The Effects of Using K.W.L Chart on Iranian High School Learners' Reading Comprehension

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Abstract

This study aims to determine the effectiveness of K.W.L (what I know, what I want to know, and what I have learned) chart on the performance of Iranian high school students in reading comprehension. To achieve this aim, a sample was selected from a private high school. The participants were 80 intermediate students as their proficiency was measured using PET (Preliminary English Test). The participants were divided into two groups: an experimental group and a control group. The students in the experimental group were taught reading comprehension with the K.W.L strategy, while the control group was taught with a conventional reading and comprehension check strategy. To collect the data, pre and post reading comprehension tests were administered. Data were analyzed using a series of t-test. The findings indicate that the experimental group scored higher on the reading comprehension post-test than their peers did in the control group. To investigate if the results were long-lasting and not due to the present research context, a delayed post-test was administered confirming the permanent effect of K.W.L strategy. The results of the study suggest that the strategy can be useful for students' reading comprehension. Implications for language teachers, materials developers, and test designers were discussed.

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1. Introduction

Nunan (2003) stated "Reading is a fluent process of readers combining information from a text and their own background knowledge to build meaning. The goal of reading is comprehension" (p. 68). He believed that strategic reading could be the ability of the reader to make use of different reading strategies for reading purposes. He also cited that to create the meaning, the reader's background knowledge embodies with all the text. Nunan (2003) believed that "the text, the reader, fluency, and strategies combined together define the act of reading" (p. 68).

Nunan (2003) explained that the reader's background knowledge can affect reading comprehension. Background knowledge includes the different experiences that a reader brings to a text, such as educational experiences, life activities, knowledge of how texts may be organized rhetorically, knowledge of how one's first or second language works, and also cultural background and understanding.

Recently, Riswanto (2014) explained that there are numerous teaching strategies teachers use the in classrooms to encourage students to develop effective reading skills. He believed that the vast majority of teaching and learning strategies usually target a particular strategy or skill. K.W.L strategy is certainly one of teaching and learning methods used mainly for specific texts(Ogle, 1986). Its aims are definitely more different. It helps readers remember prior knowledge of the main topic of the text; set a reason for reading; monitor their particular comprehension; estimate their comprehension with the text; and develop ideas beyond the written text.

2. Literature Review

K.W.L strategy was coined by Ogle (1986). The K.W.L strategy involves three steps: What I know? What I want to know? And What I have learned? The K.W.L strategy allows the learner to get started by brainstorming (generating) any prior knowledge they will often have on the topic which in turn helps them to be interested in the subject and sets them thinking about learning more about the idea. This can be done individually or in the group. Ogle (1986) believed that after producing what is known, learners generate what they wish to learn about the subject giving them the self-motivation to learn to read and make up their own questions and it is an excellent way to ascertain a purpose for understanding. After learning, students generate what they have learned.

Kumari and Jinto (2014) explained that K.W.L strategy is a metacognitive strategy. They asserted that metacognition has been used in both education and psychology. This chart also has appeared as an important part in cognitive psychology. They mentioned, "Metacognition is thinking

about thinking and developing the process of solving problems and answering questions" (p. 94).

Violet (2010) believed that the K. W. L chart is among the simplest strategies for organizing students' thinking of a topic or an issue; therefore, it is especially effective in talk with younger children. The K. W. L chart is usually used as a group technique to record the collective consideration of the class about the overall topic. It is also used to guide independent learning by giving a structure for students to think on prior knowledge, pose issues for further study, and think on what has been realized.

Ogle (1986) explained that there are some purposes when a teacher uses K.W.L charts. The most important aims are eliciting students' prior knowledge of the topic of the text, setting a purpose for reading, and helping students to monitor their comprehension.

To reach to these aims, Ogle (1986) suggested the following steps to use a K.W.L chart: (1) on the chalkboard, on an overhead, on a handout, or on students' individual clear sheets, three columns should be drawn; (2) label column1 K, column 2 W, column 3 L; (3) prior to reading (or seeing or listening), students add the known line with words, terminology, or phrases using their background or earlier knowledge. If you are having them draw on the topic previously discovered, then the K column can be topic-related. However, in the event the topic is something new, and they do not recognize anything (or much) about it, you should make use of the K column to get them to bring in your thoughts a similar, corresponding, or broader concept; (4) Then have individuals predict what some might learn about the topic, which might comply with a quick go through the topic headings, photographs, and charts which are found in the actual reading. This aids in setting their objective for reading along which focuses their attention on key ideas; (5) on the other hand, you may ask students to put in the second column what they need to learn about the topic; (6) after reading, students should add their new knowledge gained from reading this article. They can also clear up misperceptions about the topic which might show up in the known column before they actually understand anything. This is the stage of metacognition: did they get it or not?; and (7) vary K. W. L. H technique.

