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The Effect of Models of Reading Instruction on Reading Comprehension, Reading Self-efficacy, and Reading Anxiety

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Abstract

Reading is one of the important ways through which foreign language learners can receive input. Finding more effective ways of improving reading comprehension and reading self-efficacy, while reducing reading anxiety, has been a concern of practitioners for many years. This study compared the effect of four reading models on reading comprehension, foreign language reading anxiety (FLRA), and reading self-efficacy. In order to do so, 184 female Iranian senior high school EFL students at intermediate English reading level were selected through convenience sampling in three high schools and one language institute in Zanjan. The participants were in four intact groups. Each group was randomly assigned to one of the treatment conditions— 'Direct Activities Related to Texts' (DARTs), Peer-Assisted Learning Strategies (PALS), 'Read, Ask, and Put into your own words' (RAP), and 'Title, Headings, Introduction, Each first sentence, Visuals, End of each part, Summary' (THIEVES) models. These models were taught for eight sessions. Data were collected using the reading comprehension part of the Michigan Test of English Language Proficiency (MTELP), Foreign Language Reading Anxiety Scale (FLRAS), and Reading Self Efficacy Questionnaire (RSEQ). The collected data were analyzed using three one-way ANCOVA procedures. The results showed that the four models did not significantly differ in terms of their effect on foreign language reading anxiety and reading self-efficacy. However, there was a significant difference between the effect of THIEVES and RAP on reading comprehension in favor of RAP. Besides, only RAP and PALS improved reading self-efficacy. Moreover, DARTs, THIEVES, and RAP improved reading comprehension and decreased reading anxiety, whereas PALS increased reading anxiety and negatively affected reading comprehension. The theoretical and pedagogical implications of the findings are also discussed.

***Keywords*:** DARTs, Foreign language reading anxiety, PALS, RAP, Reading comprehension, Reading self-efficacy, THIEVES

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INTRODUCTION

Reading is among the most important ways of receiving input in foreign language learning contexts. (Nurbianta & Dahlia, 2018; Tse, Choi, & Tang, 2017). Due to the significance of reading, developing a clear understanding of the concept of reading appears to be of paramount importance. There are different reading models for enabling learners to read better. This study compared the effect of four different models on learners' reading comprehension, self-efficacy, and anxiety. 'Direct Activities Related to Texts' (DARTs), Peer-Assisted Learning Strategies (PALS), 'Read, Ask, and Put into your own words' (RAP), and 'Title, Headings, Introduction, Each first sentence, Visuals, End of each part, Summary' (THIEVES) are each a combination of different reading comprehension strategies. They have been referred to by a variety of names, including activities (Mastropieri, Scruggs, & Graetz, 2003), approaches (Cortazzi, Jin, & Rafik-Galea, 1998), strategies (Hagaman, Luschen, & Reid, 2010), programs (Völlinger, Supanc, & Brunstein, 2018), and models (Fallah Golchin & Dayyani Kheirabadi, 2013). In this study, we have chosen to refer to them as 'model' because each of them includes a combination of strategies or activities that are not the result of random selection, but combined purposefully to guide learners in their reading experience. Some researchers believe that teaching a combination of strategies is more effective than teaching them separately (Reutzel, Smith, & Fawson, 2005). Therefore, we need to know which strategies can be combined to yield effective results. As a result of this new trend, some reading models have been devised based on combining different reading strategies.

One of the four models in this study is DARTs—direct activities related to texts. DARTs is created by combining a variety of strategies that vary as the kind of text changes. The model tries to help learners go beyond verbal comprehension and grasp the exact concept of a text through pair or group work. Activities in DARTs engage learners with important parts in a text. This happens via teaching them how to reflect on the content of a text,

discuss it with other learners and, thereby, check their understanding (Wellington & Osborne, 2001).

Another model to be investigated is RAP. It is based on strengthening the learners' paraphrasing ability. The model aims at training learners to become active readers through paying attention to the passage, breaking it down into small chunks, and, thereby, remembering the information in those small units (Hagaman, Casey, & Reid, 2016). When learners put ideas from passages into their own words, they make a connection between new knowledge and prior knowledge (M. Israel, Maynard, & Williamson, 2013). Other advantages of the model are its potential in helping learners to pay attention to the main ideas of a passage, its adaptability with existing curriculums, and its capacity in improving learners' paraphrasing skill which, in turn, improves reading comprehension (Hagaman & Casey, 2016). RAP can be used for instructing reading from middle school to high school students (Johnson, Reid, & Mason, 2011).

The third model, PALS, pairs students with weaker academic abilities with stronger ones. Three reading strategies used in PALS are partner reading with retell, paragraph summary, and prediction relay (Rapp, van den Broek, McMaster, Kendeou, & Espin, 2007). The roles of pairs are reciprocal; they take turns being tutor and tutee (McMaster, Fuchs, & Fuchs, 2006).

The last model is THIEVES. Manz (2002), its creator, suggests that teachers encourage learners to become greedy THIEVES who steal as much information as possible ahead of reading. She believes THIEVES has proved its usefulness for different grades from elementary to college learners.

