

Concept Mapping, Directed Reading Thinking Activity (DRTA), and Know-Want to Know-Learned (KWL) Reading Strategies and Iranian Secondary School Learners' Reading Comprehension

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Abstract: The present study was an attempt to explore the effects of concept mapping (CM), directed reading thinking activity (DRTA), and know-want to know-learned (KWL) reading strategies on Iranian secondary school students' reading comprehension. To perform this, 69 male secondary school students in Doroud, Lorestan province were selected to take part in this study. Then, the participants were divided into three equal-sized experimental groups namely CM, DRTA and KWL groups. To evaluate the students' reading comprehension at the onset of the study, a teacher-made reading pretest was administered. After the treatment sessions, the participants in the groups took a reading posttest to measure their ability in reading after the instruction. Obtained results showed that using CM strategy did not have significant effect on the EFL students' reading comprehension. On the other hand, DRTA and KWL did have significant effects on the students' reading. That is, utilizing DRTA and KWL strategies significantly boosted the participants' reading ability. Moreover, DRTA was the most effective strategy in enhancing the participants' reading comprehension. Implications of the study suggest that administering DRTA and KWL can enhance reading comprehension of Iranian secondary EFL students.

Key Terms: CM, DRTA, KWL, Reading Comprehension

Introduction

Among the main language skills, reading comprehension is essential to second/foreign language (L2) learning. However, there is a lack of familiarity with L2 reading due to several reasons, including the influence of comprehension-based approaches to L2 learning, the role of applied linguists, and the development of computer-based L2 corpora (Nunan, 1999). Reading comprehension is a complex skill to be taught to L2 learners since it requires coordinating several interrelated sources of information, determining the main idea of a text, identifying reference, inferencing, and recognizing vocabulary. Thus, many L2 learners have difficulties to gain mastery over it (Anderson, Hiebert, Scott, & Wilkinson, 1985). Having adequate reading proficiency entails the accurate and efficient understanding of written statements or texts (Mahfoodh, 2007). The L2 reading comprehension may be significant in the EFL context of Iran because the Iranian EFL learners need to gain a good command over it for their English for academic purposes (EAP) success. There are different strategies for improving this skill in L2 classrooms. For that reason, the present study was designed to reveal the effectiveness of the reading strategies of CM, DRTA, and KWL on improving the EFL students' reading comprehension.

CM is a strategy for examining L2 learners' understanding of concepts (Novak & Cañas, 2007). Concept maps are also used as cognitive tools to help L2 learners organize their knowledge and learning experiences and increase their self-awareness through reflective thinking (Kao, Lin, & Sun, 2008). A concept map may take the form of a diagram or a graphic organizer to provide a visual representation of the major concepts in a text and how they are related to each other. Using CM during the reading process primarily demands the L2 learners to find the main ideas of a text. Next, they are required to focus on the relationships between the ideas to depict cross-linking between them in a hierarchical order (Rassaei, 2017).

DRTA is a reading strategy that meets the requirements of comprehension and thus is suitable for reading informational texts (Blachowicz & Ogle, 2008). It is a group-inquiry reading approach for guiding readers through a text during the first time they read it in an L2 classroom. It comprises pre-, whilst- and postreading stages. The whilst-reading stage includes the pre-reading phase, the guided silent-reading phase, and the postreading (prove) phase (Stauffer, 1969). The DRTA extends reading to higher-order thought processes and provides the L2 teachers with a great deal of information about each L2 learner's ideas, thought processes, prior knowledge, and thinking skills (Tankersley, 2005; Blachowicz & Ogle, 2008).

The KWL strategy is a practice type through which the L2 teacher engages active readers in reading texts. This activity processes any information and knowledge that the L2 learners possess to help their peers in a group and establish a good learning condition through communicating the results of their reading. In other words, this strategy stimulates them to activate their prior knowledge in reading. Thus, they become active

readers who analyze texts in three steps, starting with the K table (what they know), then go on with the W table (what they want to learn more), and end with the L table (what they have learned) (Blachowicz & Ogle, 2008).

Several studies examined the impacts of different strategies on L2 learners' developing reading comprehension (Aksan & Kisac, 2009; Fahim & Hoominian, 2014; Fahim & Sa'ee pour, 2011; Hosseini, Bakhshipour Khodaei, Sarfallah, & Dolatabadi, 2012; Marzban & Davaji, 2015; Shanhan, 1988). However, to the best of researcher's knowledge, no research investigated the effectiveness of teaching CM, DRTA, and KWL reading strategies on enhancing EFL students' reading comprehension in Iran. Thus, in order to fill this gap in the literature on this matter, this study explored the possible effects of these reading strategies on improving the Iranian secondary school EFL learners' reading comprehension performance.

