The Impact of Semantic Mapping Instruction on Iranian EFL Learners' Reading Comprehension of Expository Texts

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Abstract

The current article was an attempt to investigate the effect of semantic mapping strategy instruction on reading comprehension performance of EFL learners. To this end, thirty homogeneous Iranian intermediate EFL learners attending a language school in Bonab, Iran, were randomly assigned to two groups, one as the experimental and the other as the control. The experimental group received instruction through semantic mapping strategy while the control one received conventional instruction by the same instructor. The study employed pre-test post-test control group design. After two months, on-line and off-line post-tests were administered for experimental and control groups. Analysis of gathered data from post-tests by using independent samples t-test and one-way ANOVA indicated that semantic mapping instruction promotes reading comprehension of expository texts. Furthermore, it was found that certain types of semantic maps were more effective not only on reading comprehension performance but also on faster reaction time.

Keywords: Expository Text, Semantic Mapping, Reading Comprehension

For successful learning and teaching in language classes, strategy-based instruction is essential. Through the use of specific learning strategies and learning tools students can be more successful learners (McKnight, 2010). Learning strategies are the conscious thoughts and actions that learners take in order to accomplish a learning goal (Chamot, 2004).The learning strategies of good language learners, once identified and successfully taught to less competent learners, could have considerable potential for enhancing the development of second language skills (O'Mally et al., 1985).

Background of the Study

Graphic Organizers

Graphic organizers are one type of advance organizers. As indicated by O'Mally et al. (1985), advance organizers are one kind of metacognitive strategies. Graphic organizer, originally called structured overview, was developed for translating Ausubel's (1968) cognitive theory of *meaningful reception learning* into practice (Griffin et al., 2001). Ausubel's learning theory suggests that meaningful learning produces a series of changes within our minds. Thus, these changes modify existing concepts and form new linkages between concepts. This results in meaningful learning. For mapping purposes, this means that concept mapping helps teachers and their students build upon your existing knowledge of a subject to understand it more completely (Whitely, 2005).

A graphic organizer is a visual and graphic representation that depicts the relationships between facts, terms, and ideas within a learning task (Hall & strongman, 2002). Graphic organizers have different types for different instructional purposes. "Two commonly used graphic organizers are semantic maps and concept diagrams"(Vaughn & Edmonds, 2006, p.135).

Semantic Mapping

Semantic mapping strategy falls under the broad category of graphic organizers **(**Baleghizadeh & Yousef poori Naeim, 2011). Avery et al. (1997) define semantic mapping as "a graphic representation or picture of one's thoughts, ideas, and attitudes toward a key concept". In addition, Sinatra et al. (1984) defines this strategy as "a graphic arrangement showing the major ideas and relationships in text or among word meanings" (p. 22). Semantic mapping diagram represents the message of the text. It is an excellent strategy to reading comprehension (Schmidt, 1986). Stahl &Vancil (1988) mentioned that semantic mapping represents a diagram of the relationships between words according to their use in a particular text.

Applied research on language learning strategies indicated that semantic maps are frequently used graphic organizers that help students analyze texts and group the ideas into meaningful clusters. For instance, Kim et al. (2004) reviewed previous research studies examining the effects of graphic organizers on reading comprehension. Their findings indicated that certain types of graphic organizers were more effective than others: Semantic organizers, cognitive maps were found to be highly effective in improving reading comprehension.

Research findings have provided evidence of the superior effects of semantic mapping strategy used to facilitate EFL learning. Semantic mapping with interactive perspective was investigated on reading comprehension by Scanlon et al. (1992). They found that students who participated in the interactive semantic mapping strategy reflected greater recall and comprehension of content area concepts. Considering Communicative Language Teaching activities, Zaid (1995) indicated that semantic mapping can become an effective technique in EFL classes. The study showed how semantic mapping can become an effective technique in the CLT classroom. With regard to effective methods in language teaching, the findings of El-Koumy (1999) revealed that the teacher-student interactive semantic mapping method was significantly better than the teacher-initiated and student-mediated semantic mapping methods. Baleghizadeh and Yousef poori Naeim (2011) proposed this strategy for private teachers running a single learner classes because they believed that the number of words presented to private learners are high and private teachers have more time to devote to a single learner.

It seems that informing students about expository texts is of vital importance for students. In this line, Dymock (2005) states students encounter different common expository text structures during their first six years at school and beyond. In a number of studies, researchers provided common expository texts along with their appropriate visual representations (Moss, 2004; Dymock, 2005; Whiteley, 2005; Jiang & Grabe, 2007; McKnight, 2010).