Although it was once believed that teaching reading strategies separately is an effective way of improving reading comprehension (Reutzel et al., 2005), recent studies have shown that teaching a combination of strategies is more effective (Pressley, 2002b). The purpose of this study is to

compare the effect of the above-mentioned models on reading comprehension, reading anxiety, and reading self-efficacy.

LITERATURE REVIEW

Reading Comprehension

There are three dominant viewpoints regarding the reading process including the bottom-up, top-down, and interactive models—in both L1 and L2 reading. Grabe and Stoller (2013) call them generalized metaphorical models. The bottom-up model of reading puts stress on the linguistic side of the process and disregards the reader's role as well as the information s/he brings into play (Paul & Christopher, 2018). Unlike the bottom-up model, the top-down model stresses upper-level processes in which readers use their prior knowledge to comprehend written form (Nassaji, 2014). Ahmadi and Gilakjani (2012) consider the interactive model as an active process that involves the reader in an interaction with the text.

The other model is the 'simple view of reading' model. Hoover and Gough (1990) explain that decoding is the central issue in reading. However, they do not demote reading to a mere decoding phenomenon as it is in the bottom-up model. Rather, they believe that decoding is incomplete without linguistic comprehension.

Dual code in the 'dual-coding' model refers to both verbal and nonverbal code. Grabe and Stoller (2013) explain that this model is based on the idea that reading comprehension is the end product of processing verbal and its related visual input such as images in a text. The final model discussed by Grabe and Stoller (2013) is Goodman's psycholinguistic guessing game. In this model, reading comprehension is simulated to a game of building hypotheses based on the context, guessing meaning, and testing the guess.

The models of this study can be considered as sub-categories of the specific reading models discussed above. For example, THIEVES can be categorized as a sub-model of the dual-code model. This is because it

consists of strategies that activate both verbal and non-verbal processes before reading activities. PALS and DARTs can also be classified under Goodman's guessing game because both use hypothesis making based on guesses and then testing their accuracy. PALS inherits from the 'simple view of reading' model, as it tries to strengthen learners' decoding and linguistic comprehension ability. This happens when pairs read parts of a text aloud for each other and discuss their understanding. RAP also seems to be a subdivision of the interactive compensatory model. In RAP, learners practice finding the main idea of a text using the structure of different paragraphs instead of merely relying on their language knowledge.

DARTs uses a combination of different reading strategies to cover a variety of text types. Although DARTs is a comprehensive model that combines different strategies, few published studies are investigating its effect. The only example that could be found was Fitria (2019), who reported the significant effect of DARTs on reading comprehension. Völlinger et al. (2018) found evidence for the effectiveness of PALS. Other studies are reporting the efficacy of PALS in improving reading comprehension (Calhoon, Al Otaiba, Cihak, King, & Avalos, 2007; Calhoon, Al Otaiba, Greenberg, King, & Avalos, 2006; Spörer & Brunstein, 2009). RAP has been shown to be effective in improving reading comprehension (Hagaman, Luschen, & Reid, 2010).

THIEVES is a previewing model that starts in groups, and learners highlight the information they preview to activate their sensory perception. When learners become expert THIEVES of information, there is no need for highlighting. Among the studies that have found evidence for the effectiveness of THIEVES on reading comprehension, we can refer to Khataee (2019) and Novia and Nery (2019). Since it is a recently devised model, there are just a few studies using it.

Each of the reading models that are of interest in this study is made up of a combination of reading strategies. Many researchers have shown that reading strategies are effective in improving learners' reading

comprehension both in L1 (Fuchs & Fuchs, 2005; Ozgungor & Guthrie, 2004) and L2 (Dreyer & Nel, 2003) contexts. In most of these studies, researchers have focused on a specific class of strategies, for example, teaching only cognitive or metacognitive strategies. Although the results of these studies are promising, focusing on an organized combination of reading strategies rather than on any randomly selected strategies seems to be more fruitful.

Foreign Language Reading Anxiety (FLRA)

Foreign language anxiety (FLA) attracted researchers' attention earlier than FLRA. Several studies such as Charoensukmongkol (2016) and García-Pastor and Miller (2019) have been conducted on FLA, and a negative correlation has been reported between anxiety and foreign language learning (Teimouri, Goetze, & Plonsky, 2019). FLRA is a phenomenon that has only recently engaged researchers (Zhou, 2107). Saito et al. (1999) showed that FLRA is distinct from general foreign language anxiety.

Since 1999, FLRA has interested many researchers of applied linguistics. They have investigated different aspects of FLRA. For instance, Matsuda and Gobel (2004) and Shariati and Bordbar (2009) investigated the relationship between FLRA and gender but found no significant relationship. However, Genç (2016) reported that females were more anxious while doing the reading.

