three items of PSS that students sometimes use are item 42 (M=3.78), item 39 (M=3.76), and item 44 (M=3.75).

Table 2 reveals that support strategy (SS) scores the highest total mean (M=3.97), followed by problem solving strategy (PSS) with a total mean of M=3.86 and predicting strategy (PS) with a total mean of M=3.85. The global strategy (GS) scores the least total mean (M=3.84).

Apart from items in the MORCS, the students' think-aloud responses portray that the questioning strategy, inferring strategy, predicting strategy, and monitoring comprehension strategy are actively used by students when reading online texts. Students use the questioning strategy under the GS to help them get the meaning of words and interpret and interact with the online text better, for instance, "maybe I should re-read...?" Besides that, students make inferences from the online text to get answers for questions like "I think the character did that because..."

Predicting strategy (PS) is the least often used by students when reading online. Students make predictions when reading online comprehension texts to help them get the answers to the questions such as "I think this text will lead me to the answer" or "I am hoping this will take me to my reading purpose".

4.2 Research Question 2 (RQ2). Is there a relationship between the Metacognitive Online Reading Comprehension Strategies and students' English language comprehension achievement?

To answer the second research question, first the pre-test and post-test results for the three sample groups (TG, CG1, and CG2) were reported in the form of the mean (M) and standard deviation (SD) scores. Table 2, Table 3, and Table 4 compare the pre-test mean and standard deviation scores among the three sample groups.

Table 2
Descriptive statistics results for students in TG

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
TGpost-test	30	54.00	100.00	73.47	16.44
TGpre-test	30	15.00	69.00	44.10	12.67

Valid N (listwise)	30	29.37	3.77
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Table 2 shows the descriptive statistic results for students in the TG. As displayed in Table 2, the students' post-test scores range from a minimum of 54 marks to a maximum of 100 marks compared to the pre-test scores which range from a minimum of 15 marks and a maximum of 69 marks. The mean score also increases in the post-test ($M=73.47$) compared to the pre-test ($M=44.10$). This means that there is a difference in the mean score ($M=29.37$) between the pre-test mean scores and the post-test mean scores.

Table 3

Descriptive statistics result for students in CG1

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
CG1 post-test	30	23.00	85.00	54.30	18.98
CG1 pre-test	30	15.00	61.00	37.53	12.13
Valid N (listwise)	30			16.77	6.85

As shown in Table 3, the descriptive statistics results for students in CG1 post-test range from a minimum of 23 marks to a maximum of 85 marks compared to the pre-test scores that range from a minimum of 15 marks and a maximum of 61 marks. Meanwhile, the mean scores also increase in the post-test ($M=54.30$) compared to the pre-test ($M=37.53$). There is a difference in the mean score ($M=16.77$) between the post-test and the pre-test of students in CG1.

Table 4

Descriptive statistics result for students in CG2

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
CG2 post-test	30	23.00	85.00	54.30	18.98
CG2 pre-test	30	15.00	77.00	53.57	18.36
Valid N (listwise)	30			0.73	0.62

Table 4 displays the results of the descriptive statistics for students in CG2 post-test ranging from 23 marks minimum to 85 marks maximum compared to the pre-test scores which range from 15 marks minimum and 77 marks maximum. Nevertheless, the mean scores slightly increase in the post-test ($M=54.30$) compared to the pre-test ($M=53.57$). There is a difference in the mean score ($M=0.73$) between the post-test and the pre-test of students in CG2.

4.2.1 Using a One-way analysis of variance (ANOVA) test to determine the significant difference of the post-test compared to the pre-test in TG, CG1 and CG2

To determine whether there is a significant difference in the post-test compared to the pre-test, a one-way analysis of variance (ANOVA) is conducted using the SPSS version 24.0. According to Green and Salkind (2012), the ANOVA compares the mean scores of two or more groups of dependents.

In this study, descriptive statistics is first conducted to observe the distribution of the data based on mean scores, standard deviation, and 95% confidence intervals for the dependent variables (Green & Salkind, 2012). Table 5 displays the summary of the descriptive statistics of test.

Table 5
Descriptive Statistics

MORCS	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
TG	30	73.47	16.44	3.00	67.33	79.61	54	100
CG1	30	54.3	18.98	3.47	47.21	61.39	23	85
CG2	30	54.3	18.98	3.47	47.21	61.39	23	85
TOTAL	90	60.69	18.13	3.31	53.92	67.47	33.33	90

As shown in Table 5, the mean and standard deviation scores of the students' online comprehension achievement are as follows: TG ($M=73.47$; $SD=16.44$), CG1 ($M=54.3$; $SD=18.98$), and CG2 ($M=54.3$; $SD=18.98$).