Based on Hall & Strangman's (2002) view, a descriptive or thematic map works well for mapping generic information, but particularly well for mapping hierarchical relationships, network tree aims to organize a hierarchical set of information, reflecting supper ordinate or subordinate elements, a spider map can help with organization when the information relating to a main idea or theme does not fit into a hierarchy, a problem-solution outline helps students to compare different solutions to a problem, a fishbone map may be particularly useful when cause-effect relationships are complex and non-redundant, a compare-contrast matrix can help students to compare concepts' attributes, a series of events chain can help students organize information according to various steps or stages. Whiteley (2005) states mind maps expand on spider maps. These maps have a tree structure with one trunk with many branches. They are examples of organic thinking. That is, like a tree, a central idea (the trunk) branches off in many directions.

Thus, along with the same line of research, the aim of this study is to find out the possible effects of instruction on eight types of semantic maps, descriptive or thematic map, network tree, problem-solution outline, compare-contrast matrix, series of events chain, spider map, fishbone map, and mind map, to examine EFL learners' reading comprehension performance and to investigate whether certain types of the eight different semantic maps are more effective on comprehension and reading speed of EFL learners.

Research Questions

The research questions to be investigated were as follows:

1. Does semantic mapping instruction have significant impact on Iranian intermediate EFL learners' reading comprehension of expository texts?
2. Are certain types of semantic maps more effective on comprehension of expository texts in Iranian intermediate EFL learners?
3. Do certain types of semantic maps demand more reaction times in processing texts by Iranian intermediate EFL learners?

Methodology

Participants

The participants in this study were 60 female Iranian intermediate EFL learners, with the age range of 15-26, attending in a language institute (ZabanSara institute) in Bonab, Iran. In order to ensure in objective terms that these learners were truly homogenous in English language proficiency, the Shiraz University Placement Test was administered. Based on the results, the participants whose scores were between120-140 were selected. Hence, 30 students met this homogeneity criterion and were thus selected to be served as the participants of this study. Later, they were randomly assigned to two groups: experimental and control, each with 15 subjects.

Instructional Materials

Twenty expository reading passages constituted the instructional reading material for the experimental and control groups. The passages were adopted from the five books: "*Active Skills for Reading"* by Anderson (2007), "*Developing Reading Development 1: Facts and Figures*" by Ackert & Lee (2005), "*Developing Reading Skills",* Beginning, by Markstein (1987), and *Select Readings*", pre-intermediate and intermediate, by Lee & Gunderson (2002) and (2001), respectively. The selected passages were checked for difficulty indexes on the basis of readability formula.

Procedure

The research design was pre and post-test with control group. The 20 study sessions consisted of the following phases:

General English proficiency test. In this study, the Shiraz University Placement Test was utilized to establish the homogeneity among subjects in terms of general language proficiency. Thus, based on the obtained scores participants were assigned into two homogeneous groups, namely the experimental and control.

Semantic mapping instruction: offline and online. For the experimental group, an explicit introduction was made in the eight kinds of semantic maps: descriptive or thematic map (De)**,** network tree (Ne), problem-solution outline (Pr), compare-contrast matrix (Co)**,** series of events chain (Se)**,** spider map (Sp)**,** fishbone map (Fi), and mind map (Mi)**.** Then the following steps offered by Scanlon et al., (1992) were applied while presenting semantic mapping instruction with an interactive aspect: 1) *Brainstorm:* asking students to think of all they already know about the concept; 2) *Clue List:* skimming the text; 3) *Develop Map:* writing the superordinate concept (topic) and subordinate ideas in the map; 4) *Read:* reading the text for details; and 5) *Review:* suggesting modifications to the map. The second phase of instruction followed by speeded computer-based reading . The reading passages along with comprehension questions were presented to the participants on the screen.

Reading instruction: conventional training. The participants in the control group studied the same expository texts with exactly the same time interval except the method of instruction which was designed according to traditional grammar translation method of teaching.

Post-testing. The online and offline posttests were used for testing the effect of the treatment. The test included eight expository texts being appropriate for the eight semantic maps. Each had four multiple-choice questions. After responding the questions, the test output was appeared on the screen. The total correct/wrong answers along with their reaction times (RT) were indicated on the screen. Both offline and online posttests were also administered for the control group.