Huang (2012) studied the relationship between students' reading performance and their FLRA and found an inverse relationship between the two variables. Soomro, Khan, and Younus (2019) found that bottom-up and classroom reading anxiety affect reading comprehension negatively, whereas top-down reading anxiety has no such effect. In another study, Z. Lu and Liu (2015) reported that FLRA was inversely related to FL reading strategy use anxiety and both of them had a significant negative effect on learners' reading comprehension. Another study by Hassaskhah and

Joghataeian (2016) suggested no meaningful correlation between FLRA level and reading comprehension.

Several studies have shown that learners' familiarity with the written system and cultural aspects of the target language, as well as their proficiency level, may also affect reading anxiety (Zhou, 2017). Text title is another source of FLRA (Güvendir, 2014). Güvendir explains that a vague title leads to failure in understanding. This failure, in turn, provokes anxiety. To summarize, the sources of FLRA include the readers' expectancy of the difficulty of a text, the writing system of different languages (Saito et al., 1999), texts with an unfamiliar topic, the kind of reading tasks and the degree of the learners' familiarity with them (Brantmeier, 2005; Hassaskhah & Joghataeian, 2016), clarity of the title of texts (Güvendir, 2014), the degree of learners' familiarity with the target language culture (Zouh, 2107).

FLRA is believed to be a factor affecting learners' choice of reading strategies (Ghonsooly & Barghchi). S.-J. Lu and Liu (2014) found that students with higher levels of anxiety used reading strategies such as guessing, checking, and confirming less often. FLRA has also been shown to have a negative relationship with self-efficacy (Ghonsooly & Elahi Shirvan, 2010).

Reading Self-efficacy

The term self-efficacy refers to human beings' inner power that enables them to successfully deal with challenges in their life (Bandura, 1986). Accordingly, researchers have investigated this factor concerning language learning. Among all, studies focusing on the relationship between self-efficacy and language strategies have attracted more attention. For example, a longitudinal study probing self-efficacy, strategy use, and reading achievement showed that the type of language learning strategies predicts successful learning and that self-efficacy controls learners' choice of strategy types (Magogwe & Oliver, 2007). There are other studies consistent with this finding, recognizing self-efficacy as a determining factor for

success as well as persistent strategy use (Anam & Stracke, 2016). Anam and Stracke (2016) found that the more the learners are self-efficacious, the more they use learning strategies. Furthermore, Mills, Pajares, and Herron (2007) showed that the beliefs learners have about their skill in using metacognitive strategies affect their language learning.

Previous studies have also shown a relationship between reading strategies and self-efficacy. Among them, Ahmadian and Gholami Pasand (2017) showed that learners with high self-efficacy used reading strategies more frequently than others. Similar results were reported by Liao and Wang (2018). Besides, **s**tudies have shown that reading achievement and proficiency are influenced by self-efficacy. For instance, Ghonsooly and Elahi Shirvan (2011) found that high self-efficacy results in an improvement in reading comprehension. Solheim (2011) reported similar findings. Boakye (2015) even considered self-efficacy as the best predictor of reading proficiency. Moreover, in a meta-analysis of 30 studies on reading self-efficacy, Unrau et al. (2017) concluded that self-efficacy and reading comprehension have a positive relationship.

PURPOSE OF THE STUDY

Many studies have investigated language learning anxiety (Gregersen, Macintyre, & Meza, 2014; Horwitz, 2001; Rassaei, 2013). Applied linguistics researchers have also investigated self-efficacy and its relation with reading strategies and comprehension (Mills, Pajares, & Herron, 2006; Murad Sani & Zain, 2011; Pace & Mellard, 2016). The findings have largely shown that self-efficacy and reading are related. For example, self-efficacy controls reading strategy use (Magogwe & Oliver, 2007) and positively correlates with reading achievement (Mucherah & Yoder, 2008). Nevertheless, there appears to be a paucity of research on the effectiveness of teaching reading through four reading models on EFL students' reading comprehension, reading self-efficacy, and reading anxiety. This study addresses this paucity and the following questions:

1. Are there any significant differences among the effects of the four models of reading (DARTs, PALS, RAP, and THIEVES) on EFL learners' reading comprehension?
2. Are there any significant differences among the effects of DARTs, PALS, RAP, and THIEVES on EFL learners' reading self-efficacy?
3. Are there any significant differences among the effects of DARTs, PALS, RAP, and THIEVES on EFL learners' reading anxiety?

METHOD

Participants

One hundred and eighty-four female Iranian EFL learners were selected through convenience sampling from among students studying in three high schools, Farzangan, Hazrat Zeinab, and Roqani, and one institute, Zanjan Language House in Zanjan City. The number of participants in the DARTs, THIEVES, RAP, and PALS groups was 43, 49, 47, and 45, respectively. However, since some participants were absent on some of the data collection sessions and some others did not cooperate well in responding to the pre-tests or posttests, their final number was less. Their number for research questions one, two, and three was 164, 150, and 142, respectively. The participants were roughly at a lower intermediate level of reading ability based on their educational background and their performance on MTELP. Their age ranged from 15 to 18, and they were bilingual speakers of Turkish and Persian.

Materials and Instruments

The following instruments were used in this study.

