

## **The Impact of Applying Concept Mapping Techniques on EFL Learners' Knowledge of Tenses**

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**ABSTRACT:** The present study was designed to investigate the impact of applying fill-in-the-map and construct-a-map techniques on EFL learners' knowledge of tenses. To this end, sixty EFL elementary female students, who were selected based on their performance on a standardized teacher-made proficiency test, were randomly assigned into two equal experimental and control groups. In order to be convinced of their homogeneity in terms of knowledge of tenses, a researcher-made test of grammar on tenses was administered to the participants in both groups. As the results showed no significant difference between the mean scores of the experimental and control groups on this test, they were regarded to be homogeneous in that respect. Students in both groups received the same amount and method of instruction but they differed in the practice phase. The participants in the experimental group used fill-in-the-map and construct-a-map techniques, but those in the control group did not practice these techniques and worked on the textbook exercises and some "find the error" activities instead. At the end of the instruction, an independent samples t-test was run for the obtained means of the experimental and control groups on a researcher-made posttest on the knowledge of tenses. The results showed that there was a significant difference between their mean scores on the test. Thus, it could be concluded that applying fill-in-the-map and construct-a-map techniques was effective in the improvement of EFL learners' knowledge of tenses.

**Keywords:** concept mapping, construct-a-map technique, fill-in-the-map technique, knowledge of tenses

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No area of second and foreign language learning has been the subject of as much empirical and practical interest as grammar teaching. Assumptions about grammar and its role in L2 learning often lie at the heart of different orientations to L2 pedagogy, and the history of L2 teaching could arguably be described in terms of the different degrees of prominence which grammar teaching has enjoyed at different points in time (Borg & Burns, 2008, p. 456). People now agree that grammar is too important to be

ignored and that without a good knowledge of grammar learners' language development will be severely constrained (Richards & Renandya, 2002, p. 145). Grammar plays a crucial role in writing, speaking, listening, and reading comprehension (Corder, 1998; Widodo, 2006). Thus, it seems that having a good knowledge of L2 grammar system accelerates L2 learning.

A study (Mc Groarty, 1990, cited in Celce-Murcia, 1992) shows that knowing how to build and use certain structures makes it possible to communicate certain types of meaning successfully. From among different grammatical categories which aid communication, tenses are of especially great importance. According to Brown and Berrian (1958), nothing is more important in the grammar of any language than the knowledge of true forms of its verbs and nothing is more difficult than to learn what forms we ought to prefer. So, finding appropriate ways to improve learners' knowledge of tenses seems crucial.

## **Grammar**

The discipline of linguistics has made teachers very conscious of the fact that grammar is the core of language, and without an internalized set of rules, or syntax, no one can understand or use a language (Rivers, 1983). It is usually posited that knowing a foreign language and knowing the related grammar rules of that language are interrelated and synonymous. Chastain (1988) holds that grammatical knowledge is a necessary and facilitative first step in learning a second language. Widdowson (1988) states that grammar is considered an aid to language learners in accurately communicating their messages, and it is not as some isolated body of knowledge that must be studied for its own sake. He also continues that language learning is essentially grammar learning, and it is a mistake to think otherwise. It seems that this claim may reflect a long outdated language teaching methodology concerned with forms rather than functions of language. Widdowson, who himself is the pioneer of communicative language teaching, stresses that grammar as a component of language enables us to make our meanings clear and precise. Bowen, Madsen, and Hilferty (1985) put it another way and state that grammar can be helpful in the study of foreign or second languages. They believe that we correct and improve our linguistic performance by a monitoring device that serves as a grammatical check of every sentence we speak, which, when it works properly, assures our ability to follow the rules of discourse.

Grammar is thought to furnish the basis for a set of language skills: listening, speaking, reading, and writing. In listening and speaking, grammar plays a crucial part in grasping and expressing spoken language (e.g., expressions) since learning the grammar of a language is considered necessary to acquire the capability of producing grammatically acceptable utterances in the language (Corder, 1998). In reading, grammar enables

learners to comprehend sentence interrelationship in a paragraph, a passage, and a text. Widodo (2006) states that, “in the context of writing, grammar allows the learners to put their ideas into intelligible sentences so that they can successfully communicate in a written form” (p. 122). Lastly, in the case of vocabulary, grammar provides a pathway to learners as how some lexical items should be combined into a good sentence so that meaningful and communicative statements or expressions can be formed, In other words, Doff (2000) says that by learning grammar students can express meanings in the form of phrases, clauses, and sentences.