Research Questions

1. Does using concept mapping (CM) reading strategy statistically significant effect on Iranian secondary school EFL students' reading comprehension ability?
2. Does using directed reading thinking activity (DRTA) reading strategy statistically significant effect on the EFL students' reading comprehension ability?
3. Does using know-want to know-learned (KWL) reading strategy statistically significant effect on the students' reading comprehension ability?
4. Are there any significant differences among the effects of using the reading strategies of CM, DRTA, and KWL on the students' reading comprehension ability?

Related Studies on CM

Hamedi, Tabatabaee Lotfi, and Sarkeshikian (2020) explored the effects of the two before reading activities of anticipation guides versus CM on the reading comprehension ability of 90 Iranian elementary L2 learners during 10 sessions of treatment. The findings showed that the use of both anticipation guides and CM as pre-reading activities significantly enhanced the Iranian elementary EFL learners' reading comprehension ability. Also, Sahraee, Hosseini, and Sedighifar (2022) investigated the impact of CM before reading on the Iranian EAP learners' reading comprehension and motivation. The results of this research revealed the value of CM in increasing the EAP learners' reading skill and motivation.

In another study, Khodadady and Ghanizadeh (2011) examined the effect of CM after reading on enhancing Iranian EFL learners' critical thinking. The findings of this research revealed the effectiveness of CM as a after reading strategy on enhancing the Iranian EFL learners' critical thinking skill. Moreover, Nour Elhouda (2020) explored the impacts of CM versus text summarization on the adult L2 learners' reading comprehension and monitoring skills through a pretest-posttest nonequivalent group research design. The results of the statistical comparison of the pre- and posttest scores of those experimental participants who used CM showed a significant improvement in their reading comprehension after the treatment in comparison with their reading ability at the onset of the study.

Related Studies on DRTA

Habibollahi Aghdam and Behroozizad (2018) studied the impact of using DRTA on enhancing the Iranian EFL learners' reading comprehension of graded readings. The findings of this research revealed that DRTA significantly affected the participants' reading comprehension. Also, Purwandari's (2021) study investigated the role of using DRTA in improving the reading comprehension ability of EAP learners. The findings of this research showed that using DRTA had a significant impact on the participants' reading comprehension. Moreover, Wijaya, Sutarto, and Zulaeha (2021) investigated and compared the influence of using DRTA and know-want to know-learned (KWL) strategies on the reading comprehension ability of fourth grade learners. The results of the study indicated that DRTA had a more positive effect on the participants' reading comprehension than KWL.

Related Studies on KWL

Taheri and Mohamadi (2015) examined the influence of using the KWL strategy on the L2 reading comprehension. The results showed that the participants in the experimental group outperformed the participants in the control group with respect to their reading comprehension ability. Also, Nanda and Pratama (2021) conducted a qualitative research to explore the role of utilizing the strategy of KWL in developing the L2 learners' reading comprehension. The content analysis of the data collected from these semi-structured interviews supported the effectiveness of utilizing the KWL strategy on boosting the L2 learners' understanding, concentration, and active engagement in reading.

Method

Participants

Sixty-nine male EFL learners who study English in a secondary school in the city of Doroud in the Lorestan province participated in this study. In order to avoid the interference of culture- and gender-based differences on the results of the study, the selection of participants was limited to the convenience (availability) sampling of the Iranian secondary school male EFL learners. The Iranian EFL learners varied in age from 12 to 13 years old and their first language is Persian. Some of the participants had studied English at private language institutes. The participants were divided into three groups, namely, CM, DRTA, and KWL groups. Each group consisted of 23 Iranian secondary school male EFL learners.

Instruments

OPT

A sample OPT was firstly administered to ensure the homogeneity of participants in terms of their L2 proficiency level. The test has three parts. Part 1 includes 40 multiple-choice reading and vocabulary items. Part 2 consists of the next 20 questions on vocabulary and reading. Due to the low proficiency level of the participants of this research, part 3, which has a writing section, was excluded. The L2 respondents had 60 min to answer the questions of the OPT.

Reading Pretest and Posttest

Two parallel reading exams based on the lessons of the eighth-grade English book were run as pretest and posttest. The purpose of pretesting was to score the participants' ability in reading comprehension at the onset of the study. After the treatment sessions, the reading posttest was administered as posttest to examine and compare the probable effects of CM, DRTA, and KWL reading strategies on the participants' reading skill.

Materials

The eighth-grade English coursebook readings called *Prospect 2: English for schools* was selected as the teaching material for the present study. This textbook written by Alavi Moghaddam, Kheirabadi, Foroozandeh Shahraki, Khadir Sharabyan, and Nikoopour (2014) is under the supervision of organization for educational research and planning of Iran's Ministry of Education.