Ogle (1989) stated that H in K. W. L. H strategy stands for how we can find out more about a topic (other sources where additional information on the topic can be found). Students complete three first columns from the chart, then ask themselves how you can learn more around the topic or maybe just how you can find a specific question in the second column. They write the actual sources for additional information in the fourth column on this chart. They will use the resources in the H column to try and do a research task.

A teacher has many reasons for using K.W.L chart within the classroom. First, a K.W.L chart activates students' prior expertise in the text or topic for being studied. By asking students what they already know, students are thinking about prior experiences or knowledge about the topic. Next, K.W.L charts set a reason for the unit. Students will be able to add their input to the topic by asking them what they wish to know. Students try to develop their ideas beyond the written text used in the classroom. By being aware of students' interests, the teacher has the ability to create projects and coursework that these students will enjoy. The K.W.L chart can be utilized as a study instrument. This may work like a study tool for someone, group or entire type. It is a solution to synthesize information into the visual aid. The students are also able to keep track of what they have done and what they still would like or need to do.

Based on the background above, in this study, the researchers were interested in investigating the effects of using K.W.L chart and recalling prior knowledge on Iranian high school learners' reading comprehension. The researchers intended to find out whether there is a significant difference in reading comprehension between the students who are taught using K.W.L strategy and that of those who are not. The following research questions are set to find the answers.

1. Is there any statistically significant difference between students' performance in pre-test and post-test of the group which does not use K.W.L chart?
2. Does K.W.L chart make a significant difference between students' performance in pre- test and post-test of experimental group after receiving the treatment?
3. Does K.W.L chart make a significant difference between post-test of control and post- test of experimental group after receiving the treatment?

3. Method

3.1 Participants

From among 116 first-grade high school female students in a private high school in Iran aged between 14 to 15 years old, 80 intermediate participants were selected as their proficiency was tested using Preliminary English Test (PET). The PET sample test for reading included 35 questions in five different parts which test a range of reading skills with a variety of texts, ranging from very short notices to longer continuous texts. Its task types were matching, multiple choice, true/false, and a cloze passage. The students spent approximately 50 minutes to answer all the questions. As the results of the PET showed, only 80 students got marks in the range of 10-20 out of 35.

These 80 students were randomly separated into two groups. The number of the students in the control group was 36, and the rest of them were 44 set as experimental group.

3.2 Data Collection Procedure

Before starting the research, a questionnaire was given to participants to ensure topic familiarity. According to the results of the topic familiarity questionnaire, most of them preferred to have topics about "movies", "travel", "describing people" and also "men and women differences". Therefore, the researchers tried to find some texts in these fields.

"Pre-test", "post-test and "10 reading texts" which were more related to the topics chosen by the students before were designed. All of the 10 texts were chosen from different sites and their text difficulties were examined to be at intermediate level. The reliability issues related to test were not controlled by the researchers and considered as limitations of the study.

In this quantitative study, the quasi-experimental method was employed. The experiment lasted for 10 sessions during 5 weeks, and all of the students were taught by the same teacher. Whereas the teacher was the same in four classes, treatment was different in control and experimental groups. In control group, each session lasted for about 30 minutes. At first, the teacher introduced the topic to them and spoke a little bit about it, and then it was the students' duty to read the text in small groups while the teacher was monitoring the class to solve their probable problems. In the next step, one or two students voluntarily explained the story for others; at last they answered related questions following each text. At the same time, in experimental group, the same texts were taught by the same teacher. This time something new was added to teaching method: K.W.L chart.

At first, the chart was introduced to the students; then the teacher drew the chart on the board and told them to draw the same chart in their notebooks. The first step was introducing topics to the class; then the teacher asked them to write everything they knew about the topic in the first column (they were told to write the information in phrases, not complete sentences or paragraphs). The students had to complete the first column in about 10 minutes. Then they shared their knowledge to the other students in class. Next step was related to the second column. This time they were told to think about what they wanted to learn in this lesson. These two columns (what I know, and what I want to know) had to be completed before starting reading. Now that everybody knew something about the topic, it was time to teach them the lesson. When teaching ended, and the students answered related questions, it was time to complete the third column of the chart (what I have learned). By the time this column was completed, they had written the summary of the text. Teaching with this strategy needed about 45 minutes for

each text. The results of all pre- test, post test1, and post test2 were compared to see the effects of the used chart on students' learning.