Michigan Test of English Language Proficiency (MTELP)

This test was borrowed from Zarei and Alipour (2020). It consisted of three parts – grammar, vocabulary, and reading. It had 100 multiple-choice items,

40 grammar, 40 vocabulary, and 20 reading comprehension questions. In this study, only the reading part was used because the other sections were irrelevant to our purpose. The reading part consisted of four texts with an average length of 220 words for each. After each text, there were five multiple-choice items. Zarei and Alipour (2020) reported the reliability of .78 for the reading part of the test in the context of Iran. Nevertheless, the KR-21 formula was applied, and the reliability index turned out to be .74.

Foreign Language Reading Anxiety Scale (FLRAS)

Designed by Saito et al. (1999), the scale has 20 items seeking participants' feelings toward reading tasks in a foreign language. To make sure that all the participants fully understood the questions, the Persian translation was administered. Of course, the translation was checked carefully, and several professors were consulted to make sure that they are valid for the intended purpose. The participants chose from a scale of one to five—one for strongly agree and five for strongly disagree. Cronbach's alpha formula was applied to the participants' scores on the posttest to estimate the reliability of this questionnaire, and it turned out to be .70.

Reading Self-efficacy Questionnaire (RSEQ)

This questionnaire was developed by Ghezlou and Biria (2013). It includes 16 items on a Likert type scale from one to five, one for strongly agree, five for strongly disagree. The questionnaire was given to the participants in Persian. Like FLRAS, the reliability of this questionnaire was estimated through Cronbach's alpha formula ($\alpha = .87$).

Expository Texts

Expository texts were selected from texts available in online sources. They were chosen based on the English reading level of the participants. The texts were on different topics including science and technology, cuisine, culture, traveling, and so forth. The average length of the texts was 400 words. The texts were followed by reading comprehension questions—some multiple

choice and some open-ended. Almost all had, at least, one picture. For the THIEVES group, a summary was added at the end of each text. Furthermore, some of the texts were modified for the DARTs group to teach them reconstruction activities. For example, a chart with blank spaces was added to the end of the text to be labeled by DARTs learners.

Procedure

The participants with the aforementioned characteristics were selected through convenience sampling based on availability. To measure the participants' reading level, FLRA, and reading self-efficacy before any treatment, the reading section of MTELP, FLRAS, and RSEQ were administered. The allotted time was 20 minutes for 20 reading comprehension questions and 30 minutes for the two questionnaires. The procedure for answering the questions was explained by the instructor.

After the pretests, each of the intact groups was randomly assigned to one of the treatment conditions. To minimize the teaching effect on the final results, the four models were presented according to the SRSD model originally from Harris and Graham (1996) to all classes. The model includes six stages: 1. develop background knowledge, 2. discuss the strategy, 3. model the strategy, 4. memorize the strategy, 5. support the strategy, 6. independent performance (Hagaman, Luschen, & Reid, 2010).

In this study, a brief background of each model was given to the participants and their questions were answered. Then it was explained to them how the strategies of the model can help them solve their possible reading problems. The next step was modeling each model for the participants via thinking aloud by the instructor. This phase was repeated several times to make sure that the participants understood how to use them independently. Afterward, their performance was monitored and their questions about using the models for reading different texts were answered. The models were taught for 8 sessions, and each session took about 20 minutes. After completing reading each text, the participants answered

reading comprehension questions. The purpose of this activity was to check their understanding and to motivate them to better concentrate on the texts.

In the PALS model, the participants with weak and strong reading abilities were paired, and they tutored each other in turn. The level of their reading ability was assessed with the reading section of MTELP prior to the treatment. To help them understand how to read a text and help each other, the instructor modeled PALS with a strong student. This phase was repeated for several paragraphs with several students and the instructor. Afterward, the participants started practicing the model in pairs. They read the paragraph of the text by paragraph and corrected each other's reading problems. Then, they explained the parts they had read to their peer—who had the role of tutor. The tutor commented on the explanation and, if necessary, corrected her peer's understanding. Next, they summarized the text and reported it to the class. Sometimes, they were asked to guess the content of the following paragraphs and then continue reading and checking their understanding.

The instructor started teaching THIEVES by explaining the model to the participants. Then it was modeled for them through reading a text and thinking aloud while using the model. First, the title was read, and the instructor stated the information she got from it. Then headings were read and related to the title. If they had extra information, the instructor referred to it and, by retelling the previous information, added new pieces to them. Then the pictures were examined. After that, the introductory paragraph was fully read and the same thinking method was used for extracting its information. The next thing was reading every first sentence of the following paragraphs and the whole of the concluding paragraph. The modeling ended by reading the summary part that was added by the researcher to the texts of the THIEVES group. Each phase of reading was followed by thinking about what was read, and the information of the part was tested against the other parts. The meaning of the difficult words that learners asked was not given to them until the whole reading task was over—this condition was observed for all the models. Afterward, the whole

text was read by the instructor. Finally, some reading comprehension questions were answered. The other sessions started by reviewing the strategies in the THIEVES model. Then, the participants were asked to do it in the same way that was modeled for them.