Procedure

Having finished the homogenization and the classification of the learners into the three groups, the reading pretest based on the lessons of the eighth-grade English course book was administered at the onset of the study to obtain the participants' reading scores. The reading test included 4 sections and 30 questions. The average time to answer the questions was 45 min. The L2 learners were expected to read and understand different types of short reading texts as well as longer, factual ones. Parts 1, 2, 3, and 4 examined the reading skills such as the underlying knowledge of vocabulary and grammar.

After administering the pretest, a briefing session was conducted to familiarize CM group with how to construct concept maps to read the course book texts. The following 15 treatment sessions were held on a weekly basis with duration of 40 min for each session. During each session, the participants read the passages using CM strategy. The participants in CM group worked individually to read the texts and construct concept maps about the contents of the lessons. During each session, they were asked to read the assigned text for about 10 min. Then, they were required to construct their own concept maps. During the concept-map construction process, the participants were allowed to refer to the text and revise their concept maps according to the evaluation feedback provided by the L2 teacher. Two types of concept maps were employed in this study, namely fill-in concept map and student-constructed concept map. Based on the first five texts, the fill-in concept maps (the incomplete concept maps with certain given concepts and linking words) were constructed. Also, comprehension exercises were used to check the participants' understanding. The participants wrote out the missing concepts with the words provided from a list based on each text and did the comprehension exercises. Regarding the last five texts, the participants were free to construct their own concept maps called student-constructed concept maps and answered comprehension exercises similar to the first phase.

Moreover, DRTA group took part in a briefing session too to get familiar with DRTA strategy of reading comprehension. Afterward, the same reading textbook was taught to them during 15 treatment sessions. Each weekly treatment session lasts for 40 min. During each session, the participants read the texts using DRTA strategy. After browsing the title of each text, they needed to come up with a list of ideas that occurred to their minds when they saw and heard about the text title or topic. Next, they wrote down those ideas on the board to combine and renovate new collocations of the word usage. As brainstorming helps to activate the participants' background knowledge, they were enabled to make predictions about what they read in the text

using all available clues, including picture, charts, table of contents, and the like. Then they read a section of the text while the L2 teacher researcher of this study determined the stopping points. Later on, they confirmed or revised their prior predictions and tried making new ones too. Then, they were encouraged to make new predictions on the rest of text. Finally, they were asked to combine what they had read with their prior knowledge discussing its relevance to their personal lives.

At last, KWL group joined in a briefing session to become familiar with the reading strategy of KWL. Next, the same reading textbook was explored during 15 40-min treatment sessions. During the pre-reading stage of KWL, which corresponds to the K step, the participants expressed what they know about the reading text's topic of the same course book material assigned to them. The while reading phase known as the W stage involved them skimming the text and preparing a list of questions or ideas regarding the topic of the given passage. Then the participants studied the text in detail and completed the L stage at which they provided answers to the questions given in the W step (Ogle, 1986).

Having finished the treatment sessions, the reading comprehension posttest was run to reassess CM, DRTA, and KWL participants' reading comprehension skills after the exposure to the assigned reading strategies. Also, through posttesting, the probable effects of CM, DRTA, and KWL reading strategies on reading comprehension ability of the L2 participants were analyzed and compared.

Design

The present study examined the effects of using the reading strategies as the independent variables on reading comprehension skill of the EFL learners as the dependent variable via a nonequivalent group pretest-posttest quasi-experimental design.

Results

Results of the OPT

Table 1: Results of the OPT

Scores	20-39	39-50	50-60
Number of Participants	69	15	6

Descriptive Statistics of Reading Pretest

The participants in CM, DRTA, and KWL groups were pretested on the reading comprehension at the onset of the study. The purpose was to enable the statistical analysis of the participants' pretest and posttest performances through the paired samples t-test and analysis of covariance (ANCOVA) procedures. Table 2 demonstrates the descriptive statistics of the CM (M = 10.14, SD = 2.54), DRTA (M = 10.52, SD = 2.75), and KWL (M = 10.39, SD = 3.74) groups for the reading comprehension pretest.

Table 2: Descriptive Statistics of Reading Comprehension, Pretest

Groups	Test	N	M	SD	Min	Max
CM	Pre	23	10.14	2.54	3	15
DRTA	Pre	23	10.52	2.75	5	14
KWL	Pre	23	10.39	3.74	4	15

Descriptive Statistics of Reading Comprehension Posttest

The participants in CM, DRTA, and KWL groups were posttested on the reading comprehension exam at the end of the study. ANCOVA was run to compare the posttest scores of the participants on reading comprehension after the treatment. Table 3 demonstrates the descriptive statistics of CM (M = 11.43, SD = 2.85), DRTA (M = 16.08, SD = 2.69), and KWL (M = 14.10, SD = 4.48) groups for the reading comprehension posttest.