4. Results and Discussion

In this part, we seek to explore if application of K.W.L chart affects students' reading comprehension. The related analysis is explained in the following parts. The descriptive statistics of pretest and post-tests of control and experimental group are displayed in Table 1.

Table 1
Descriptive Statisticd of Pretest and Postest

	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	*Statistic*	*Statistic*	*Statistic*	*Statistic*
Pre-test control	36	2.00	8.00	5.4722	1.44393
Post-test control	36	5.00	10.00	7.0000	1.24212
Pre-test experimental	44	2.00	9.00	4.6136	1.74164
Post-test experimental	44	6.00	10.00	8.6364	1.14305
Valid N (list wise)	36				

4.1 Checking for the Assumptions of T-Test

To use any parametric tests, two general assumptions should be met: normality of data and homogeneity of variances. A descriptive table shows the exact number of the students in each group, the mean of them, skewness, and kurtosis. According to Plant (2011), when the skewness and kurtosis indexes are less than 1, there is no concern for normality of the data.

Table 2
Tests of Normality

	Group membership	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	*Sig.*	*Statistic*	*df*	*Sig.*
Reading scores	1. Pre- test control	.226	36	.050	.912	36	.007
	2. post- test control	.167	36	.053	.935	36	.056
	3. pre- test exp.	.138	44	.066	.949	44	.052
	4. post -test exp.	.188	44	.061	.879	44	.060
a. Lilliefors Significance Correction							

Table 2 indicates if normality assumption is violated. The results of the test show all the significant levels of the Kolmogrov Smirnov were greater than the research confidence interval, meaning that normality

assumption is not violated across all groups. Both Table 1 and Table 2 show that the data is statistically normal in all groups.

4.2 Control Group's Pre- test – Post- test Analysis

It is shown in Figure 4.1 that the entire test results have a normal curve; in the other words, they are bell-shaped. Therefore, the results are acceptable.
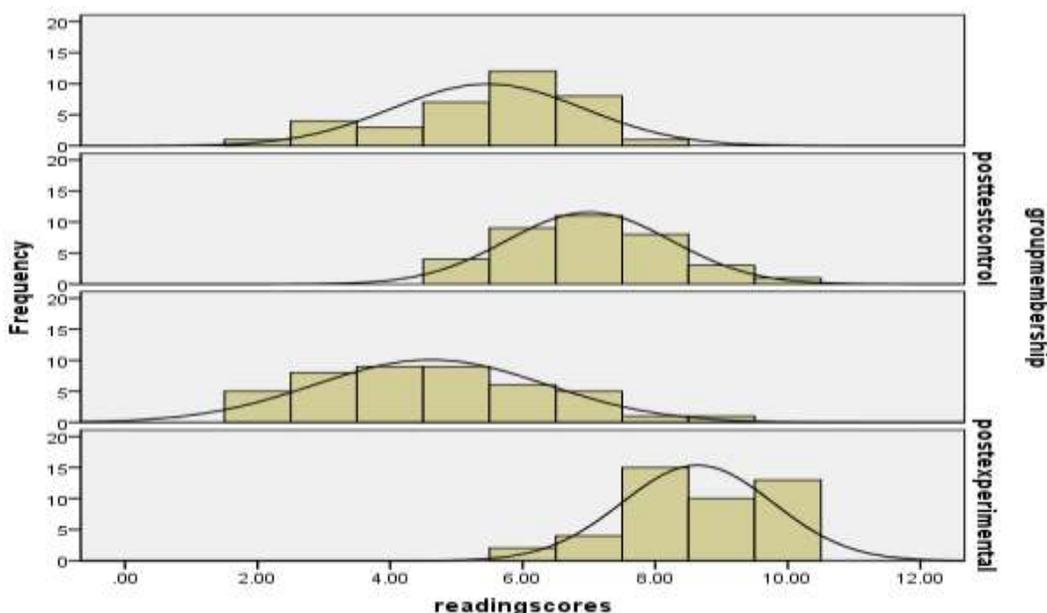

Figure 1. Histogram with normal curve on reading scores across the groups

To answer the first research question which investigates if there is any statistically significant difference between pre- test and post- test of the control group a paired sample t-test was used. The results are shown in Table 3 and Table 4.

Table 3
Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre- test control	5.4722	36	1.44393	.24065
	Post- test control	7.0000	36	1.24212	.20702

Table 3 indicates the descriptive statistics of this analysis. The mean score of pre- test and post- test are 5.4 and 7.00, respectively. The mean score of the post test is greater than that of pre -test. To see if this difference is significant, the results of the paired sample t-test in Table 4 should be studied.