Meanwhile, Table 6 illustrates the comparison of the mean difference between the pre-test and post-test results for the TG, CG1, and CG2. The mean scores are as shown; TG (73.47), CG1 (54.30), and CG2 (54.30). To yield $(I-J) = (73.47 - 54.30) = 19.167$ for the mean difference between the two groups. An asterisk (*) appears next to the mean differences indicates significantly different, probability is less than 0.05 in the Sig. column.

Table 6
Comparison of difference in mean between pre-test and post-test

(I) Group	(J) Group	Mean			95% Confidence Interval	
		Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
TG	CG1	19.16667*	4.69	.000	9.84	28.49
	CG2	19.16667*	4.69	.000	9.84	28.49
CG1	TG	-19.16667*	4.69	.000	-28.49	-9.84
	CG2	.00000	4.69	1.000	-9.32	9.33
CG2	TG	-19.16667*	4.69	.000	-28.49	-9.84
	CG1	.00000	4.69	1.000	-9.32	9.33

*. The mean difference is significant at the 0.05 level.

The p (sig.) value ($p=.000$) for the TG and CG1 is $p<0.05$ (level of significance). The p-value ($p=1.00$) for the CG2 is more than 0.05 (level of significance). This indicates that the TG and CG1 mean scores are significantly different from the CG2. This shows that students in the TG receive a significantly higher score in the post-test compared to CG1 and CG2.

4.2.2 Pearson Correlation analysis to determine the relationship between the MORCS and students' English language comprehension achievement

A scatterplot is first determined to check the strength of relationship between the MORCS and students' English language comprehension achievement.

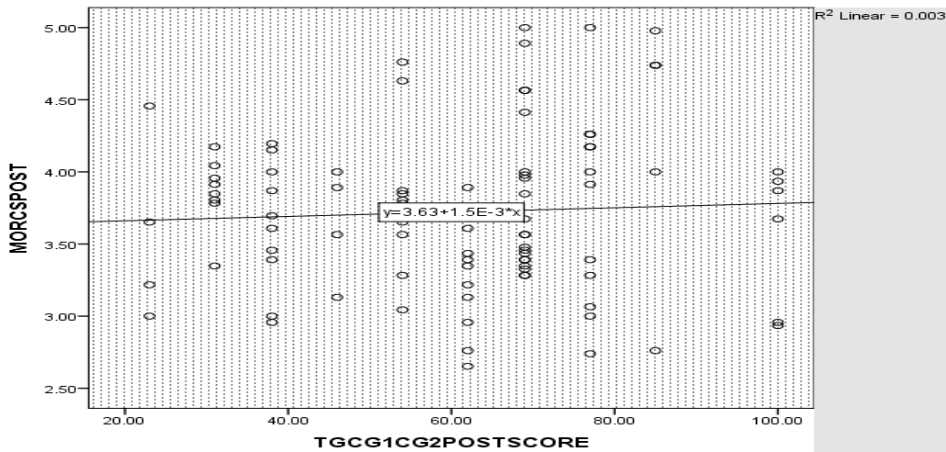


Figure 2: Scatterplot

Figure 2 illustrates a scatterplot of the relationship between the MORCS and students' English language comprehension achievement for the TG, CG1, and CG2. The scatterplot indicates that there is a positive but rather weak statistical relationship between the MORCS and students' English language comprehension achievement. There is a very weak relationship for the two variables, ($y=3.63+1.5E=3*x$), at R^2 linear = 0.003. A descriptive statistical bivariate Pearson correlation analysis (r) is conducted to examine whether there is a significant relationship between the MORCS and students' English language comprehension achievement.

Table 7 shows that the Pearson's correlation between the MORCS survey and the pre-test results is $r = 0.040$. This indicates a rather weak positive relationship between the MORCS and pre-test results.

Table 7
Correlation between the MORCS and pre-test results

Correlations			
		Pre-test	MORCS
Pre-test	Pearson Correlation	1	.040
	Sig. (2-tailed)		.710
	N	90	90
MORCS	Pearson Correlation	.040	1
	Sig. (2-tailed)	.710	
	N	90	90

The Pearson's correlation value (r) is close to 0.05. Nevertheless, the two variables show no statistical significance ($p=.710$) which is more than the standard value ($p>0.05$).

As shown in Table 8, the Pearson's correlation between the MORCS and post-test results has a positive relationship with the r -value, $r = 0.054$. This r -value increases a little in the post-test compared to the pre-test with a difference of correlation value, $r =0.014$. The correlation results have no statistical significance between the two variables as $p = .611$ is more than the significance value, $p\geq 0.05$.