Table 3: Descriptive Statistics of Reading Comprehension, Posttest

Groups	Test	N	M	SD	Min	Max
CM	Post	23	11.43	2.85	4	16
DRTA	Post	23	16.08	2.69	5	19
KWL	Post	23	14.10	4.48	3	16

Testing the First Null Hypothesis

The paired samples t-test was run to compare the pretest and posttest mean scores of CM group on the reading comprehension exam. Table 4 demonstrates the paired samples t-test results for the reading comprehension pretest and posttest scores of CM group. As Table 4 indicates, the t-observed ($t=3.137$, $df=22$, $p = 0.070$) revealed that there was not a statistically significant difference between the CM participants' pretest and posttest scores on the reading comprehension exam. Thus, the first null hypothesis of the study was accepted.

Table 4: Results of the Paired Samples t-Test for CM Group's Reading, Pretest & Posttest

	Paired Differences					t	df	Sig. (2-tailed)
	M	SD	SEM	95% CID				
				LR	UR			
CM Group's Pre-versus Posttest	-1.725	3.721	2.005	2.739	5.96	3.137	22	0.070

Research Question 1

The negative answer to the first research question of the study showed that using CM strategy did not significantly affect the EFL learners' reading comprehension ability. Namely, the participants' reading comprehension did not enhance after the treatment. The total mean score of their posttest on reading comprehension was not significantly bigger than the total mean score of their pretest on reading comprehension.

Testing the Second Hypothesis

The paired samples t-test was run on the pretest and posttest scores of the participants in DRTA group on the reading comprehension exam. As Table 5 indicates, the t-observed ($t = 8.802$, $df = 22$, $p = 0.000$) illustrated that there was a statistically significant difference between the pretest and posttest scores of the participants in DRTA group on the reading test. Thus, the second null hypothesis of the study was rejected.

Table 5: Results of the Paired Samples t-Test for DRTA Group's Reading, Pretest & Posttest

	Paired Differences					t	df	Sig. (2-tailed)
	M	SD	SEM	95% CID				
				LR	UR			
DRTA Group's Pre-versus Posttest	11.024	4.573	2.088	5.194	9.854	8.802	22	0.000

Research Question 2

The positive answer to the second research question of the study signified that using the L2 DRTA strategy significantly affected the EFL learners' reading comprehension ability. That is, the participants' reading comprehension improved after the treatment sessions. The total mean score of their posttest on reading comprehension was significantly bigger than the total mean score of their pretest on the reading test.

Testing the Third Null Hypothesis

Table 6 presents the paired samples t-test results for the pretest and posttest scores of the participants in KWL group. As Table 6 illustrates, the results of the pretest and posttest scores ($t = 7.183$, $df = 22$, $p = 0.000$) signified a statistically significant difference between the mean scores of this group on the reading comprehension exam. Thus, the third null hypothesis of the study was rejected too.

Table 6: Results of the Paired Samples t-Test for KWL Group's Reading, Pretest & Posttest

	Paired Differences					t	df	Sig. (2-tailed)
	M	SD	SEM	95% CID				
				LR	UR			
KWL Group's Posttest versus Pretest	9.120	3.952	1.879	4.995	8.207	7.183	22	0.000

Research Question 3

The positive answer to the third research question designated that using KWL strategy was effective in enhancing the EFL learners’ reading comprehension ability. The results revealed reading comprehension ability of the participants in KWL group was improved after the treatment. The total mean score of their posttest on reading comprehension was significantly bigger than the total mean score of their pretest on reading comprehension.

Testing the Forth Null Hypothesis: ANCOVA Results for the Posttest

The reading comprehension posttest scores of the participants in CM, DRTA and KWL groups were compared to each other after the treatment to test the forth null hypothesis of this research. The ANCOVA test was run on the participants’ posttest scores on the reading comprehension exam. The results are presented below.

Testing ANCOVA Assumptions

This study analyzed and compared the effects of using CM, DRTA, and KWL strategies on improving the EFL learners’ reading comprehension through the use of ANCOVA test. The purpose was to determine the most efficient type of strategy to help the participants enhance their reading comprehension ability. Thus, the ANCOVA assumptions were checked.

Testing the Assumption of Homogeneity of Variances

To run ANCOVA test, the assumption of homogeneity of variances was tested. As Table 7 demonstrates, the *p*-value ($p > 0.05$) of the pretest and posttest scores on the reading comprehension exam showed that the variances were homogeneous. Thus, the assumption of the homogeneity of the variances of the pretest and posttest scores was met.