RAP was taught in almost the same way as THIEVES. First, the instructor explained the model. Then, she modeled it by reading a paragraph sentence by sentence and pausing after reading each sentence, asking herself what the sentence tried to convey. The sentences were then compared together—the comparison was based on the information they provided—and they were related to each other. Then, the instructor decided which one gave the main information that was more comprehensive and that the other sentences tried to explain it. Then the participants' ideas were sought about the instructor's choice, and they were discussed. After modeling one more paragraph, one of the participants was asked to read the next paragraph like the instructor. Then the participants were asked to read the other paragraphs by themselves and try to use the same method to get the main idea of the paragraph. At the end of the passage, the participants answered reading comprehension questions. The participants' attention was gradually drawn to connecting the main ideas to create a whole idea.

To teach DARTs, the instructor started by explaining the model for the learners. Then a modified text was given to them that needed to be ordered logically. First, the participants were asked to find the correct order by themselves, in pairs, or even groups. Afterward, the instructor ordered the sentences by numbering them. While ordering, the reasons were thought out loud. Then the participants were given the unmodified text. It was read and summarized by the instructor. Finally, the participants answered reading comprehension questions following the text. The other sessions of DARTs continued with other text types and other strategies to reconstruct the structure of the text in their minds. The information was extracted through analysis strategies. After completing the instruction phase, the participants were given the three tests—reading comprehension section of the MTELP

test, FLRAS, and RSEQ questionnaires—again under roughly the same conditions.

Data Analysis

To answer the research questions, the collected data were analyzed using the one-way Analysis of Covariance (ANCOVA). Prior to using one-way ANCOVA, of course, its assumptions were checked.

RESULTS

Investigation of the First Question

To answer the first question—the effect of DARTs, PALS, RAP, and THIEVES on reading comprehension—the participants' scores on reading comprehension pretest and posttest were compared using one-way ANCOVA. Before using the ANCOVA, its assumptions were checked. The covariate was administered before the treatments to control the treatment effect on the covariate. Additionally, no curvilinear relationship between the covariate and the dependent variable was observed in the scatter plot. Moreover, the assumption of the homogeneity of regression slopes was checked, and there was no significant interaction between the independent variable and the covariate ($F_{(3,160)} = 1.77$, $P > .05$). Furthermore, the result of Levene's test was not significant ($F_{(3, 160)} = .603$, $p > .05$), suggesting that the assumption of the equality of variances was met. Descriptive statistics of pre and posttests for reading comprehension showed that the models had differentially affected the participants' reading comprehension (Table 1).

Table 1: Descriptive statistics for reading comprehension

	Pretest		Posttest		
Models	Mean	SD	Mean	SD	N
DARTs	3.31	1.906	3.91	2.254	35
THIEVES	3.43	1.778	3.50	2.052	47
RAP	4.54	2.198	4.91	2.085	46
PALs	5.64	3.555	4.39	2.115	36
Total	4.20	2.555	4.16	2.177	164

In order to see if the differences among the groups are significant, the one-way ANCOVA was used. The results of ANCOVA (Table 2) showed a significant difference among the models ($F_{(3, 159)} = 2.89$, $p < .05$). However, partial eta squared was indicative of relatively small effect size.

Table 2: One-way ANCOVA results on reading comprehension

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	77.329[a]	4	19.332	4.421	.002	.100
Intercept	479.403	1	479.403	109.641	.000	.408
pre_RC_total	23.342	1	23.342	5.338	.022	.032
Models	38.012	3	12.671	2.898	*.037	.052
Error	695.226	159	4.372			
Total	3617.000	164				
Corrected Total	772.555	163				

Note. Dependent variable = post-RC-total; RC = Reading Comprehension.
[a]R Squared = .100 (Adjusted R Squared = .077).

Pairwise comparisons between the groups showed a significant difference between THIEVES and RAP (Table 3). The other group differences were not significant.

Table 3: Test of between-groups differences for reading comprehension

(I) Models	(J) Models	Mean Difference (I-J)	Sig.[a]	95% Confidence Interval for Difference[a] Lower Bound	Upper Bound
DARTs	THIEVES	.485	1.000	-.762	1.733
	RAP	-.804	.561	-2.077	.469
	PALs	-.106	1.000	-1.499	1.287
THIEVES	RAP	-1.289*	.024	-2.466	-.112
	PALs	-.591	1.000	-1.893	.711
RAP	PALs	.698	.844	-.561	1.957

Note. Based on estimated marginal means; Dependent Variable: Reading Comprehension.
[a]Adjustment for multiple comparisons: Bonferroni.

Investigation of the Second Question

To answer the second question, the participants' reading self-efficacy scores on pretest and posttest were analyzed using the one-way ANCOVA, and after checking its assumptions. The relationship between the covariate—pre-RSEQ—and the dependent variable—post-RSEQ—was checked, and no curvilinear relationship was noted. To check the assumption of homogeneity of regression slopes, the interaction between the dependent variable and the covariate for each group was checked. The result showed that this assumption was met, too ($F_{(3, 160)} = 2.42$, $p > .05$) . The significance level of Levene's test ($F_{(3, 146)} = 2.202$, $p > .05$) also ensured the equality of error variances.