### **Concept Mapping**

Concept maps were developed in the course of Novak’s research program at Cornell University in the 1970s in which he sought to follow and understand changes in children’s knowledge of science (Novak, 1990; Novak, 2002; Novak & Gowin, 1984). They have subsequently been used as a tool to increase *meaningful learning* in the science and other subjects as well as to represent the expert knowledge of individuals and teams in education, government, and business. According to Novak (2001), “concept maps are visual tools that show the most important ideas and reflect the linkage of concepts or facts within a passage and help students generate questions about the content and understand better” (p. 15). Over the last few years, concept mapping has increasingly obtained great popularity and changed to one of the important elements in the plans for the improvement of the teaching-learning process (Espinosa, Martinez, & Garcia, 2007). Concept maps include concepts, usually enclosed in circles or boxes of some type, and relationships between concepts indicated by a connecting line, linking two concepts. “Words on the line referred to as linking words or linking phrases, specify the relationship between the two concepts” (Novak & Cañas, 2008, p. 1).

According to Ruiz-Primo and Shavelson (1996) concept mapping has different techniques, which are based on variation in tasks that invite students to provide evidence bearing on their knowledge structure in a content domain, a format for a student’s response, and a scoring system by which the student’s concept map can be evaluated accurately and consistently. Teacher-made and student-made concept maps (Novak & Gowin, 1984), macro or micro concept maps (Novak, 2001), seeded terms or guided choice concept maps (Novak, 2001), fill-in-the-map or construct-a-map (Shavelson, et al., 1998) are some examples of concept mapping techniques, which, each, has its own advantages.

One of the characteristics of concept maps is the *hierarchical structure* of the concepts, with the most inclusive, most general concepts at the top, and the more specific, less general concepts arranged hierarchically below. This shows how concept mapping helps meaningful learning because

meaningful learning proceeds most easily when new concepts or concept meanings are subsumed under broader, most inclusive concepts (Novak & Gowin, 1984). On the other hand, White (1987, as cited in Shavelson, Lang, & Lewin, 1994) mentions that this hierarchical characteristic of concept maps is not obligatory; it depends on the subject domain. According to Nesbit and Adesope (2006), in non-hierarchical concept maps, concepts are placed in a cluster or network pattern. For the most part, it follows a radial tree structure in which each node, except the central root node, has one incoming link.

Another important characteristic of concept maps is the inclusion of *cross-links*. Cross-links are horizontal linking lines between concepts in different segments or domains of the concept map. They help us see how a concept in one domain of knowledge represented on the map is related to a concept in another domain shown on the map. Cross-links are fundamental in demonstrating that the learner understands the relationship between the sub-domains. In creation of the new knowledge, cross-links often represent creative leaps on the part of the knowledge producer (Novak, 2001).

The final feature of concept maps is *specific examples* of events or objects, which help to clarify the meaning of a given concept. Since they do not represent concepts, they are not usually included in ovals or boxes (Novak & Canas, 2008).

According to Novak (2001), concept mapping can be used for several purposes:

- To generate ideas (brainstorming)
- To design complex structures (long texts, hypermedia, large web sites)
- To communicate complex ideas
- To aid learning by explicitly integrating new and old knowledge
- To assess understanding or diagnose misunderstanding

### **Fill-in-the-map Technique**

The fill-in-the-map technique provides students with a concept map where some of the concepts or the linking words have been left out. Students fill in the blank nodes or linking lines. The response format is straightforward; students fill in the blanks and their responses are scored correct-incorrect (Anderson & Huang, 1989; McClure & Bell, 1990; Minnick & Witt, 1997; Surbur, 1984, cited in Ruiz-Primo, 2000, p.37). There are two types of fill-in-the-map techniques: a) *fill-in-the-nodes*, in which students fill in a blank-node skeleton map with concepts provided, and b) *fill-in-the-linking lines*, in which students fill in a blank-line skeleton map with the description of the relationship provided for each pair of connected concepts.

According to Schau and Mattern (1997, p. 174), fill-in-the-map technique has some advantages:

1. It takes much less time for administration.
2. Its scoring is simple, easy, and quick.
3. It requires lower special visual and verbal skill than those required for map generation.

In this study, only linking words were left out of the concept maps and students were supposed to fill linking lines in the blank.