Table 7: Test of Homogeneity of Error Variances

	Levene Statistic	df1	df2	P
Pretest	0.551	1	69	0.602
Posttest	2.910	1	69	0.097

Testing the Assumption of Linear Correlation of the Variables

Table 8 indicated that the statistics value of the control variable F is meaningful ($F= 160.092, p > 0.05$). That is, the relationship between the variables was linear. Thus, the ANCOVA test could be run.

Table 8: Test of Linear Correlation of Variables

	df	F	P.
Pre	1	160.092	0.000

ANCOVA Test Results for CM, DRTA, & KWL Groups, Posttest

Table 9 depicts the results of ANCOVA test of the pretest and posttest scores of the participants in CM, DRTA, and KWL groups on the reading comprehension exam. As Tables 9 indicates, there was a statistically significant difference between the posttest scores of the participants in CM, DRTA, and KWL groups ($p < 0.05$). Thus, the forth null hypothesis of the study was rejected.

Table 9: ANCOVA Results of Reading Comprehension, Posttest

Source	Type III Squares	Sum of Squares	df	Mean Square	F	P.	Partial Eta Squared
Corrected Model	694.778 ^a		3	235.578	84.985	0.000	0.970
Intercept	78.908		1	82.459	33.324	0.000	0.533
pretest	375.851		1	372.235	146.854	0.000	0.879
Group	259.236		1	143.619	53.746	0.000	0.820
Error	129.485		60	2.105			
Total	7199.361		65				
Corrected Total	775.472		69				

ANCOVA Results for the Groups

As Tables 10 indicates, the posttest mean score of DRTA (M = 16.08, SE = 0.818) was greater than the posttest mean score of KWL (M = 14.10, SE = 0.692), which was in turn greater than the posttest mean score CM (M = 11.43, SE = 0.753) on reading comprehension. Thus, using DRTA and KWL strategies significantly developed the students' reading comprehension ability. Also, it was shown that DRTA was the most effective reading comprehension strategy. However, concept mapping did not statistically enhance the students' reading comprehension.

Table 10: Estimates of CM, DRTA and KWL Groups, Posttest

Groups	M	SE	95% Confidence Interval	
			Lower Bound	Upper Bound
CM	11.43	0.753	21.507	24.125
DRTA	16.08	0.818	19.425	32.547
KWL	14.10	0.692	20.505	30.142

Table 11: Pairwise Comparison of CM, DRTA and KWL Groups, Posttest

(I) GROUP	(J) GROUP	MD (I-J)	SE	P.	95% Confidence Interval for Difference	
					Lower Bound	Upper Bound
CM	DRTA	-6.175*	0.651	0.000	-6.460	-4.930
	KWL	-4.560*	0.664	0.000	-4.850	-3.259
DRTA	CM	6.155*	0.651	0.000	3.920	7.470
	KWL	2.655*	0.646	0.016	0.391	3.869
KWL	DRTA	4.560*	0.664	0.000	2.249	5.870
	CM	-2.635*	0.646	0.016	-2.879	-1.361

Research Question 4

The positive answer to the fourth research question of the study signified that there was a statistically significant difference between the mean scores of the participants in CM, DRTA and KWL groups on the reading posttest. Based on the data analysis procedure, CM had positive effects on reading comprehension of the EFL learners; however, its impact was not statistically significant. Thus, the first research null hypothesis was confirmed. Also, DRTA did have a statistically significant effect on reading ability of the EFL students. Hence, the second research null hypothesis was rejected. Moreover, KWL did have statistically significant impacts on reading comprehension of the learners. Therefore, the third research null hypothesis was rejected. Furthermore, there were statistically significant differences among the effects of DRTA, CM and KWL on reading comprehension ability of the EFL learners. In view of that, the fourth research null hypothesis was rejected too.

Conclusion

The results of the current study revealed that concept mapping did not have statistically significant impacts on the Iranian elementary secondary school EFL learners' reading comprehension. Thus, the first null hypothesis was confirmed. Also, DRTA and KWL did have statistically significant impacts on the Iranian elementary secondary school EFL learners' reading comprehension. Therefore, the second and third null hypotheses were rejected. Moreover, the outcomes of this research indicated that there was a statistically significant difference among the impacts of utilizing the three reading comprehension activities of CM, DRTA, and KWL on the Iranian elementary secondary school EFL learners' reading comprehension. DRTA and KWL significantly developed the participants' reading comprehension whereas the effectiveness degree of using CM was not statistically significant. That is why the fourth null hypothesis was not accepted too.

