The Journal of Asia TEFL

The Effect of a Speed Reading Course on the Reading Comprehension of Impulsive vs. Reflective Learners

Gopalan Aroo
Asia-e University

Vahid Nimehchisalem
Universiti Putra Malaysia

Introduction

Reading is the primary source of input for university learners, and speed reading can affect the learners' reading comprehension by increasing reading fluency and, in turn, increasing the performance of the working memory (Yeni, 2019). Various studies have investigated how speed reading (also known as fluent reading) can affect reading comprehension (e.g., Acklin & Papesh, 2017; Kang, 2020; Macalister, 2010), and they have mostly concluded that developing speed reading skills is vital to foster reading comprehension. However, some studies also concluded that attempts to increase reading comprehension through speed reading have failed; especially those delivered through mobile applications (Acklin & Papesh, 2017). As speed reading, to a great extent, depends on the skills the students develop to read, teaching these skills may positively affect the comprehension of the learners (Förster et al., 2018; Macalister, 2010). In addition, limited research has dealt with speed-reading courses and learning styles.

As reading is a cognitive skill (Nation, 2010), it may have intricacies with the learning styles that are cognitive. Two of the most significant learning styles which have recently been the center of attention to researchers in the field are impulsivity vs. reflectivity. Unlike introversion vs. extroversion which have been subject to many studies in ESL/EFL contexts, impulsivity and reflectivity have not been investigated thoroughly (Shabani et al., 2017). This necessitates investigating the effect of a speed reading course on learners' reading speed and comprehension by considering their reflectivity and impulsivity. In other words, the answer to the question of how much learning styles can affect learning is still not fully reached.

Problem Statement

There are pieces of evidence in the ESL context of Malaysia which show that students still have problems with reading comprehension (Rahim, 2018; Sidek & Rahim, 2015). Previous researchers have linked reading comprehension problems of Malaysian learners to a lack of vocabulary knowledge (Chen et al., 2016), the use of inappropriate reading strategies (Subbiah & Singh, 2004), inappropriate reading materials (Rahim, 2018), and a lack of critical thinking skills (Zin et al., 2014). Problems such as a lack of vocabulary knowledge and a lack of awareness of appropriate reading strategies increase reading time through what Chung and Nation

(2006) call 'fixation on words' or 'moving backward and forward.' In other words, the reading comprehension problems of Malaysian learners affect reading speed, and in turn, reading understanding. This finding is in line with global research conducted on speed reading and reading comprehension, which states a correlation between reading comprehension and reading speed. This gap led to the first objective of the study, i.e., whether or not a speed reading course can increase Malaysian undergraduate students' reading comprehension.

On the other hand, a closer look at the nature of reading activities in Malaysia's context is missing. Jung (2018) asserts that reading is a cognitive skill, and cognitive thinking skills can affect comprehension. One of the factors that can determine the learners' cognitive thinking skills is that of learning style. Kolb and Kolb (2005, as cited in Shabani et al., 2017) note that "determining one's learning style can indicate what appropriate channel should be opted to conduct classes. Therefore, it seems significant to study learners' learning styles and their effect on reading comprehension" (p. 52).

Objectives

This study was conducted to:

1. investigate the effects of a speed reading course on the reading comprehension of Malaysian undergraduate students.
2. compare the effects of a speed reading course on reading comprehension of impulsive vs. reflective Malaysian undergraduate ESL students.

Literature Review

Theoretical Background

Speed reading model (Nation, 2007)