Table 4 shows the way the models affected the participants' reading self-efficacy. Based on the result of the one-way ANCOVA in Table 5, the four models did not significantly differ from each other regarding their effect on reading self-efficacy after controlling for the initial differences ($F_{(3, 145)} = 1.24$, $p > .05$). Partial eta squared value shows that only 2.5 percent of the total variability on the posttest is attributable to the treatment.

Table 4: Descriptive statistics for reading self-efficacy

	Pretest		Posttest		
Models	Mean	Std. Deviation	Mean	Std. Deviation	N
DARTs	44.00	13.866	44.50	17.570	32
THIEVES	44.80	9.593	45.33	12.296	45
RAP	47.80	10.218	45.59	9.292	44
PALs	43.14	10.077	39.66	15.363	29
Total	45.19	10.934	44.13	13.533	150

Note. Lower mean score means higher self-efficacy, based on RSEQ in Appendix A.

Table 5 also shows that the reading self-efficacy pretest is a significant covariate for the posttest after controlling for the independent variable. It accounts for more than 40 percent of the variability on the posttest.

Table 5: One-way ANCOVA results on reading self-efficacy

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	11429.625[a]	4	2857.406	26.128	.000	.419
Intercept	585.603	1	585.603	5.355	.022	.036
pre_RSEQ_total	10685.480	1	10685.480	97.706	.000	.403
Models	409.805	3	136.602	1.249	*.294	.025
Error	15857.708	145	109.364			
Total	319450.000	150				
Corrected Total	27287.333	149				

Note. Dependent Variable= post-RSEQ-total; RSEQ = Reading Self-efficacy Questionnaire.
[a]R Squared = .419 (Adjusted R Squared = .403).

Investigation of the Third Question

To answer the third question, first, the assumptions of ANCOVA were checked. To prevent the effect of the treatment on the covariate, the FLRAS was administered before the treatment. The result of the test of homogeneity of regression slopes ($F_{(3, 137)} = 2.56$, $p > .05$) revealed no violation of the assumption. The error variance was also equal for all groups based on Levene's Test of Equality of Error Variances ($F_{(3, 137)} = .58$, $p > .05$). Additionally, the simple scatterplot showed no curvilinear relationship between the covariate and the dependent variable. Since all the assumptions were met, one-way ANCOVA was used to compare participants' FLRA. Before doing one-way ANCOVA, the pretest and posttest results of FLRAS for each group were summarized (Table 6).

Table 6: Descriptive statistics for reading FLRA

	Pretest		Posttest		
Models	Mean	Std. Deviation	Mean	Std. Deviation	N
DARTs	58.07	9.833	61.67	13.121	30
THIEVES	58.28	10.146	60.85	11.207	39
RAP	58.67	8.225	59.53	9.275	43
PALs	58.13	9.853	56.67	12.127	30
Total	58.32	9.371	59.74	11.326	142

Note. FLRA = Foreign Language Reading Anxiety; Higher mean score means lower FLRA, based on FLRAS.

The result of the one-way ANCOVA showed no significant difference between the participants' scores on the posttest of FLRA after controlling for the pre-existing differences ($F_{(3,\ 137)} = 1.88$, $p > .05$). Meanwhile, Table 7 shows a significant relationship between the pretest and posttest of FLRA while controlling for group differences.

Table 7: One-way ANCOVA results on FLRA

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7158.103[a]	4	1789.526	22.432	.000	.396
Intercept	994.389	1	994.389	12.465	.001	.083
pre_FLRAS_total	6713.852	1	6713.852	84.159	.000	.381
Models	452.051	3	150.684	1.889	*.134	.040
Error	10929.256	137	79.776			
Total	524857.000	142				
Corrected Total	18087.359	141				

Note. Dependent Variable: post-FLRAS-total; FLRAS = Foreign Language Reading Anxiety Scale; FLRA = Foreign Language Reading Anxiety.
[a]R Squared = .396 (Adjusted R Squared = .378).

DISCUSSION

The first finding of the study was that although both RAP and THIEVES improved the participants' reading comprehension, RAP was significantly more effective than THIEVES. This finding is consistent with the findings of Novia and Nery (2019) and Khataee (2019) with regard to the effect of THIEVES. In these studies, both models positively improved learners' reading comprehension. Moreover, it adds to their findings that when used in almost the same conditions, RAP is more effective than THIEVES in improving learners' reading comprehension. This is while these two models did not differ significantly from DARTs and PALS. In the following paragraphs, RAP and THIEVES are contrasted based on the way they affect learners' reading comprehension to see the reason for the difference between them.

As Hagaman et al. (2016) pointed out, learners who learn to read through RAP remember what they read better, because they break texts into small chunks that are easier to remember. Moreover, M. Israel et al. (2013) believe that RAP strengthens learners' ability to connect new and prior knowledge via reporting the main idea and some supporting sentences in their own words. These characteristics of RAP may account for the better performance of its learners over the THIEVES model learners.