Table 4
Paired Samples T-test

	Paired Differences			t	df	Sig. (2-tailed)
	Mean	*Std. Deviation*	*Std. Error Mean*			
Pair 1 Pre-test control post-test control	1.52778	1.52102	.25350	-6.027	35	.000

The results of Table 4 show that there is a statistically significant different in pre -test and post- test of control group since the significant level of the test (0.000) is smaller than the confidence interval (0.005). This investigation indicated the first null hypothesis is rejected and the first research question is answered.

4.3. The Effect of K.W.L Chart

To study the effect of K.W.L chart on students' reading comprehension, a paired sample t-test is used to compare the pre- test and post- test of experimental group. The results are shown in Table 5 and in Table 6.

Table 5
Paired Samples Statistics

	Mean	*N*	*Std. Deviation*	*Std. Error Mean*
Pretest experimental	4.6136	44	1.74164	.26256
Posttest experimental	8.6364	44	1.14305	.17232

The results of descriptive statistics in Table 5 show that there is mean difference between pre- test and post- test (4.61 < 8.63), meaning that participants had better performance in post- test. To investigate if this difference is statistically significant, a paired sample t-test was used.

Table 6
Paired Samples Test

	Paired Differences			t	df	Sig. (2-tailed)
	Mean	*Std. Deviation*	*Std.Error Mean*			
Pretest aiexperimental r –posttest 1 experimental	-4.02273	2.04016	.30757	-13.079	3	.000

As it is shown in Table 6, there is a statistically significant difference between students' performance in experimental group, since the sig. level of the test (0.000) is smaller than the research confidence interval (0.005). The second null hypothesis which says there is no statistically significant difference for the effect of K.W.L chart on participants' reading comprehension ability is rejected and the second research question is answered.

4.4. Cross-Checking the Effect of K.W.L Chart across the Groups

As it is shown in the following tables, there was a statistically significant difference in both groups, meaning that both the research treatment in experimental group affected reading comprehension scores. To see which approach affected the dependent variable more, an independent sample t-test is used to compare the post test of control and experimental group. The results are indicated in Tables 7 and 8.

Table 7
Group Statistics–Independent Group Statistics

	Group membership	N	Mean	Std. Deviation	Std. Error Mean
Reading scores	Post- test control	36	7.0000	1.24212	.20702
	Post- test experimental	44	8.6364	1.14305	.17232

The results of Table 7 show that there is mean difference between the post-test of control and experimental group. To investigate at which post-test students performed better, Table 8 is recalled.

As shown in Table 8, significance level is smaller than confidence interval (0.000 < 0.05), so it is concluded that there is a statistically significant difference between post-test of control and post-test of experimental group. In the other words, the third null hypothesis is rejected and the third research question is answered.

4.5. The Effect of Duration of the Effect of K.W.L Chart

To investigate the effect of K.W.L chart and see if it has long-lasting effect on reading comprehension scores, a paired sample t-test is used. The results are shown in Table 9 and Table 10.

Table 8
Independent Samples Test

| | | Leven's Test for Equality of Variances | | t-test for Equality of Means | | | | |
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Reading scores	Equal variances assumed	.030	.863	-6.126	78	.000	-1.63636	
	Equal variances not assumed			-6.075	72.122	.000	-1.63636	.26935

Table 9
Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	posttest2experimental	8.5227	44	1.19083	.17952
	Posttest experimental	8.6364	44	1.14305	.17232

Table 9 compares the first post test in experimental group with the second post- test in experimental group. The results show that the means in both tests are almost the same.

Table 10
Paired Samples Test

		Mean	Std. Deviation	Std. Error Mean	t	df	Sig.
Pair 1	Posttest2 experimental –post-test experimental	-.11364	.99337	.14976	-.759	43	.452

In Table 10, to see if the effect of K.W.L chart is still in students' performance after time interval (after 2 weeks of time interval), the post test of the same reading level was administered. A paired samples t-test is used to compare the mean of post-test of the first post test in experimental group with second post-test of experimental group. The results show that there is no significant difference. If sig. level is greater than research confidence interval which is 0.05, so we do not have significant results. It means that there is no

change in students' performance from post-test 1 to post- test 2. Therefore, we can see the results of using K.W. L chart in students' performance.

The same analysis was done for the control group. To investigate the long-lasting effect of placebo on control group, a delayed post-test was taken from the students. A paired sample t-test was used to compare the post test and delayed post-test in control group. The results are shown in Tables 11 and 12.