Data Analysis and Results

The first research question formulated whether semantic mapping instruction has significant influence on reading comprehension of expository texts by Iranian intermediate EFL learners. To investigate the impact of semantic mapping instruction on the participants reading comprehension, independent samples t-test was run. The descriptive statistics along with the results of the t-test for the two groups are presented in Tables1and 2 respectively.

Table 1. *Independent samples t-test descriptive statistics for EG and CG*

	group	N	Mean	Std. Deviation	Std. Error Mean
Reading comprehension	*experimental*	*15*	24.6000	3.31231	.85524
	control	*15*	12.9333	2.01660	.52068

Table 2. *The results of Independent Samples t-test for EG and CG*

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Reading comprehension	Equal variances assumed	5.243	.030	11.652	28	.000	11.66667	1.00127	9.61566	13.71767
	Equal variances not assumed			11.652	23.125	.000	11.66667	1.00127	9.59600	13.73733

Given the information in table 1, one can clearly see that the mean score obtained by experimental group (24.60) is higher than the mean score obtained by control group (12.93). However, independent samples t-test was run to ensure that the difference was significant.

Table 2 shows that there is a significant difference in the scores obtained from the two groups because the probability value is substantially smaller than the critical value (0.000<0.05).Accordingly, it can be claimed that semantic mapping instruction was shown to exert a positive effect on the comprehension of expository texts.

The second research question asked whether certain types of semantic maps are more effective on comprehension of expository texts. First, the mean score in eight different semantic maps were analyzed for the probable significance. The descriptive statistics of comprehension scores in eight semantic maps are shown in table 3.The information in table 3 demonstrates that participants in experimental group outperformed in certain types of semantic maps. That is, participants of experimental group had the highest comprehension score in mind mapping questions (3.6). In addition, the participants got high scores in spider map, descriptive or thematic map (3.46), fishbone, network tree (3.2), and series of events chain (3.13).

Table 3. *Descriptive statistics for the correct answers on post-test of EG*

strategy	Mean	N	Std. Deviation
spider.map	3.4667	15	.63994
fishbone.map	3.2000	15	.94112
mind.mapping	3.6000	15	.63246
descriptive	3.4667	15	.74322
network tree	3.2000	15	.56061
problem.solution	2.4667	15	1.12546
compare.contrast	2.0667	15	1.09978
Series of events	3.1333	15	.74322
Total	3.0750	120	.95409

Having gained some rudimentary information about the differences in the performance of members in eight semantic maps (eight sets of scores), the researchers had to determine whether the differences were significant at the critical level of p<0.05. Therefore, one-way ANOVA was used. The results of ANOVA can be seen in Table 4.

Table 4. *The results of one-way ANOVA on the post test for correct answers of EG*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	30.058	7	4.294	6.145	.000
Within Groups	78.267	112	.699		
Total	108.325	119			

Given the information in table 4, one can conclude that the comprehension scores on the eight maps differed significantly because the probability value (0.000) is substantially smaller than the specified critical value (0.00<0.05). It should be determined where the observed differences lie, therefore a post Hoc Test was run. The test indicates where the differences among the comprehension scores on eight maps occur. Table 5 reveals the results of the Post-Hoc test.

Table 5. *The results of the Post-Hoc Test for comprehension (correct answers) of eight maps*

					95% Confidence Interval	
(I) strategy	(J) strategy	Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
spider.map	fishbone.map	.26	.30	.38	-.33	.87
	mind.mapping	-.13	.30	.66	-.73	.47
	descriptive	.00	.30	1.00	-.60	.60
	network tree	.26	.30	.38	-.33	.87
	problem.solution	1.00*	.305	.00	.39	1.60
	compare.contrast	1.40*	.30	.00	.79	2.00