The model is based on Quinn and Nation's (1974) speed reading theory. It is also referred to as "7 speed reading system", as the system has seven main principles and one final outcome, i.e., comprehension. Nation (2007) asserts that reading fluency is an essential component of language courses, and can be achieved by working on the learners reading rates. This requires a step-by-step procedure that can be implemented through a speed reading course. Indeed, the aim of the speed reading model proposed by Nation (2007) is to a great extent identical to what Meyer (1999, p. 284) expects from effective reading, i.e., "the ability to read text rapidly, smoothly, effortlessly, and automatically with little attention to the mechanics of reading such as decoding". The model was adopted for Asian and Pacific Speed readings for ESL Learners which implies its effect and success. The principles are shown in Figure 1:
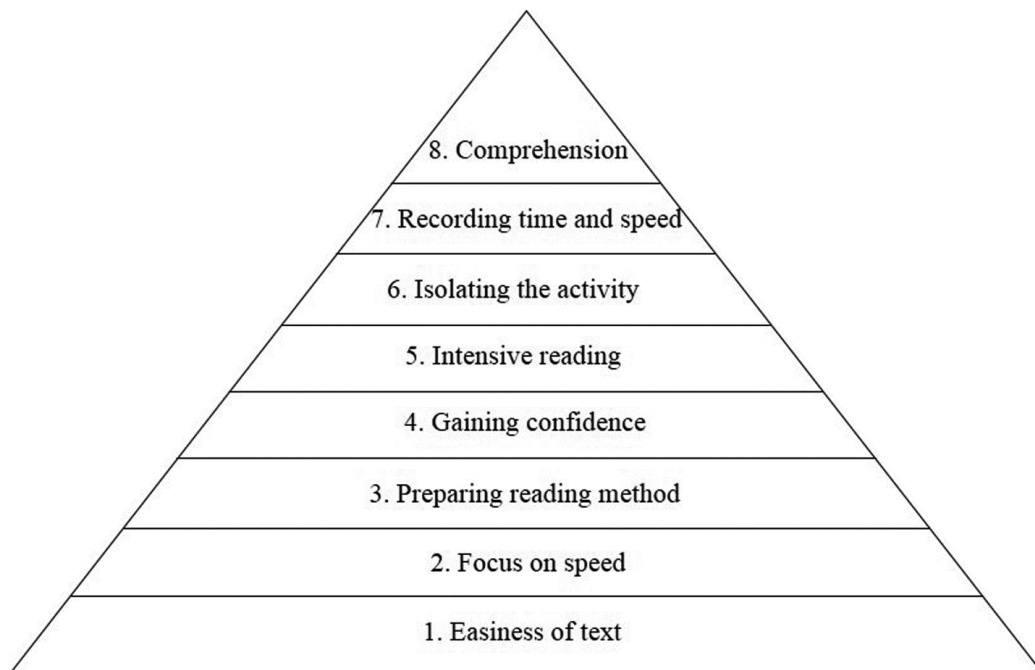
Figure 1. Speed reading model (Nation, 2007).

Learning style theory

Currently there are 13 major models of learning styles (Coffield et al., 2004). One of the most predominant and widely used ones is that of Kolb's Learning Style Inventory (LSI). This model was developed in 1981 and is based on experiential learning theory. Four main categories in the model include: accommodating, diverging, converging, and assimilating. According to Kolb (1984), while divergents understand concrete situations and brainstorm more easily, assimilators are more logical, and can organize information. Convergent style deals with discovering practical use of ideas and accommodations are based on instinct rather than logic. Based on LSI, the language learners are different in terms of reflective thinking and their tendency to guessing more rather than thinking more (impulsive). As this categorization has been made obvious by Kolb (1984), it was considered in distinguishing the learners in this study.

Whether or not learning styles affect learning is still a subject of debate. Willingham et al. (2015) who see learning styles as different approaches to processing information believe that there should be differences in the quality of processed information when the learning methods match the learners' learning styles. This view matches the basis of learning style theory. Kolb (1984) believes that individuals learn in different ways, and if their thinking approach matches their learning, they can learn better. However, empirical studies that use assessment as a tool to measure learning report that not in all cases learning styles affect learning (Griggs, 2000). This contradiction requires more research.

Considering these two theories and according to the significance of learning styles in research on reading comprehension, the current researchers merges the two theories by adding one more step to Nation's (2007) reading comprehension theory. Figure 2 visualizes the theory.
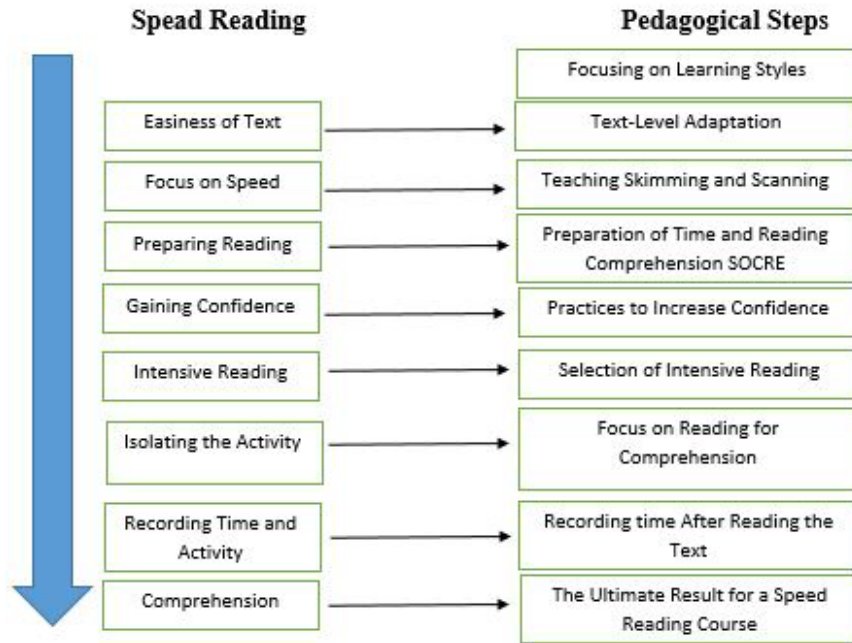
Spead Reading