Discussion

The First Research Question: This result is in line with the findings of Oliver's (2009) research who investigated the sixth-grade science students' representation of structures of a 900-word textbook chapter on the soil conservation. The outcomes of this investigation showed that students were more successful at sorting the pre-selected terms under the prearranged superordinate categories than they were at fully classifying the pertinent concept sets and producing three different types of relationships between the terms. Also, this result of

the study contradicts the outcomes of Salehi, Jahandar and Khodabandehlou's (2013) research that explored the influence of concept mapping on the Iranian EFL learners' reading comprehension ability. The results of this investigation revealed that there was a statistically significant difference between the reading comprehension ability of the participants in the experimental and control groups. The participants in the experimental group who used CM outperformed those in the control group on reading comprehension. Similarly, this finding of the study is not commensurate with the upshots of Beydarani's (2015) investigation that examined the impacts of concept mapping on the Iranian EFL learners' reading comprehension of persuasive and descriptive texts. The analysis of their posttest scores revealed that the L2 learners in the two experimental groups who drew in CM outperformed those in the two control groups in terms of their ability of reading comprehension.

The Second Research Question: This finding of the current study is in line with Utomo and Syamsi's (2019) research who examined the effectiveness of the problem-based learning (PBL) versus the DRTA on the Indonesian elementary school learners' critical thinking and reading comprehension. The outcomes of this investigation indicated that using the DRTA was more effective than drawing on the PBL in enhancing the Indonesian elementary school learners' reading comprehension. Also, this upshot is in agreement with Nerim (2020) who examined the impacts of using the DRTA on Indonesian second grade guidance school L2 learners' reading skills. The participants in the experimental group used the DRTA to understand the texts assigned to them while those in the control group did not receive any instructions on reading the given passages. The outcomes of this investigation indicated that the DRTA was more effective than the conventional way of teaching reading. Thus, utilizing the DRTA significantly affected the participants' reading comprehension. Moreover, this result of the study is congruent with Hanafi and Septiana (2022) who explored the effects of utilizing the DRTA on the Indonesian EAP learners' comprehension of academic discourse. The outcomes disclosed that the DRTA had a significant impact on the Indonesian EAP learners' reading comprehension after the treatment.

The Third Research Question: This result of the study confirms the findings of Al-Khateeb and Idrees (2010) who examined the effects of using the KWL in acquiring religious concepts among the 8th grade students in Jordan. The outcome revealed that the participants in the experimental group who drew on the KWL strategy outperformed those in the control group in terms of their comprehension ability. Also, this upshot is commensurate with Usman, Fata, and Pratiwi's (2018) investigation that analyzed the effectiveness of teaching reading through the KWL strategy in boosting the Indonesian L2 learners' reading comprehension. The study indicated that the implementation of the KWL strategy significantly improved the participants' reading comprehension skill and helped them gain autonomy. Moreover, this outcome is in keeping with AlAdwani, AlFadley, AlGasab, and Alnwaiem (2022) who investigated the impacts of using the English metacognitive reading strategies on L2 reading comprehension in Kuwaiti primary school EFL learners. This experimental study sought to find a relationship between the L2 learners' metacognitive strategies and performance on L2 reading comprehension. The results showed that the KWL strategy was the most significant predictor of L2 reading comprehension among all of the research participants.

The Forth Research Question: This result of the study contradicts the findings of Adani, Yufriзал, and Munifatullah (2019) who explored and compared the impacts using the CM and DRTA strategies on the Indonesian eighth grade students' reading comprehension. The participants in one of experimental groups drew on the CM strategy to read the narrative texts assigned to them whereas those in the other experimental group used the DRTA to read the same passages. The independent samples t-test showed that the participants who utilized CM outperformed those who used the DRTA in terms of their reading comprehension ability.

The finding of this study concerning the more effectiveness of KWL in comparison with CM in enhancing the participants' reading comprehension is line with DolatiMiandoab, Dortaj, and Farroki's (2019) investigation that compared the impacts of using the KWL and CM strategies on developing the Iranian secondary school EFL learners' critical thinking. The results of this research indicated that there was a statistically significant difference between the impacts of the strategies of the KWL and CM on the participants' critical thinking. That is, the participants in both experimental groups outperformed those in the control group in terms of their critical thinking ability. However, the effectiveness degree of the KWL strategy was significantly more than the effectiveness of the CM in increasing the participants' critical thinking ability.

Implications

First, L2 teachers should use different activities and strategies to improve reading comprehension of their EFL learners. Second, based on the results of this research, educational authorities are required to educate L2 teachers to enable them to utilize a variety of activities and strategies of instructing L2 reading comprehension.