Table 8
Correlation between the MORCS and Post-test results

Correlations			
		Post-test	MORCS
Post-test	Pearson Correlation	1	.054
	Sig. (2-tailed)		.611
	N	90	90
MORCS post-survey	Pearson Correlation	.054	1
	Sig. (2-tailed)	.611	
	N	90	90

In Table 9, the Bivariate Pearson Correlation test is conducted between the MORCS and students' test results. The results indicate that there is a positive relationship between the two variables with $r = .316^{**}$. The post-test has a statistically significant relationship with the pre-test with a significance value of $p = 0.002$, less than the correlation significance at 0.01 level.

Table 9
Correlations Pre-test and Post-test scores

Correlations			
		Pre-test	Post-test
Pre-test	Pearson Correlation	1	.316**
	Sig. (2-tailed)		.002
	N	90	90
Post-test	Pearson Correlation	.316**	1
	Sig. (2-tailed)	.002	
	N	90	90

** . Correlation is significant at the 0.01 level (2-tailed).

5. Discussion

In the new norm due to the pandemic, challenges of online learning affect students' comprehension achievement (Cao, Fang, Hou, Xu, Dong & Zheng, 2020; Coiro, 2018; Marboot, Roohani & Mirzaei, 2020). Many studies have discovered the benefits of metacognitive reading strategy for students to learn language (Anderson, 2003; Guthrie & Wigfield, 2019; Kummin & Rahman, 2010; Tavakoli, 2014; Yuksel & Yuksel, 2012). Some studies revealed that the Metacognitive Online Reading Strategy could increase students' use of online reading strategies and improve their online reading comprehension achievement (Jusoh & Abdullah, 2016; Coiro, 2014; Manusson, Roe, & Blikstad-Balas, 2019; Omar, 2014). Besides that, think-aloud training is proven to help students overcome the difficulties in effective online reading (Carioli & Peru, 2019). The present study aims to determine how the strategies are used to understand online texts and whether there is any relationship between the students' usage of MORCS and their English language comprehension achievement.

5.1 Research Question 1 (RQ1). How do students in TG use Metacognitive Online Reading Comprehension Strategies while reading online comprehension texts?

In this study, findings revealed that support strategy (SS) were the most often employed by students, followed by problem solving strategy (PSS) and predicting strategy. Global strategy (GS) was used the least by students. This finding contradicts previous studies that revealed the PSS is the most frequently used by students, followed by GS and SS (Al-Mekhlafi, 2018; Manusson, Roe, & Blikstad-Balas, 2019; Panchu, Bahuleyan, & Seethalakshmi et al., 2016). Finding of the present study indicated that SS is often used by students for meaning to keyword, translations, and references that help them to understand online texts. Support Reading Strategy (SS) provides support via tools and apps to sustain students' responses toward reading online texts. Students used support strategy for better comprehension as they read online text. Cao et. al. (2020) stated that variety of online learning strategies could affect students' comprehension achievement.

In this study, the researcher discovered how students use each item in MORCS to help them when they read. The strategy items that students use with the highest mean score is item 10 under GS, followed by item 19 under PSS, item 38 under PS, and item 29 under SS (refer to Table 1). This finding indicates that most students checked their understanding of new information before they start to read. Students read slowly and carefully to understand and predicted what to expect from what they read. Students searched for meaning of difficult words to understand what they read. For students who could not understand the meaning of difficult words, they use translation tools. Findings of the present study was in agreement with past studies finding which indicated that support reading strategies provide more support for students to sustain responses when reading online text (Cheng, 2016; Malmkjaer, 2017; Mokhtari & Shoerey, 2002).

Besides that, it was found that most students use MORCS items employed (i) questioning strategy, (ii) inferring strategy, (iii) predicting strategy, and (iv) monitoring comprehension strategy in the think-aloud activity. Students used questioning strategy to plan before they start to read by asking "maybe I should re-read...?" or "what is this text about?" Students used inferring strategy to get answers for the task given, for example, "I think the character did that because..." Students often resorted to the use of PSS items such as 'student read slowly and carefully to understand online text', or 'student used page-up and page-down to get find answers' and 'student re-read the online text to understand the meaning of difficult words, phrases, and sentences. These findings were in agreement with past studies conducted by Al-Mekhlafi (2018) and Panchu, Bahuleyan, & Seethalakshmi et al. (2016) stated that students prompted many questions when reading online. Students seem not to favour PSS items such as 'distinguish fact and opinion' or 'stop and think from time to time as the strategy might distract reading. Thus, students might pick items related to the task requirement and suit the reading purposes. When conducting the think-aloud (TA) sessions with students in TG, the students verbalized what they were thinking most of the time by self-questioning. This finding is in agreement with past studies indicating that students practiced their thinking as they attempted reading tasks using metacognitive reading strategies (Coiro & Dobler, 2007; Anderson, 2003).

Predicting is a section in MORCS that allows students to enlighten ways to understand online texts. Findings of this study showed that PS was used as often as GS in predicting and planning before they read the online texts. PS is used to assess the students' expectations of what they read and what they understand to answer the tasks assigned to them. In doing that, the students could predict what information to search and encourage them to focus on what they read for better comprehension (Coiro, 2014; Coiro & Dobler, 2007).