Pedagogical Steps

Spead Reading	Pedagogical Steps
	Focusing on Learning Styles
Easiness of Text	Text-Level Adaptation
Focus on Speed	Teaching Skimming and Scanning
Preparing Reading	Preparation of Time and Reading Comprehension SOCRE
Gaining Confidence	Practices to Increase Confidence
Intensive Reading	Selection of Intensive Reading
Isolating the Activity	Focus on Reading for Comprehension
Recording Time and Activity	Recording time After Reading the Text
Comprehension	The Ultimate Result for a Speed Reading Course

Figure 2. The speed reading model designed by the researchers for this study.

It should also be noted that in order to categorize the learners into impulsive and reflective groups, proper tests should be used. For this purpose, two commonly used tests, i.e., Barrat et al.'s (1995) impulsivity test and Kember et al.'s (2000) reflectivity tests were used in this study.

Methods

Figure 3 shows the implementation of the programme, including the pretest, impulsivity and reflectivity questionnaire, the treatment for 18 sessions, and the post-test.
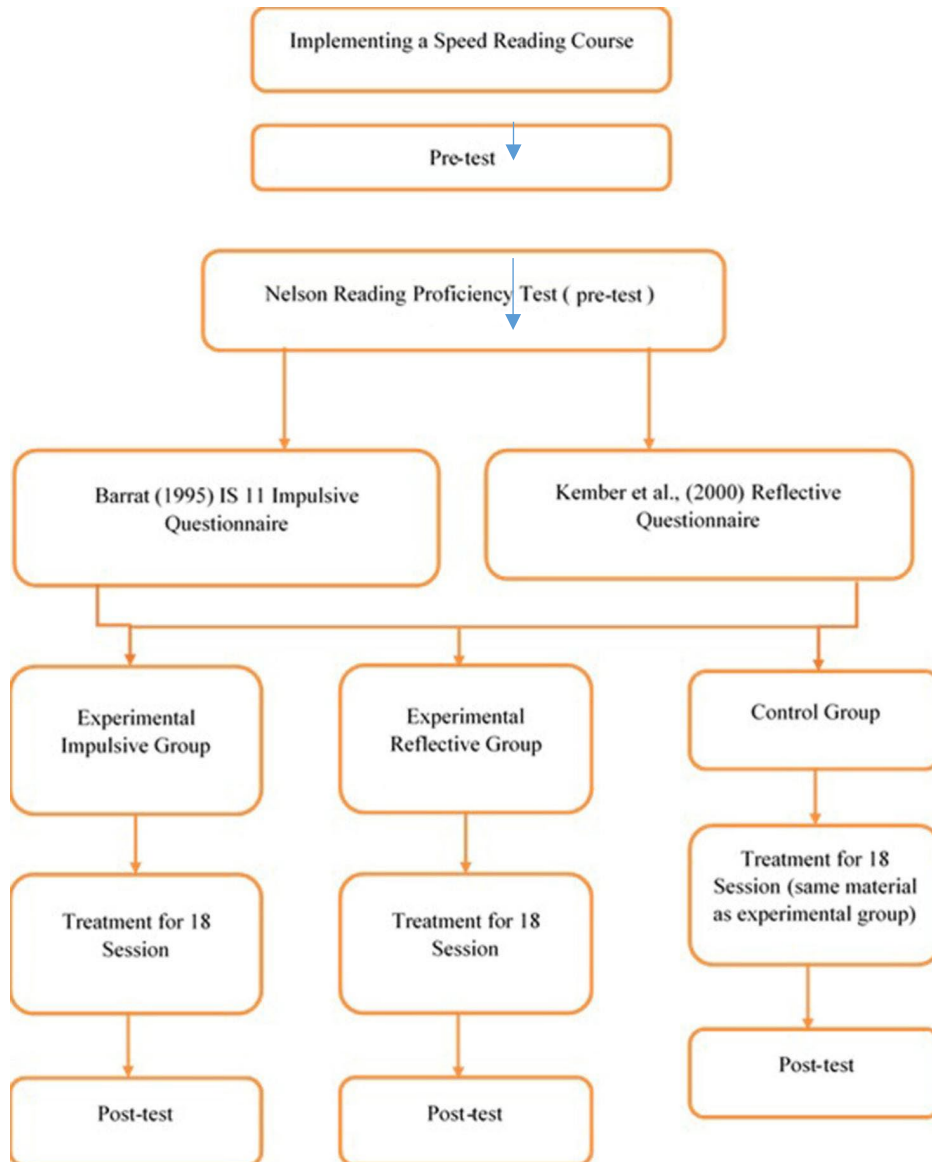
```
┌─────────────────────────────────────┐
│  Implementing a Speed Reading Course │
└─────────────────────────────────────┘

┌─────────────────────────────────────┐
│              Pre-test                │
└─────────────────────────────────────┘

┌─────────────────────────────────────┐
│ Nelson Reading Proficiency Test (pre-test) │
└─────────────────────────────────────┘
```