### **Construct-a-map Technique**

According to Ruiz-Primo (2000), in this technique,

students are asked to construct a map from scratch. This technique varies as to how much information the assessor provides. The assessor may provide the concepts or linking words or may ask students to construct a hierarchical or non-hierarchical map. The response format is simply a piece of paper on which students draw a map. Scoring system varies from counting the number of nodes and linking lines to evaluating the accuracy of the propositions (p.69).

In this study, two approaches were used for this technique. In the first approach, students were given a passage, with the correct form of the verbs included in it, and they were asked to construct a map for the passage finding the verbs and writing them on the linking lines. In the second approach, students were given a passage in which the verbs had been left out. They were supposed to first recognize the correct form of the verbs and then construct a map for the passage writing the correct forms of the verbs on the linking lines.

### **Knowledge of Tenses**

One of the most problematic areas in the teaching of grammar for foreign or second language learners is that of tenses. "Knowledge of tenses refers to the relationship between the form of the verb and the time of the action or state it describes" (Richards, Platt, & Platt, 1992, p. 376). EFL teachers and L2 researchers recognize that English tenses are difficult to acquire (De Carrico, 1986; Richard, 1982; Riddle, 1986). Guiora (1983) notes that speakers of Hebrew encounter difficulty mastering the meanings and usages of several English past tense verbs, which, to them, seem redundant and without an easily discernible function. He also notes that speakers of Chinese may be faced with establishing an entirely new hypothesis of how

time is used and referred to. Smith (1988) indicates that his Polish students had difficulty regarding the past progressive and its form. Richard (1982) discusses the complexity of introducing English progressive tenses and their explicit and implicit meanings. Coppieters (1987), who conducted a study of highly educated Non-Native Speakers (NNSs) with near-native proficiency in French, found that whereas they had obviously acquired tense forms, their perceptions of tense meanings were not Native Speaker (NS)-like. Coppieters contends that the NNSs' perception of tense meanings were strongly affected by tense meanings in L1 so that the speakers of Romance languages interpreted the meanings of French tenses differently from speakers of Germanic and tenseless languages.

Given the importance of learning the use of tenses and the forms used in English to refer to them, the researchers aimed at investigating how concept-mapping techniques, namely fill-in-the map and construct-a-map, could affect EFL students' learning of tenses. To this end, the following research question was raised:

- Does applying fill-in-the-map and construct-a-map techniques have any significant impact on EFL learners' knowledge of tenses?

## **Method**

### ***Introduction***

In order to be able to answer the research question, certain procedures were used to select the subjects and conduct the study. In the following sections, the participants who took part in the study, as well as the instruments used, and the procedure followed will be discussed.

### ***Participants***

The participants of the study were 60 elementary EFL female students studying at Roshangar guidance school in Tehran. The participants were all females and at the elementary level of language proficiency, ranging from 13 to 14 years of age and it was their first exposure to concept mapping. They were selected based on their performance on a school-made proficiency test, which was first piloted with thirty students with the same characteristics as the target sample, and then the test was administered to the subjects in order to ascertain their homogeneity in terms of general English proficiency prior to the study.

### ***Instrumentation***

The following instruments were used in this study:

**School-made proficiency test.** To select the subjects of the study and to minimize the individual differences among them, a school-made proficiency test after being piloted with 30 students possessing similar

characteristics, was administered as a standard criterion to help the researchers to choose as homogenous a sample as possible. The test consisted of three sections after the removal of the malfunctioning items: a) structure (38 items), b) vocabulary (20 items), and c) reading comprehension (3 passages, 12 items) in multiple-choice format. There were 70 items in the test and the time allotted was 80 minutes.

**Two researcher-made tests of grammar on knowledge of tenses.** A researcher-made test of grammar on knowledge of tenses was administered to the participants as the pre-test. Before the administration of the test, it was piloted with 30 subjects with similar characteristics to the target sample. This test was composed of 25 items in multiple-choice format; the tenses under question were present progressive tense, simple present tense, and simple past tense (the only tenses available in the students' textbook).

At the end of the treatment, a parallel researcher-made test, one with the same nature and characteristics as the first grammar test, was administered to the participants in the control and experimental groups as a post-test. Prior to the main administration, this test was also piloted to estimate the reliability and item characteristics, thereof. The time allocated to both grammar tests was 25 minutes.