Table 11
Independent Samples Statistics

		Mean	*N*	*Std. Deviation*	*Std. Error Mean*
Pair 1	Post -test control	7.0000	36	1.24212	.20702
	Delayed Post-test control	6.6111	36	2.25867	.37644

The results of descriptive statistics in Table 11 show that there is a mean difference between post-test and delayed post-test in control group. The results show that the effect of placebo vanishes in post-test since the mean in delayed post-test decreases. To investigate if this result is significant, Table 12 is given. The sig. level of the test is (0.280) which is greater than research confidence interval (0.005), meaning that the effect of the mean difference is not significant, but as it is clear in Table 11, participants' mean score decreased in delayed post-test in control group whereas the effect of K.W.L is still present in experimental group as Table 9.

Table 12
Paired Samples Test

		Mean	*Std. Deviation*	*Std. Error Mean*	*t*	*df*	*Sig.*
Pair 1	Post- test control – post test2 control	.38889	2.12842	.35474	1.096	35	.280

To see if students perform better in second post-test in experimental group than in second post-test in control group, an independent paired sample test (Table 12) was used. The result of this test showed that there is a significant difference. Since the sig. level of the test is smaller than the research confidence interval (0.000 < 0.05), it shows that there is a significant difference.

To investigate in which delayed post-test participants performed better, an independent sample t-test is used.

Table 13
Group Statistics

	Group membership	N	Mean	Std. Deviation	Std. Error Mean
Reading delayed	postcontrol2	36	6.6111	2.25867	.37644
	post experimental 2	44	8.5227	1.19083	.17952

To see which group performed better, Table 13 is given. It shows that the mean of the second post-test of control group is 6.6 while the students in the second experimental group get 8.5.

Table 14
Independent Samples Test

		Levene's Test for Equality of Variances						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Reading delayed	Equal variances assumed	9.975	.002	-4.854	8	.000	-1.91162	.39382
	Equal variances not assumed			-4.584	0.600	.000	-1.91162	.41706

The last table (Table 14) which is an independent sample test shows sig. level is smaller than confidence interval (0.002 < 0.05). In the other words, better results in experimental group show that K.W.L chart affects students' performance and they still can benefit from the delayed effect of K.W.L table in their reading performance.

As all the above tables and figure show, K.W.L chart and anticipation guides are effective for building background knowledge and they can make active links between old and new information. In other words, it can be said that there is a relationship between learning new subjects with old information that we have, so the K.W.L chart can increase this relationship. However, it can be concluded that this chart is a suitable study tool, and it is helpful in teaching reading comprehension. The results of this study show that using study tools such as K.W.L chart can increase the students'

awareness of their prior knowledge and their ability in understanding reading comprehension.

5. Conclusion and Implications

The findings of this study offer several pedagogical implications for teaching reading comprehension in EFL contexts. Teachers can apply this strategy in the process of teaching reading and help the learners make significant progress. The insight gained from this experiment emphasizes two principles in reading instruction.

First, the teachers should bear in mind that the students' prior knowledge can help to understand new texts. Secondly, the responsibility of the teacher should be to develop the students' ability in problem solving and exploiting whatever knowledge or resources they may have. The pedagogical focus should not be so much on one aspect of learning such as vocabulary or translating but on comprehending. In short, students must be made conscious of what is involved in successful reading. They must activate their resources in the recreation of meaning and make a relation between their old knowledge and new ones. A study tool such as K.W.L strategy can be helpful. In K.W.L strategy, the instructor is not a direct teacher, but provides support for the learners to be able to learn on their own. The instructors in this strategy only help them to do the best. This strategy enables the students to be more active and participate in the process of learning.

Teachers nowadays are inspired to use a range of materials in their classes so as to accommodate the individual desires, interests, and talents of their students. However, this trend does not deny the importance of textbooks since using textbooks effectively provides them with a tool for independent learning. The K.W.L is one strategy, among others, that ought to be instructed and may be taught totally. The K.W.L helps to create textbooks as different materials significant. It encourages students to create connections between previous data and new data, thereby simplifying the construction of meaning. Teachers should consider the students' sometimes limited background knowledge. Considering this and other relevant factors, any teacher can engage in effective implementation of the K.W.L.

Teaching reading is usually difficult. Teachers should be aware of the progress that students are making and adjust instruction towards changing abilities on the students. It is also crucial to remember that the aim of reading is to recognize the text so that you can learn from them. Reading is an art that will allow everyone who learns it. They should be able to benefit from the particular store of knowledge in printed components and, ultimately, to bring about that knowledge. Good teaching enables students to learn to read and read to know.

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