Barrat (1995) IS 11 Impulsive Questionnaire

Kember et al., (2000) Reflective Questionnaire

Experimental Impulsive Group

Experimental Reflective Group

Control Group

Treatment for 18 Session

Treatment for 18 Session

Treatment for 18 Session (same material as experimental group)

Post-test

Post-test

Post-test

Figure 3: The study procedures

Before conducting the study, a consent form was given to the participants to remind them of their rights and to ensure their educational, physical, and emotional safety during the research.

As can be seen in Figure 3, three groups were formed for this study. The two experimental groups (impulsive and reflective) went through an18 session speed reading course, whereas the control group practiced the same material but read the texts at their own pace. A post-test was administered to participants in all groups after 18 sessions.

Student Participants

The participants were selected from a group of 180 students who took the reading course for the second semester of 2019, at Future Advanced College Technology, Senawang, Seremban. One hundred forty two learners were selected as the initial sample for the current study. The Nelson Reading Proficiency test was administered to these participants with the aim of assessing the participants' degree of reading comprehension

in the current experiment and to ensure homogeneity at the baseline. This test consists of 30 multiple-choice questions with 5 reading texts to be completed within 45 minutes. Ninety participants were selected by administering the Nelson Denny reading test as homogeneity test. These participants formed two third of the total population in the study with the most similar results (close to the mean), as the results were distributed normally. This form of selection can avoid the ceiling effect and the floor effect. As a result, more accurate data is selected.

Barrat's impulsivity questionnaire (1995) and Kember et al.'s (2000) reflectivity questionnaire were administered to these 90 participants to select about 30 participants who proved to be impulsive, 30 participants who proved to be reflective and 30 participants with ambivalent learning styles. These 3 groups formed the three main groups for the study, i.e., a) experimental impulsive group, b) experimental reflective group, c) the control group. Table 1 shows the participants of the study.

TABLE 1
Participants of the Study

	Control Group	Experimental Reflective	Experimental Impulsive
N	30	30	30
Gender	Male: 18	Male: 23	Male: 21
	Female 12	Female 7	Female 9
Age	18-22	18-23	18-21
Ethnicity	Malay: 24	Malay:15	Malay:21
	Chinese:1	Chinese:7	Chinese:4
	Indian:5	Indian:8	Indian:5
Learning style	Ambivalent	Reflective	Impulsive

These participants were both male and female students with Malay, Chinese and Indian ethnicities. Their age range was between 18 and 21. They had experienced 12 years of formal instruction.

Procedure

After selecting the participants for this study and forming 3 groups to conduct the study, i.e., experimental impulsive, experimental reflective, and the control group, both groups received the same speed reading course as treatment for 9 weeks, 18 sessions. All participants received and signed consent forms to comply with rules of ethical research. The main purpose of the treatment course is to gauge the effects of a speed reading course on reading comprehension of the participants and to find out whether or not impulsivity and reflectivity can be a predictor of this effect. The post-test was given after the 9 weeks of speed reading course treatment.