	Series of events	.33	.30	.27	-.27	.93
fishbone.map	spider.map	-.26	.30	.38	-.87	.33
	mind.mapping	-.40	.30	.19	-1.00	.20
	descriptive	-.26	.30	.38	-.87	.33
	network tree	.00	.30	1.00	-.60	.60
	problem.solution	.73*	.30	.01	.12	1.33
	compare.contrast	1.13*	.30	.00	.52	1.73
	Series of events	.066	.30	.82	-.53	.67
mind.mapping	spider.map	.133	.30	.66	-.47	.73
	fishbone.map	.40	.30	.19	-.20	1.00
	descriptive	.13	.30	.66	-.47	.73
	network tree	.40	.30	.19	-.20	1.00
	problem.solution	1.13*	.30	.00	.52	1.73
	compare.contrast	1.53*	.30	.00	.92	2.13
	Series of events	.46	.30	.12	-.13	1.07
descriptive	spider.map	.00	.30	1.00	-.60	.60
	fishbone.map	.26	.30	.38	-.33	.87
	mind.mapping	-.13	.30	.66	-.73	.47
	network tree	.26	.30	.38	-.3381	.87
	problem.solution	1.00*	.30	.00	.39	1.60
	compare.contrast	1.40*	.30	.00	.79	2.00
	Series of events	.33	.30	.27	-.27	.93
network tree	spider.map	-.26	.30	.38	-.87	.33
	fishbone.map	.00	.30	1.00	-.60	.60
	mind.mapping	-.40	.30	.19	-1.00	.20
	descriptive	-.26	.30	.38	-.87	.33
	problem.solution	.73*	.30	.01	.12	1.33
	compare.contrast	1.13*	.30	.00	.52	1.73
	Series of events	.06667	.30	.82	-.53	.67
problem.solution	Spider map	-1.00*	.30	.00	-1.60	-.39
	Fishbone map	-.73*	.30	.01	-1.33	-.12
	Mind mapping	-1.13*	.30	.00	-1.73	-.52
	descriptive	-1.00*	.30	.00	-1.60	-.39
	Network tree	-.73*	.30	.01	-1.33	-.12
	compare contrast	.40	.30	.19	-.20	1.00
	Series of events	-.66*	.30	.03	-1.27	-.06
compare.contrast	spider.map	-1.40*	.30	.00	-2.00	-.79
	fishbone.map	-1.13*	.30	.00	-1.73	-.52
	mind.mapping	-1.53*	.30	.00	-2.13	-.92
	descriptive	-1.40*	.30	.00	-2.00	-.79
	network tree	-1.13*	.30	.00	-1.73	-.52
	problem.solution	-.40	.30	.19	-1.00	.20
	Series of events	-1.06*	.30	.00	-1.67	-.46
Series of events	spider.map	-.33	.30	.27	-.93	.27
	fishbone.map	-.06	.30	.82	-.67	.53
	mind.mapping	-.46	.30	.12	-1.07	.13
	descriptive	-.33	.30	.27	-.93	.27
	network tree	-.06	.30	.82	-.67	.53
	problem.solution	.66*	.30	.03	.06	1.27
	compare.contrast	1.06*	.30	.00	.46	1.67

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

As indicated by the Post-Hoc Test, comprehension scores in compare-contrast matrix and problem-solution outline is significantly different from the other six semantic maps and there seem to be no significant difference among other six maps-mind mapping, spider map, fishbone, network tree, descriptive or thematic map, and series of events chain. As a result, it can be claimed that certain types of semantic maps lead to improving reading comprehension of EFL learners.

The third research question asked whether certain types of semantic maps demand more RT for processing reading passages.The descriptive statistics of the scores obtained from the on-line post-test demonstrates that certain types of semantic maps require more time for processing texts. In fact, one can see in Table 6 that the mean scores obtained by EG in series of events chain (188418.16 ms) exceeds the mean score of problem-solution (174442.62 ms) which is, in turn, higher than the mean score belonging to compare-contrast matrix (156458.91 ms).

Table 6. *Descriptive statistics for total RT (wrong and correct) of EG on the eight semantic maps*

strategy	**Mean**	**N**	**Std. Deviation**
Spider map	93003.841133	15	43344.6458743
fishbone.map	124503.217067	15	43975.5189474
Mind mapping	115548.423067	15	32874.4408541
descriptive	118283.565800	15	55089.6691691
Network tree	109332.270133	15	36180.9897852
Problem solution	174442.620533	15	65939.6985246
Compare contrast	156458.912667	15	58573.4146295
Series of events	188418.168867	15	77515.3922135
Total	134998.877408	120	61031.0660934

Some rudimentary information about the differences in the RT of the members in the eight maps is presented in Table 6. In order to determine whether the observed differences were significant at the critical level of $p<0.05$, the one-way ANOVA was conducted. Table 7 provides the results of the ANOVA.

Table 7.*The results of one-way ANOVA*

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	120903017818.897	7	17271859688.414	6.001	.000
Within Groups	322347114572.151	112	2878099237.251		
Total	443250132391.048	119			

The information in table 7 indicates that the eight maps differ significantly because the significant value is observed to be 0.000 which is less than the critical value (0.05). Although the information presented in Table 7 is revealing, it does not show where the observed differences lie. Therefore, a post hoc test had to be run. The results of the Post Hoc Test are provided in Table 8.