Like RAP, in THIEVES, the activation of background knowledge and connecting it to new information while reading the full text is expected, this time before the reading task. Learners of THIEVES read the title, subheadings, the first paragraph, the first sentence of each paragraph, the concluding paragraph, and the summary of the whole text to form a preconception. This preconception could have activated the background knowledge of learners so that when they read the whole text, they could connect their background knowledge to the new knowledge of the text. This activation seems a fruitful way of comprehending a text. But if a text has no summary, and if some or all first sentences of different paragraphs are not the main sentences, the activation may be incomplete or unsuccessful. In reading comprehension tests like that in MTELP, there are no headings, title, summary, and visuals to assist learners to activate their background knowledge. The only thing they can do is reading the introductory paragraph and the first sentence of the following paragraphs. This makes the model inappropriate for these situations. This may further explain the better performance of the RAP group on the reading part of MTELP.

The other reason for the better performance of the RAP group can be found in the method used for finding the main idea. Both models are based, in part, on training learners to use the main ideas in different paragraphs of a text. The result shows that both models have improved reading comprehension, but this improvement is more in the RAP model. Using RAP, learners practice identifying the main sentence of each paragraph and try to understand it using one or two supporting sentences in the same

paragraph. THIEVES, on the other hand, teaches learners to get as much information as possible through reading the first sentences of each paragraph. Apparently, THIEVES is based on the assumption that the first sentence of a paragraph is its main sentence. If the assumption is not met, learners cannot get the right information. This strategy in THIEVES is also dependent on the level of difficulty of texts. If the first sentences of a text contain difficult words and/or complicated structures, learners cannot benefit much from reading them. However, in RAP, learners analyze almost all the sentences of a paragraph and have a better chance of finding the main idea.

Comparing the mean scores on pre and posttest on reading comprehension, one can notice that unlike the DARTs, THEIVES, and RAP models, PALS negatively affected the participants' reading comprehension. This is while Calhoon et al. (2006), Calhoon et al. (2007), Spörer and Brunstein (2009), and Völlinger et al. (2018) reported PALS as an effective model in improving reading comprehension. In short, although the PALS model learners used the same strategies like the ones used in the other models, the way they used them was different. For example, before reporting the summary, the learners of PALS checked their understanding with each other, while in RAP, the learners tried to understand the text by themselves and summarize with no support. It might be that the PALS participants got used to the assistance provided for them by their peers. They did the reading task and summarized it together, and checked their understanding with their peers. It is possible they also helped each other to understand difficult words and structures. All these can explain the negative effect of PALS on the reading comprehension performance of the participants on the MTELP posttest because they did not have the advantage of scaffolding that they possibly got used to during the treatment phase.

Considering the effect of DARTs on reading comprehension, it can be observed that this model affected reading comprehension positively. This result is consistent with the findings of Fitria (2019). Nevertheless, this finding is also in contradiction with the same study in that the effect of the

model (although positive) was not statistically significant in this study. We can justify this result by the fact that in Fitria's study, the model was compared with a control group, whereas in this study DARTs was compared with three other reading models.

Another finding of this study was that the models did not significantly differ from each other regarding their effect on reading self-efficacy. Meanwhile, though the difference between the models was not statistically significant, not all had a positive effect on the trait. Only PALS and RAP improved the participants' reading self-efficacy. The positive effect of RAP on reading self-efficacy can be direct or indirect. It means that the improvement can also be the result of improved reading comprehension that is caused by the model. According to Unrau et al. (2017), reading self-efficacy and comprehension are related traits, and improvement in one can lead to an improvement in another. As for PALS, the result showed the model affected the participants' reading self-efficacy, but failed to improve their reading comprehension. Hence, the improvement cannot be attributed to the change in the participants' reading behavior. This could be the result of the effect of scaffolding that learners had using the model. Being paired and trained by their peers could have helped the participants to assess their reading ability against that of their peers. This assessment may, in turn, have influenced their self-perception positively.

The contrast between the results of reading comprehension and reading self-efficacy of THIEVES, PALS, and DARTs is in contradiction with the findings of Solheim (2011), Ghonsooly, and Elahi Shirvan (2011), and Boakye (2015). They all found a positive relationship between the two traits. However, in this study, the self-efficacy of the participants was negatively affected by the THIEVES and DARTS groups, while their reading comprehension improved. And in PALS, despite the decrease in reading comprehension level, there was an improvement in reading self-efficacy.

The third finding of the study was that there were no significant differences among the models concerning their effect on FLRA. One explanation can be given based on the sources of FLRA. In other words, each of the models can potentially remove one of the sources. For example, one of the sources is learners' unfamiliarity with the writing system of the target language. DARTs has the power of making learners familiar with how different text types are written and what kind of information they should expect from a text. Readers' expectancy of the difficulty of a text is also alleviated by using THIEVES. THIEVES gives learners a guided chance of analyzing the whole text and getting as much information as possible from it before they start reading it. By doing this, they develop an estimated image of the difficulty of the text. As a result, they do not get excited as the reading task proceeds. RAP also gets the reader engaged with the text and, this way improves their concentration on the task itself. Hence, it controls negative off-task thoughts. PALS, on the other hand, is expected to lower learners' FLRA as they practice reading out loud texts for other participants.