Treatment

In order to implement a speed reading course in this study, 18 reading texts from Asian and Pacific Speed Reading for ESL learners by Quinn and Nation (1974) and published again by Nation (2007) were administered. These texts were the basis for the course and were used to obtain the speed reading data. This book has been designed for practicing speed reading within the first 1000 words of English for non-native speakers of English. The time for reading passage is controlled so that the participants will put more pressure to their working memory (Chang, 2010).

In order to make sure the texts are at the participants' level, the text was piloted with 5 participants prior to the main study. Their opinions about the text difficulty was sought. Having made sure that the participants could handle the texts in terms of difficulty, the researchers decided to apply the materials in the study.

According to Nation's suggestion, before students started reading the texts, every reading text was displayed using power point slides and students were assisted in identifying the vocabulary. After finishing reading the texts, students made a note of their reading time and answered the comprehension questions from their memory without looking back at the passage and marked them using answer keys. Finally, they converted their reading time into words per minute using a conversion chart.

Results

The data collected in this study were analyzed through one-way analysis of variances (one-way ANOVA). The reliability indices of the pretest and post-test were .83 and .84 respectively. The results were also considered normal as the ratios of skewness and kurtosis were lower than ±1.96 in all groups.

Homogenizing Groups on Pretest of Reading Comprehension

A one-way ANOVA was run to compare the reflective, impulsive and control groups' means on pretest of reading comprehension in order to prove that they were homogenous in terms of the reading comprehension ability prior to the administration of the treatments. It should be noted that one-way analysis of covariance (one-way ANCOVA) was not run on the reading comprehension post-test controlling for the possible effects of the pretest because the research questions required that the groups be compared using a priori contrast tests which are not available through one-way ANCOVA.

The descriptive statistics for the three groups on the pretest of reading comprehension. The results showed that the reflective ($M = 17.73$, $SD = 6.34$), impulsive ($M = 16.80$, $SD = 5.89$) and control ($M = 17.53$, $SD = 6.66$) groups had fairly close means on the pretest of reading comprehension.

Table 2 displays the main results of one-way ANOVA. The results ($F (2, 87) = .182$, $p > .05$) indicated that there were no significant differences between the three groups' means on the pretest of reading comprehension. That is to say, the groups were homogenous in terms of their reading comprehension ability prior to the main study.

TABLE 2
One-Way ANOVA Results for Reading Comprehension Pretests

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14.489	2	7.244	.182	.834
Within Groups	3462.133	87	39.795		
Total	3476.622	89			

Homogenizing Groups on NELSON Test

Before discussing the results of the one-way ANOVA, it should be noted that the assumption of homogeneity of variances of the groups was met for the Nelson test. The non-significant results of the Levene's test ($F (2, 87) = .009$, $p > .05$) indicated that the three groups were homogeneous in terms of their variances on the NELSON test. The results showed that the reflective ($M = 28.83$, $SD = 3.50$), impulsive ($M = 28.60$, $SD = 3.51$) and control ($M = 28.57$, $SD = 3.56$) groups had fairly close means on the NELSON Test.

In addition, the results of one-way ANOVA of $F (2, 87) = .051$, $p > .05$, $\eta^2 = .001$ representing a weak effect size 1) indicated that there were no significant differences between the three groups' means on the NELSON. That is to say, the groups were homogenous in terms of their general language proficiency prior to the main study.

Learning Style

At the initial stages of the study and in order to group the participants, their learning styles were determined. In order to do so, Barrat et al.'s (1995) impulsivity test (BIS) and Kember et al.'s (2000) reflectivity test were administered to the participants. The questionnaires were scored based on the average score given to each participants' performance in each test. Considering that the impulsivity test has 30 items and the reflectivity

---

[1] The effect size indices of eta squared and partial eta squared should be interpreted based on these three criteria; .01 = Weak, .06 = Moderate, and .14 = Large (Gray & Kinnear, 2012).

test has 16 items, the value given to the reflective test results should be multiplied by 1.875. By doing so, it was determined that out of 90 participants who took part in this study, 40 participants are reflective learners and 50 participants are impulsive learners.

Effect of a speed reading course on reading comprehension

A one-way ANOVA was run to compare the reflective, impulsive and control groups' means on the post-test of reading comprehension in order to probe the research questions raised in this study. Before discussing the results of one-way ANOVA on the post-test of reading comprehension, it should be noted that the assumption of homogeneity of variances of the groups was met. As displayed in Table 6, the non-significant results of the Levene's test (F (2, 87) = .623, p > .05) indicated that the three groups were homogeneous in terms of their variances on post-test of reading comprehension.