**Textbook.** The textbook instructed to both groups of the study was English Zone 2 by Prieto and Robbins (2006).

### ***Procedure***

To accomplish the purpose of the study, the following procedures were carried out:

As the first stage, a school-made proficiency test was piloted with 30 students having similar characteristics to those of the target group and then it was administered to 90 elementary Iranian EFL learners in order to choose a homogeneous sample from among them. From this sample, 60 students whose scores fell between one standard deviation below or above the mean were selected and randomly assigned into two groups, experimental and control, with 30 students in each. Next, a researcher-made test of grammar on knowledge of tenses, which was also piloted, was given to the participants to ascertain that there was no significant difference between the two groups regarding their knowledge of tenses.

Following the test administration, both groups were taught the tenses in accordance with the treatment and placebo conditions. The students in both groups received the same amount and method of instruction, but they differed in the practice phase, in which the participants in the experimental group used fill-in-the-map and construct-a-map techniques, which are two

types of concept mapping techniques, but those in the control group just received the relevant information concerning the construction of the verb forms, were given examples, and finally were required to do the textbook exercises. They did not use the concept mapping techniques.

The first step in concept map training was to introduce the idea of concepts, linking words, propositions, and concept maps to the students. This was done in the experimental group in the first session of the treatment.

Following the preparation activities for making the participants in the experimental group familiar with concept maps, the first concept map technique, i.e. fill-in-the-map, was introduced. Four short passages along with their concept maps were provided for the participants. For the first two passages, the students were asked to read each passage silently, and immediately after that fill in the blank nodes of the concept maps using the list of concepts provided by the teacher. For the second two passages, they were asked to read each passage silently and immediately after that fill in the linking lines, using the list of linking words provided by the teacher.

Then the second concept map technique, construct-a-map, was introduced to the students. In this stage, the subjects were given two short passages and were asked to construct-a-map for each one of them. In the first passage, the teacher provided the concepts for the students to make the task easier for them, but in the second passage students were supposed to find the concepts themselves.

In the second session, the teacher started with teaching present progressive tense and taught its affirmative and negative forms. Right after working out the rules, the subjects were given concept maps of some sentences followed by the concept map of a passage including affirmative and negative sentences in present progressive tense, and they were asked to complete the map using fill-in-the-map technique. In their concept maps, linking words were left out and the subjects were provided with a list of infinitives. What they were supposed to do was to recognize the correct form of the verbs, make the necessary changes, and write them on the linking lines (See Appendix A). Their homework, for this session, consisted of concept maps of some affirmative and negative sentences to be filled using fill-in-the-map technique and a list of infinitives to be used for that purpose.

In the third session of the treatment, the teacher started with working on the construct-a-map technique for the two categories (affirmative and negative forms) taught in the previous session. She gave two short passages to the subjects and asked them to construct a map for each passage. In the first passage, the verbs were provided in the passage and the subjects were supposed to recognize and write them on the linking lines. In the second passage, verbs were omitted from the passage and the subjects were first



supposed to write the correct form of the verbs using the list of infinitives given by the teacher and then construct a map for the passage and put the correct form of the verbs on the linking lines. Since the subjects were not good at finding the concepts, the teacher gave them a list of concepts included in the passages in the first three sessions of working on this technique (from the fourth session on they were supposed to find the concepts themselves). The students were supposed to write the concepts in the nodes and the verbs in the linking lines. The homework for this session consisted of two other short passages for which the students were asked to construct a map.

The remaining nine sessions were devoted to practicing the two concept mapping techniques, to teach other tenses and forms as interrogative forms of present progressive tense (yes/no and wh-form), the affirmative and negative sentences in simple present tense, the interrogative forms of the simple present tense (wh-word and yes/no questions), simple past tense, affirmative and negative, as well as interrogative forms of the simple past tense, (wh-word and yes/no questions). The subjects were required to do homework practicing the concept mapping techniques.

In both experimental and control groups, tenses were presented in the same way. That is, they were taught inductively and one of the researchers, who was also the teacher of both classes, started with contextualizing the grammar (tenses) first and then provided the students with some examples and explanations about the different situations in which each tense was used and about the mostly used adverbs of each tense. She tried to relate the examples to the students' everyday lives and ended the instruction with the specific rules of each tense. The only difference between the experimental and control groups lay in the practice phase.

In the control group, all the categories of the three tenses were taught in the same way as in the experimental group, but in the practice phase, the subjects did not use concept-mapping techniques. That is, after working out the rules, subjects worked on the textbook's exercises and some "find the error" activities.

At the end of the treatment, a researcher-made test, with the characteristics similar to the first test on tenses was administered to the participants in the experimental and control groups as a posttest.