Table 8.*The results of the Post-Hoc Test*

(I) strategy	**(J) strategy**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**95% Confidence Interval**	
					Lower Bound	**Upper Bound**
spider.map	fishbone.map	-31499.37	19589.45	.11	-7.031336E4	7314.608857
	Mind mapping	-22544.58	19589.45	.25	-6.135857E4	1.626940E4
	descriptive	-25279.72	19589.45	.20	-6.409371E4	1.353426E4

	network tree	-16328.42	19589.45	.40	-5.514241E4	2.248556E4
	Problem solution	-81438.77*	19589.45	.00	-1.202528E5	-4.262479E4
	Compare contrast	-63455.07*	19589.45	.00	-1.022691E5	-2.464109E4
	Series of events	-95414.32*	19589.45	.00	-1.342283E5	-5.660034E4
fishbone.map	spider.map	31499.37	19589.45	.11	-7.314609E3	7.031336E4
	Mind mapping	8954.79	19589.45	.64	-2.985919E4	4.776878E4
	descriptive	6219.65	19589.45	.75	-3.259433E4	4.503364E4
	network tree	15170.94	19589.45	.44	-2.364304E4	5.398493E4
	Problem solution	-49939.40*	19589.45	.01	-8.875339E4	-1.112542E4
	Compare contrast	-31955.69	19589.45	.10	-7.076968E4	6858.289190
	Series of events	-63914.95*	19589.45	.00	-1.027289E5	-2.510097E4
mind.mapping	spider.map	22544.58	19589.45	.25	-1.626940E4	6.135857E4
	fishbone.map	-8954.79	19589.45	.64	-4.776878E4	2.985919E4
	descriptive	-2735.14	19589.45	.88	-4.154913E4	3.607884E4
	network tree	6216.15	19589.45	.75	-3.259783E4	4.503014E4
	problem.solution	-58894.19*	19589.45	.00	-9.770818E4	-2.008021E4
	compare.contrast	-40910.48*	19589.45	.03	-7.972447E4	-2.096505E3
	Series of events	-72869.74*	19589.45	.00	-1.116837E5	-3.405576E4
descriptive	spider.map	25279.72	19589.45	.20	-1.353426E4	6.409371E4
	fishbone.map	-6219.65	19589.45	.75	-4.503364E4	3.259433E4
	mind.mapping	2735.14	19589.45	.88	-3.607884E4	4.154913E4
	network tree	8951.29	19589.45	.64	-2.986269E4	4.776528E4
	problem.solution	-56159.05*	19589.45	.00	-9.497304E4	-1.734507E4
	compare.contrast	-38175.34	19589.45	.05	-7.698933E4	638.637923
	Series of events	-70134.60*	19589.45	.00	-1.089486E5	-3.132062E4
network tree	spider.map	16328.42	19589.45	.40	-2.248556E4	5.514241E4
	fishbone.map	-15170.94	19589.45	.44	-5.398493E4	2.364304E4
	mind.mapping	-6216.15	19589.45	.75	-4.503014E4	3.259783E4
	descriptive	-8951.29	19589.45	.64	-4.776528E4	2.986269E4
	problem.solution	-65110.35*	19589.45	.00	-1.039243E5	-2.629637E4
	compare.contrast	-47126.64*	19589.45	.01	-8.594063E4	-8.312658E3
	Series of events	-79085.89*	19589.45	.00	-1.178999E5	-4.027191E4
problem.solution	spider.map	81438.77*	19589.45	.00	4.262479E4	1.202528E5
	fishbone.map	49939.40*	19589.45	.01	1.112542E4	8.875339E4
	mind.mapping	58894.19*	19589.45	.00	2.008021E4	9.770818E4
	descriptive	56159.05*	19589.45	.00	1.734507E4	9.497304E4
	network tree	65110.35*	19589.45	.00	2.629637E4	1.039243E5
	compare.contrast	17983.70	19589.45	.36	-2.083028E4	5.679769E4
	Series of events	-13975.54	19589.45	.47	-5.278953E4	2.483844E4
compare.contrast	spider.map	63455.07*	19589.45	.00	2.464109E4	1.022691E5
	fishbone.map	31955.69	19589.45	.10	-6.858289E3	7.076968E4
	mind.mapping	40910.48*	19589.45	.03	2096.504810	7.972447E4
	descriptive	38175.34	19589.45	.05	-638.637923	7.698933E4
	network tree	47126.64*	19589.45	.01	8312.657743	8.594063E4
	problem.solution	-17983.70	19589.45	.36	-5.679769E4	2.083028E4
	Series of events	-31959.25	19589.45	.10	-7.077324E4	6854.728590
Series of events	spider.map	95414.32*	19589.45	.00	5.660034E4	1.342283E5
	fishbone.map	63914.95*	19589.45	.00	2.510097E4	1.027289E5
	mind.mapping	72869.74*	19589.45	.00	3.405576E4	1.116837E5
	descriptive	70134.60*	19589.45	.00	3.132062E4	1.089486E5
	network tree	79085.89*	19589.45	.00	4.027191E4	1.178999E5
	problem.solution	13975.54	19589.45	.47	-2.483844E4	5.278953E4
	compare.contrast	31959.25	19589.45	.10	-6.854729E3	7.077324E4