Table 3 displays the descriptive statistics for the three groups on the post-test of reading comprehension. The results showed that the reflective group (M = 24.30, SD = 5.24) had the highest mean on the post-test of reading comprehension. This was followed by the impulsive (M = 23.50, SD = 4.74) and control (M = 20.37, SD = 5.59) groups.

TABLE 3
Descriptives Statistics; Post-test of Reading Comprehension by Groups

	N	*Mean*	*Std. Deviation*	*Std. Error*	*95% Confidence Interval for Mean*	
					Lower Bound	*Upper Bound*
Reflective	30	24.30	5.247	.958	22.34	26.26
Impulsive	30	23.50	4.740	.865	21.73	25.27
Control	30	20.37	5.592	1.021	18.28	22.45
Total	90	22.72	5.422	.571	21.59	23.86

Table 4 displays the main results of one-way ANOVA. The results (F (2, 87) = 4.78, p < .05, η2 = .078 representing a weak effect size) indicated that there were significant differences between the three groups' means on the reading comprehension post-test. The significant results of the one-way ANOVA were followed by a priori contrast tests in order to make the comparisons required to answer the two research questions mentioned above.

TABLE 4
One-Way ANOVA; Post-Test of Reading Comprehension by Groups

	Sum of Squares	*df*	*Mean Square*	*F*	*p*
Between Groups	259.289	2	129.644	4.786	.011
Within Groups	2356.767	87	27.089		
Total	2616.056	89			

Table 5 displays the contrast coefficients. The first research question required that the sum of the reflective and impulsive groups (experimental group) be compared with the control group, and the second research question necessitated that the reflective and impulsive groups' means be compared on the post-test.

TABLE 5
Contrast Coefficients

Contrast	*Group*		
	Reflective	*Impulsive*	*Control*
1	.5	.5	-1
2	1	-1	0

The experimental group; i.e. reflective and impulsive groups, with a mean [2] of 23.90 significantly outperformed the control group (M = 20.37) on the post-test of reading comprehension (t (87) = 3.036, p < .05, r = .306 representing a moderate effect size [3]). Thus it can be concluded that the experimental group that participated in the speed reading course significantly outperformed the control group on the post-test of reading comprehension.

TABLE 6
Contrast Tests

	Contrast	Value of Contrast	Std. Error	t	df	p
Assume equal variances	1	3.53	1.164	3.036	87	.003
	2	.80	1.344	.595	87	.553
Does not assume equal variances	1	3.53	1.208	2.925	52.569	.005
	2	.80	1.291	.620	57.411	.538

As shown in Table 6, there was not any significant difference between the reflective (M = 24.30) and impulsive (M = 23.50) groups' means on post-test of reading comprehension (t (87) = .595, p > .05, r = .064 representing a weak effect size).

Discussion

The main consensus in the literature is that speed reading can affect reading comprehension (Çayir, 2017; Rau et al., 2018; Tabata-Sandom, 2017; Yeni, 2019). For example, in the study conducted by Tabata-Sandom (2017), it was revealed that Japanese EFL learners prefer speed reading to intensive reading courses, especially the courses that involve translation. Also, in the study conducted by Tabata-Sandom (2017), the learners' reading fluency increased, and their accuracy in answering the reading comprehension questions was enhanced. These findings are congruent with the results of this research. In the current study, a positive impact of speed reading on reading comprehension was observed. Reading time and scores were decreased. Thus, both fluency and accuracy were affected.

Although numerous studies support the impact of some learning styles on language learning (Taheri et al., 2019), there are debates over whether reading comprehension is affected by learning styles. HaiHua, (2020) and Magulod (2019) state that reading habits are different regardless of learning styles; thus, they affect reading comprehension. This explanation clarifies why the reading comprehension of the participants in the current study was not affected by impulsivity and reflectivity. In the study conducted by Rau et al. (2018) on speed reading and reading performance, no significant difference was observed between those students who used desktop computers for reading than virtual reality technology. Other than reading habits, Leasa and Corebima (2017) believe that emotional intelligence has a significant correlation with learning styles. They assert that habits, skills, and attitudes are influenced by emotional intelligence and should affect learning. Yet, the impact of learning styles on reading comprehension requires focusing attention on empirical studies.