Also, L2 teachers in EFL settings may use DRTA, KWL, and CM strategies to improve their L2 learners' reading comprehension performance. One of the main goals of L2 teaching and learning is to develop L2 learners' abilities in communicative skills. Thus, using DRTA, KWL, and CM may help L2 learners to achieve the interactional competence. Teaching reading skill is very important particularly in the EFL context of Iran. Therefore, Iranian EFL teachers should pay special attention to this vital skill in their teaching and enhance their L2 learners' abilities in reading. Moreover, L2 teachers should encourage their L2 learners to use the strategies and activities of DRTA, KWL, and CM to develop Iranian EFL learners' reading comprehension performance. Furthermore, L2 material developers are recommended to design L2 classroom activities and exercises in accordance with DRTA, KWL, and CM to promote teaching and learning reading.

Limitations

First, the selection of the participants of this study was limited to the availability sampling of 69 Iranian secondary EFL students. Thus, the findings of this investigation may lack generalizability to other age groups of L2 learners with different English proficiency levels. Second, due to time restrictions, it was not possible to conduct a perception-based study to analyze the participants' attitudes toward the use of DRTA, KWL, and CM to develop their reading skill.

Suggestions

Future research in this domain may investigate the effectiveness of CM, DRTA, and KWL reading strategies in enhancing reading comprehension of L2 learners in non-Iranian educational contexts. Also, it is recommended to use other data collection instruments such as questionnaires or interviews to gather relevant information regarding the possible impacts of the aforementioned strategies on the L2 reading comprehension performance. Moreover, the analysis and comparison of the effects of using CM, DRTA, and KWL in developing the reading comprehension of other age groups of L2 learners with different levels of proficiency in English are worth considering. Furthermore, upcoming studies may consider the role of utilizing the reading strategies in boosting L2 reading comprehension in EAP settings.

References

- [1]. Adani, U. S., Yufrizal, H., & Munifatullah, F. (2019). A comparative study of students' reading comprehension in narrative text through mind mapping technique and directed reading thinking activity (DRTA) technique at the second grade of SMP Negeri 25 Bandar Lampung. *U-JET: Unila Journal of English Teaching*, 8(4), 1-8.
- [2]. Aksan, N., & Kisac, B. (2009). A descriptive study: Reading comprehension and cognitive awareness skills. *Procedia - Social and Behavioral Sciences*, 1(1), 834-837.
- [3]. AlAdwani, A., AlFadley, A., AlGasab, M., & Alnwaieem, A. F. (2022). The effect of using KWL (Know-Want-Learned) strategy on reading comprehension of 5th grade EFL students in Kuwait. *English Language Teaching*, 15(1), 79-91.
- [4]. Alavi Moghaddam, S. B., Kheirabadi, R., Foroozandeh Shahraki, E., Khadir Sharabyan, S., & Nikoopour, J. (2014). *Prospect 2: English for schools*. Iran's Textbooks Printing and Publishing Company.
- [5]. Al-Khateeb, O. S. M., & Idrees, M. W. K. (2010). The impact of using KWL strategy on grade ten female students' reading comprehension of religious concepts in Ma'an city. *European Journal of Social Sciences*, 12(3), 471-489.
- [6]. Anderson, R. C., Hiebert, E. H., Scott, J. A. & Wilkinson, I. A. G. (1985). *Becoming a nation of readers*. National Institute of Education.
- [7]. Ausubel, D. P. (1963). *The psychology of meaningful verbal learning*. Grune and Stratton.
- [8]. Beydarani, V. (2015). The influence of concept mapping on reading comprehension of Iranian English students employing persuasive and descriptive texts. *Journal of English Language Teaching and research*, 6(1), 196-203.
- [9]. Blachowicz, C. & Ogle, D. (2008). *Reading comprehension: Strategies for independent learners* (2nd ed.). Guilford Press.
- [10]. Dolati Miandoab, A., Dortaj, F., & Farroki, N. (2019). Comparison of effect of kwl educational strategy and concept mapping strategy on students' critical thinking. *Iranian Journal of Educational Sociology*, 2(3), 27-35.
- [11]. Fahim, M., & Hoominian, Z. (2014). The relationship between critical ability and reading strategies used by Iranian EFL learners. *ELT Voices*, 4(6), 70-78.
- [12]. Fahim, M., & Sa'eeppour, M. (2011). The impact of teaching critical thinking skills on reading comprehension of Iranian EFL learners. *Journal of Language Teaching and Research*, 2(4), 867-874.