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

By a closer inspection on table, it can be claimed that the mean score of RT in each of series of events chain, compare-contrast matrix, and problem-solution outlines is significantly different from the other six maps. Thus, certain types of semantic maps demanded more RT in processing texts.

Discussion

The study attempted to investigate the effects of semantic mapping strategy on reading comprehension of intermediate EFL learners. Thus, the main objectives of the study were (a) to investigate the effect of semantic mapping on reading comprehension of expository texts, (b) to explore the effectiveness of certain types of semantic maps which lead to improving reading comprehension of expository texts, and (c) to examine the effectiveness of certain types of semantic maps which demanded faster RT for processing information of expository texts. Thus, the following major results emerged from the study.

First, the fact that learners who received semantic mapping instruction did significantly better on the post-test suggests that semantic mapping technique was effective in leading learners to comprehend expository texts better. This is in line with the previous studies that report the benefits of semantic mapping instruction (Scanlon et al., 1992; Zaid, 1995; El Koumy, 1999; Kim et al., 2004; Mede, 2010; Mohammadi et al., 2010). Moreover, applying different type of semantic maps for the comprehension of expository texts is in compliance with the findings of Schmidt (1986).

Second, the results for EG demonstrates that certain types of semantic maps – mind mapping, spider map, fishbone, network tree, descriptive or thematic map, and series of events chain – are more effective on comprehension of expository texts. Using different types of semantic maps for classroom instruction is in line with previous studies: Schmidt believes that the shape of maps alone communicates some essential relationships. Moreover, the present study indicated that applying mind mapping with semantic aspect was the best strategy. The significant improvement of EG comprehending texts with use of mind mapping can be justified considering the findings of Sok Fun and Maskat(2010) that student-centered mind mapping indicated significant increase in the students' test score.

Third, certain types of semantic maps demand faster RT for processing expository texts. The study revealed that the students read faster through the application of spider map, network tree, mind mapping, descriptive or thematic, and fishbone, whereas they read more slowly through the use of series of events chain, problem-solution, and compare-contrast matrix. Thus, it can be claimed that as types of semantic maps – series of events chain, problem-solution, and compare-contrast matrix – need more time for processing expository texts. Although series of events chain worked well for comprehension, it requires more time for processing information.

Finally, comparing the RT of correct and wrong answers in the eight semantic maps, it was revealed that series of events chain was found to be the only map which demanded slow RT in processing wrong answers (see Appendix A). Thus, it seems that the map demanded more cognitive load for processing expository texts. That is, wrong answers RT for series of events chain (M=6.32 Ms) was found to be more than correct answer RT (M=1.31 Ms).

Concluding Remarks

The findings clearly demonstrate that semantic mapping may serve as a useful graphic strategy for improving reading comprehension. More specifically, certain types of semantic maps not only were more effective on reading comprehension process but also demanded faster RT in processing texts. In light of the present study certain pedagogical implications can be proposed. First, EFL instructors should integrate semantic mapping strategy instruction to their EFL/ESL classes in order to improve comprehension and enhance reading speed. Instruction on different types of semantic maps should be operationalized and implemented by second language instructors. As Macalister (2010) suggests, it is likely that a speed reading course may not, of itself, be sufficient to enhance and maintain reading speed. Thus, the challenge for teachers is to decide how best to reinforce the reading gains that a speed reading course can deliver speed. Second, Syllabus designers can design sections for mapping in the text books. In this way, they can introduce different types of semantic maps that are incompatible with different expository texts. The present study opens up a new dimension of research by introducing certain types of semantic maps as an effective technique to reading comprehension and reading speed. Exploring more about the application of various semantic maps remains a fertile ground for further research.

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