Since text difficulty—one of the sources of FLRA—was controlled in this study by using the same texts for all groups, we expected that all the models lower the FLRA level. However, only the THIEVES, RAP, and, DARTs groups behaved as they were expected; the PALS group failed to do so. The different effects of PALS can be contributed to the effect of the reliance of the participants on each other for doing the reading. The negative effect of this reliance may have neutralized the positive effect of PALS on reducing the participants' FLRA—by using the strategy of reading texts aloud for their peers.

As to why the models did not differ significantly from each other regarding their effect on FLRA, it might be argued that all of them may have controlled more or less the same number of sources of FLRA. The other way we can justify this finding is considering the relationship between FLRA and reading comprehension. Researchers, like Huang (2012), have reported that FLRA and reading comprehension are related inversely. By comparing the reading comprehension and FLRA of each group, we noticed

the same thing in DARTS, THIEVES, and RAP groups. In the PALS group, where the reading comprehension of the participants was negatively affected, their FLRA was augmented. It may be concluded that this finding is in agreement with the result of the above-mentioned studies.

On the other hand, based on Ghonsooly and Elahi Shirvan's (2010) finding, an inverse relationship was expected between FLRA and reading self-efficacy. Nevertheless, we found a controversial relationship, since, in THIEVES, RAP and DARTs groups, reduction in FLRA did not coincide with an improvement in reading self-efficacy. Almost the same thing happened in PALS—higher FLRA did not lower the participants' reading self-efficacy. This controversy may be rooted in the treatment effect in this study. The study of Ghonsooly and Elahi Shirvan was based on comparing the results of FLRA and reading self-efficacy questionnaires without having any treatment.

CONCLUSION AND IMPLICATIONS

Based on the results of this study, the following conclusions may be drawn. First of all, the study showed that, under the same conditions, only the RAP model had desirable effects on reading comprehension, self-efficacy, and FLRA. This enables us to conclude that this model is the most effective of the four models and to suggest special attention to be paid to this model for training EFL learners.

Moreover, PALS failed in improving learners' reading comprehension and decreasing their FLRA. This indicates that in EFL contexts, the model needs to be used cautiously, because in these settings, learners usually do not know how to read a text, and it is possible that they mislead rather than guide each other. On the other hand, as they do not know the reading strategies to rely on while reading, they may subconsciously rely on their partner for understanding texts. This reliance can have a negative impact on their performance when they have to do a

reading by themselves. Therefore, the second conclusion is to use this model for training learners with higher levels of reading proficiency.

Compared to THIEVES, RAP was more conducive to learners' reading comprehension. However, since the two models are based on the activation of background information and the use of the main idea in different paragraphs, it may be concluded that the models can complement each other and eradicate shortcomings. For example, one of the weak points of THIEVES is that it is susceptible to the type of the first sentences of each paragraph. When a text does not follow the rule of putting the main idea of a paragraph in the first sentence, there is not much information provided for learners before reading. On the other hand, in RAP, learners can scan the paragraph and find the main sentence.

Another conclusion to draw is about the use of DARTs. It was observed that DARTs harms reading self-efficacy, although it decreased FLRA. This model, like THIEVES, can be combined with other models to eradicate this problem. If not used with other models, it is not advisable to use this model for training learners with low reading self-efficacy. The observation that there was no significant difference between the four models in terms of their effectiveness on FLRA and reading self-efficacy may lead to the conclusion that blind insistence on the side of the teacher to stick to any of the four models is not advisable. Given that each of these models has its strengths and may have been developed for a specific purpose, we may conclude that a degree of eclecticism in the choice of these models may promise a more desirable outcome than any of these models alone.

Furthermore, since the four reading models were differentially effective on reading comprehension, reading self-efficacy, and FLRA, we may conclude that the effectiveness of a model on reading comprehension should not tempt a teacher to assume that it is more beneficial than other models. A model of reading may improve learners' reading performance in the short term. However, if it negatively affects their reading self-efficacy or FLRA, it will have grave consequences in the long term.

The findings of this study can be used in teacher training courses to familiarize teacher trainees with the effect these and similar models may have on EFL learners. Knowing their characteristics gives EFL teachers the chance of wisely selecting practical models suitable for the aim they pursue. For example, if a teacher wants to have a long term plan for training his/her students how to read, he/she can start with DARTs and THIEVES models. After the models were mastered by the students, they can start practicing RAP. The course can be completed by teaching PALS.

These findings may also help learners to know what kind of information in what order to expect when reading a text. This helps them in organizing new information and in comprehending it better. EFL textbook writers can also use the findings of this study to improve the reading parts of their books. Curriculum developers can also consider the reading models of this study and incorporate them into their future designs.

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