-
- [13]. HabibollahiAghdam, M., Behroozizad, S. (2018). Directed reading-thinking activity and reading comprehension. *The Journal of English Language Pedagogy and Practice*, 11(22), 111-126.
- [14]. Hanafi, M., & Septiana, A. R. (2022).DRTA strategy on students' reading comprehension. *Journal Eduscience (JES)*, 9(1), 543-554.
- [15]. Hamed, F., Tabatabaee Lotfi, S. A., & Sarkeshikian, S. A. H. (2020). The effect of concept mapping and anticipation guides on EFL learners' reading comprehension.*Applied Linguistics Research Journal*, 4(4), 57-69.
- [16]. Hosseini, F., Bakhshipour Khodaei, F., Sarfallah, S., & Dolatabadi, H. R. (2012).Exploring the relationship between critical thinking, reading comprehension and reading strategies of English university students. *World Applied Sciences Journal*, 17(10), 1356-1364.
- [17]. Kao, G.Y.M., Lin, S.S.J. & Sun, C.T. (2008). Breaking concept boundaries to enhance creative potential: Using integrated concept maps for conceptual self-awareness. *Computers & Education*, 51(4), 1718-1728.
- [18]. Khodadady, E., & Ghanizadeh, A. (2011).The impact of concept mapping on EFL learners' critical thinking ability.*English Language Teaching*, 4(4), 49-60.
- [19]. Marzban, A., & Davaji, D. (2015).The effect of authentic texts on motivation and reading comprehension of EFL students at intermediate level of proficiency. *Theory and Practice in Language Studies*, 5(1), 85-91.
- [20]. Nanda, D. W., & Pratama, D. (2021).Exploring the application of KWL strategy towards students' reading comprehension: Teachers' perceptions.*Journal of English Language Studies*, 6(2), 185-194
- [21]. Nerim, N. (2022). Scrutinizing directed reading thinking activity (DRTA) strategy on students' reading comprehension. *JOLLT Journal of Languages and Language Teaching*, 8(2), 128-138.
- [22]. Nour Elhouda, T. (2020).*The effect of concept mapping and summarization on L2 readers' comprehension monitoring and metacognitive accuracy: A mixed methods study* [Doctoral dissertation, Lancaster University]. Library of Lancaster University.
- [23]. Novak, J. D., & Cañas, A. J. (2007).The theory underlying concept maps and how to construct and use them. *Reflective Education*, 3(1), 29-42.
- [24]. Nunan, D. (1999). *Second language teaching and learning*. Heinle and Heinle Publishers.
- [25]. Ogle, D. M. (1986). KWL: A teaching model that develops active reading of expository text. *Reading Teacher*, 39(6), 564-570.
- [26]. Oliver, K. (2009). An investigation of concept mapping to improve the reading comprehension of science texts.*Journal of Science Education and Technology*, 18, 402-414.
- [27]. Purwandari, D. (2021). Directed reading thinking activity and students' reading comprehension: An experimental research.*Research and Innovation in Language Learning* 4(3), 231-252.
- [28]. Rassaei, E. (2017). Effects of two forms of concept mapping on L2 reading comprehension and strategy awareness. *Applied Linguistics Review*, 10(2), 93-116.
- [29]. Sahraee, R. M., Hosseini, Z. S., & Sedighifar, Z. (2022).The effectiveness of concept mapping instruction on improving reading skills and motivation of Persian language learners. *Journal of Zabanpazhuhi*, 13(41), 170-135.
- [30]. Salehi, A., Jahandar, S., & Khodabandehlou, M. (2013).The impact of concept mapping on EFL students' reading comprehension.*Indian Journal of Fundamental and Applied Life Sciences*, 3(3), 241-250.
- [31]. Shanhan, T. (1988). The reading-writing relationship: Seven instructional principles.*The Reading Teacher*, 41(7), 636-647.
- [32]. Stauffer, R. G. (1969). *Directing reading maturity as a cognitive process*. Harper and Row.
- [33]. Taheri, F. & Mohamadi, Z. (2015). The effects of using K.W.L chart on Iranian high school learners' reading comprehension. *English Language Teaching*, 2(2), 63-76.
- [34]. Tankersley, K. (2005). *Literacy Strategies for Grades 4-12: Reinforcing the Threads of Reading*. Association for Supervision and Curriculum Development.
- [35]. Usman, B., Fata, I. A., & Pratiwi, R. (2018).Teaching reading through know-want-learned (KWL) strategy: The effects and benefits. *Englisia: Journal of Language, Education, and Humanities*, 6(1), 35-42
- [36]. Utomo, A. C., & Syamsi, K. (2019).The effect of PBL and DRTA on critical thinking and reading comprehension to students in elementary school.*Advances in Social Science, Education and Humanities Research*, 326, 95- 101.
- [37]. Wijaya, P. A., Sutarto, J., & Zulaeha, I. (2021).The influence of direct reading thinking activity (DRTA) strategy and know-want to know-learned (KWL) strategy on reading comprehension skills.*Journal of Primary Education*, 10(3), 284-296.
-