Hsieh and Dwyer (2009) opened a discussion regarding the impact of learning styles on reading comprehension. They assert that the relationship between learning styles and reading comprehension is mutual. Sometimes the educators introduce strategies to the learners that match their learning styles. This can be aided by using technology. In this case, a positive effect is usually observed. This is when the researchers look for the impact of learning procedure on learning styles. However, at times the learning procedure does not match the learning styles, and the researchers' focus is solely on how the learning styles affect learning. This is when we are talking about the impact of learning styles on learning procedures. In this case, a positive effect is not

---

[2] The mean for the experimental group is the average of the means of the reflective and impulsive groups; i.e. (24.30 + 23.50) / 2 = 23.90.

[3] The r effect size was computed using the following formula; t*t / (t*t* / degree of freedom. It should be interpreted using the following criteria; .10 = Weak, .30 = Moderate, and .50 = Large (Field 2018).

always guaranteed. Based on this explanation, the current study falls in the second category. Therefore, the learning styles failed to predict reading comprehension in a speed reading course.

Conclusion

It can be concluded that although a speed reading course can affect reading comprehension of the ESL learners, the educators should not be concerned with impulsivity vs. reflectivity learning styles of the learners, as they did not show a significant impact. In addition, the participants' reading time was increased while their comprehension was increased; thus, a speed reading course is a suitable option for those learners and teachers who aim at covering a larger quantity of reading materials in a shorter time, and reading comprehension.

The Authors

Gopalan Aroo (corresponding author) holds a Ph.D. in applied linguistics from Asia-e University, Malaysia. He has over 30 years of experience in teaching reading courses to ESL students in Malaysia.

Asia e University
Wisma Subang Jaya
No 106, Jalan SS. 15/4
47500 Subang
Selangor
West Malaysia
E-mail: gopalan_aroo@yahoo.com

Vahid Nimehchisalem holds a PhD in TESL from Universiti Putra Malaysia (UPM). He is currently associate professor at UPM. He is chief editor of the *International Journal of Education and Literacy Studies* based in Australia, and managing editor of Journal of Language and Communication, UPM, Malaysia.

Department of English
Faculty of Modern Languages and Communication
Universiti Putra Malaysia
Serdang 43400, Selangor, Malaysia
Tel: +60176678715
Email: nimechie@gmail.com, vahid@upm.edu.my

References

Acklin, D., & Papesh, M. H. (2017). Modern speed-reading apps do not foster reading comprehension. *American Journal of Psychology*, *130*(2), 183-199. https://doi.org/10.5406/amerjpsyc.130.2.0183

Chang, A. (2010). The effect of a timed reading activity on EFL learners: Speed, comprehension, and perceptions. *Reading in a Foreign Language*, *22*(2), 284-303. https://files.eric.ed.gov/fulltext/EJ901548.pdf

Chen, L. L., Yunus, M. M., & Maarof, N. (2016, May). Factors affecting ESL reading comprehension of Malaysian secondary school students. In *International Conference on Education (ICE2) 2018: Education and Innovation in Science in the Digital Era* (pp. 542-547). https://core.ac.uk/download/pdf/267023575.pdf

Chung, M., & Nation, I. S. P. (2006). The effect of a speed reading course. *English Teaching, 61*, 181-204. https://pdfs.semanticscholar.org/a384/b3b9a82f1b6c53c11864d38ae44cdfb44166.pdf

Coffield, F., Moseley, D., Hall, E., & Ecclestone, K. (2004). Learning styles and pedagogy in post-16 learning systematic and critical review. Learning & Skills Research Centre. http://www.voced.edu.au/content/ngv13692

Griggs, S. (2000). *Practical approaches to using learning styles in higher education*. Greenwood Publishing Group.

Haihua, T. (2020). Influence of Students' Learning Style and Performance in the Comprehensive English Class. *Int'l J. Soc. Sci. Stud.*, *8*(5), 58-71. https://doi.org/10.11114/ijsss.v8i5.4881

Hsieh, P. H., & Dwyer, F. (2009). The instructional effect of online reading strategies and learning styles on student academic achievement. *Journal of Educational Technology & Society*, *12*(2), 36-50. Retrieved on 01/01/2022 from http://www.asian-efl-journal.com/March_2007_EBook.pdf

Jung, Y. (2018). *Reading architecture, literary imagination and architectural experience.* Routledge.