5.2 Research Question (RQ2). Is there any relationship between the Metacognitive Online Reading Comprehension Strategies (MORCS) and students' English language comprehension achievement?

Metacognitive Reading Strategy is believed to have positive and direct relationship with reading comprehension achievement (Coiro, 2012; Coiro & Dobler's, 2007; Obilor & Amadi, 2018). The present study was conducted to determine the relationship between Metacognitive Online Reading Comprehension Strategies and students' English language comprehension achievement. Findings showed that the scatterplot for both variables showed that there was a positive relationship between students' usage of MORCS and their English language comprehension achievement. Meanwhile, the Pearson's correlation result showed that the students' usage of MORCS and the students' pre-test correlation value had positive relationship, $r = 0.040$. The Pearson correlation value (r) was close to 0.05. It was found that the two variables showed no statistical significance, $p = .710$ was more than the standard value, $p > 0.05$. Besides that, the Pearson's correlation result between students' usage of MORCS and their post-test correlation value had positive relationship, $r = 0.054$. Nevertheless, the r value was slightly increased for the post-test compared to the pre-test with a difference correlation value of $r = 0.014$. This finding supported a previous study by Coiro (2014), who perceived that students' knowledge and experiences in handling online reading tools and apps used to tackle online texts could have relationship with their English language comprehension achievement. This analysis evaluated evidence on whether a statistically significant relationship exists (Obilor & Amadi, 2018).

Align with that, Bivariate Pearson's Correlation test indicated that there was a positive relationship between the pre-test and post-test results with value $r = .316^{**}$. Finding showed that the post-test had statistically significant relationship with the pre-test. Its significance value was $p = 0.002$, which showed less than the correlation significance value at 0.01 level. The present study confirmed finding that students who used MORCS in tackling online reading perform better in reading comprehension (Kummin & Rahman, 2010; Tavakoli, 2014; Yuksel & Yuksel, 2012).

6. Pedagogical Implications

This study believes that over time, students, people, and the education system may change especially in the new norm. Hence, the MORCS could fit the requirements to keep finding ways to improve the strategies in reading online comprehension texts for the benefit of teaching and learning. The findings of this study reveal that the MORCS could be another methodology to enhance the students' skills in solving problems of online reading comprehension and improve their skills in understanding online texts.

Assessing the students' ways of using online reading strategy is necessary especially in this challenging era of technology and pandemic lockdown. Furthermore, quite many online educational entities keep growing where online courses are offered to students, reading materials are uploaded online, and links for extra reading are sent to students. It means that students are required to read each other's works and leave feedback for one another in these non-linear environments. This is part of the requirements towards 21st-century education purposes and in preparing students for smart classrooms soon.

Besides that, teaching students to use MORCS could help the students to improve skills in selecting suitable materials for learning language purposes. Furthermore, reading online texts is also necessary for the students to engage with the learning purposes and gain awareness on plagiarism. It is hoped that the findings of this study could support students to use tools and apps effectively while reading online texts for better comprehension. In addition, the present study is also in agreement with a study by Coiro (2018) and Cao et. al. (2020), who encourage students to grasp many challenges and

opportunities that information and communication technology (ICT) has to offer to improve their language and achievement in online reading comprehension.

7. Recommendations for future research

The findings of this study reveal that there are more benefits in teaching the MORCS to the students as a learning platform to enhance the understanding of online texts. Thus, more research is recommended to examine the effects of the metacognitive online reading comprehension strategies (MORCS) on the students and their language learning. This is because previous studies show that these strategies can be taught, and once the use of strategy has been developed, students become better readers. In addition, further study could also be done on how teachers teach the MORCS to the students and how this can change the students' reading ability and understanding of the English language or other subjects using online texts. Besides that, as there has not been much research on the usage of the MORCS among the mixed ability students, the results of this study may contribute towards the knowledge for further research in the future. This is essential as more research may help readers to explore more online reading strategies for the benefit of language learners as well as readers in other fields towards digitalization in education.

8. Conclusion

In conclusion, it is worth teaching students the use of different MORCS that suit their needs to understand online texts. Since most young readers are not trained systematically on the strategies required for online text reading (Carioli & Peru, 2019), this is important to equip readers especially students and teachers with online reading strategies for a more beneficial reading (Guthrie & Wigfield, 2019). Teaching instruction in the language curriculum could promote online reading proficiency among the second language (ESL) learners of different abilities. Similarly, the findings of this study have shown that teachers' and educators' roles should not only focus on the subject matter but also on teaching students' ways to use online reading strategies (Ruan et.al., 2018; Guthrie & Wigfield, 2019).

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