Kang, Y. (2020). Relative contribution of reading fluency and vocabulary knowledge in predicting Korean EFL learners' reading comprehension. *The Journal of Asia TEFL, 17*(3), 778. http://dx.doi.org/10.18823/asiatefl.2020.17.3.2.778

Kember, D., Leung, D.Y. P., Jones, A., Loke, A. Y., McKey, J., Sinclair, Tse, H., Webb, C., Wong, F. K. Y., Wong, M., & Yeung, E. (2000). Development of a questionnaire to measure the level of reflective thinking. *Assessment and Evaluation in Higher Education, 25*(4), 381-395. https://doi.org/10.1080/713611442

Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, *4*(2), 193-212. https://doi.org/10.5465/amle.2005.17268566

Kolb, B. (1984). Functions of the frontal cortex of the rat: a comparative review. *Brain Research Reviews*, *8*(1), 65-98. https://doi.org/10.1016/0165-0173(84)90018-3

Leasa, M., & Corebima, A. D. (2017). Emotional intelligence among auditory, reading, and kinesthetic learning styles of elementary school students in Ambon-Indonesia. *International Electronic Journal of Elementary Education*, *10*(1), 83-91. https://eric.ed.gov/?id=EJ1156303

Macalister, J. (2010). speed reading courses and their effect on reading authentic texts: A preliminary investigation. *Reading in a Foreign Language*, *22*(1), 104-116. http://hdl.handle.net/10125/66649

Magulod Jr, G. C. (2019). Learning styles, study habits and academic performance of Filipino university students in applied science courses: Implications for instruction. *Journal of technology and science education*, *9*(2), 184-198. http://hdl.handle.net/2117/134350

Nation, I. S. P. (2007). The four strands. *International Journal of Innovation in Language Learning and Teaching*, *1*(1), 1-12. https://doi.org/10.2167/illt039.0

Quinn, E., & Nation, I. S. P. (1974). *Speed reading: A course for learners of English*. Oxford University Press.

Rahim, P. R. M. A. (2018). Facilitating reading comprehension among ESL learners. *Malaysian Journal of ELT Research*, *13*(1), 30-42. https://meltajournals.com/index.php/majer/article/view/575

Rau, P. L. P., Zheng, J., Guo, Z., & Li, J. (2018). Speed reading on virtual reality and augmented reality. *Computers & Education*, *125*, 240-245. https://doi.org/10.1016/j.compedu.2018.06.016

Shabani, S., Ramazani, M., & Alipoor, I. (2017). The effect of impulsivity vs. reflectivity on reading comprehension of Iranian EFL learners. *International Journal of Education and Literacy Studies*, *5*(3), 52-56. https://doi.org/10.7575/aiac.ijels.v.5n.3p.52

Sidek, H. M., & Rahim, H. A. (2015). The role of vocabulary knowledge in reading comprehension: a cross-linguistic study. *Procedia-Social and Behavioral Sciences*, *197*, 50-56. https://doi.org/10.1016/j.sbspro.2015.07.046

Subbiah, R., & Singh, D. R. (2004). Problems in reading comprehension in English among weak rural secondary school students: a study of four rural secondary schools in the district of

Segamat/Rajentharan Subbiah [Unpublished manuscript]. Institute of Research, Development and Commercialization, Universiti Teknologi MARA.

Tabata-Sandom, M. (2017). L2 Japanese learners' responses to translation, speed reading, and" pleasure reading" as a form of extensive reading. *Reading in a Foreign Language*, *29*(1), 113-132. http://hdl.handle.net/10125/66730

Taheri, H., Bagheri, M. S., Bavali, M., & Khajavi, Y. (2019). EFL learners' L2 achievement and its relationship with cognitive intelligence, emotional intelligence, learning styles, and language learning strategies. *Cogent Education*, *6*(1), 1655882. https://doi.org/10.1080/2331186X.2019.1655882

Willingham, D. T., Hughes, E. M., & Dobolyi, D. G. (2015). The scientific status of learning styles theories. *Teaching of Psychology*, *42*(3), 266-271. https://doi.org/10.1177/0098628315589505

Yeni, S. (2019). *The correlation between students' speed reading and reading comprehension at second grade students of SMPN 5 Padang Panjang* [Unpublished doctoral dissertation]. Sekolah Tinggi Keguruan dan Ilmu Pendidikan (STKIP) PGRI Sumatera Barat, Indonesia.

Zin, Z. M., Wong, B. E., & Rafik-Galea, S. (2014). Critical reading ability and its relation to L2 proficiency of Malaysian ESL learners. *3L: Language, Linguistics, Literature®, 20*(2), 43-54. http://journalarticle.ukm.my/7214/1/4635-16800-1-PB.pdf