## **Results**

### ***Piloting the School-made Proficiency Test***

A school-made proficiency test was piloted with 30 students with similar characteristics to those of the subjects in the target sample. This test consisted of 95 items, 50 grammar items, 30 vocabulary items, and three reading passages with 15 questions in the multiple-choice format. At the

piloting stage, the reliability of the test turned out to be 0.91. After removing 25 items for being malfunctioning, the rest, which consisted of 38 grammar items, 20 vocabulary items, and 12 reading questions, served as the criterion to check the homogeneity of the target sample in terms of general English proficiency. After calculating the descriptive statistics of the piloted proficiency test, the reliability of the test was computed by KR-21 formula and it turned out to be 0.94 (Table 1).

**Table 1.** *The Reliability of the School-made Proficiency Test*

KR-21 <i>r</i>	N of Items
0.94	70

### ***Administering the Standardized Proficiency Test***

The next step was to administer the piloted proficiency test to 90 available participants in Roshangar guidance school. After the administration of the test, the descriptive statistics of the test was computed and in order to come up with a homogeneous sample, 60 students whose scores fell between one standard deviation below or above the mean were selected for this study. Table 2 shows the descriptive statistics.

**Table 2.** *Descriptive Statistics of PET, Main Administration*

Test	Mean	Std. Deviation	Variance	Plus 1 SD	Minus 1 SD
<b>PROFICIENCY</b>	29.9176	18.49467	341.88	48.40	11.42

As Table 2 shows, the mean and standard deviation were 29.91 and 18.49, respectively; therefore, students who scored between 11.42 and 48.40 were selected.

### ***The First Grammar Test on Tenses***

After selecting the participants and randomly assigning them into experimental and control groups, the subjects were given a researcher-made test of grammar on knowledge of tenses. This test was first piloted with 30 students. At the piloting stage, the reliability of the test turned out to be 0.824, and 5 items were removed from the test for being malfunctioning subsequently. The ultimate reliability of the test was estimated to be 0.844 afterwards (Table 3).

**Table 3.** *The Reliability of the First Grammar Test*

KR-21 r	N of Items
0.84	25

After the administration of the test to the target sample, its descriptive statistics was calculated as reported in Table 4.

**Table 4 .** *Descriptive Statistics of the Grammar Test on Tenses, Main Administration*

Groups	Mean	Mode	Median	SD	V	Min	Max	Skewness statistic	Std. Error of skewness	Skewness Ratio
Experimental	14.600	10.00	14.500	4.343	18.869	8.00	22.00	.183	.427	.42
Control	13.166	10.00	12.000	4.434	19.661	5.00	22.00	.458	.427	-1.07

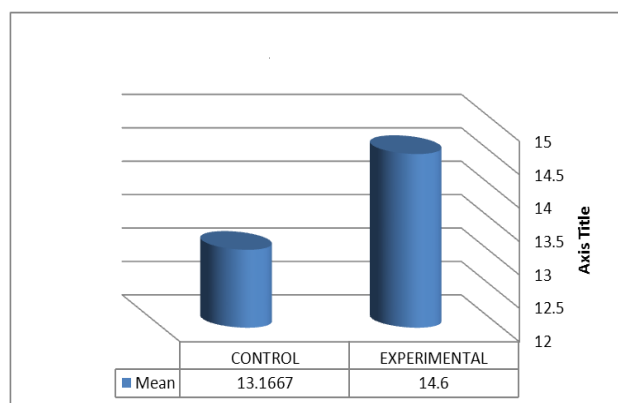
In order to run a t-test, the researchers had to meet the two criteria of normal distribution of both sets of scores and the homogeneity of variances. As Table 4 shows, the two groups' scores on the test of tenses were normally distributed as the skewness ratios for both groups were within the range of plus and minus 1.96. Table 5 shows the result of the Leven's test of homogeneity of variances and the t-test.

**Table 5.** *Independent t-test for the Grammar Test on Tenses*

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	.096	.757	1.265	58	.211	1.43333	1.13328	-83518	3.70184
Equal variances not assumed			1.265	57.976	.211	1.43333	1.13328	-83520	3.70187

As shown in Table 5, the two groups enjoyed homogeneous variances ( $F=0.096, p=0.757 > 0.05$ ). Thus, the second assumption was also met, so that the researchers could safely rely on the result of the t-test reported in the same table. As depicted there, the difference between the mean scores of the two groups was not significant ( $t=1.26, p=0.211 > 0.05$ ), hence the

homogeneity of the two groups on their tense knowledge prior to the treatment. Figure 1 displays the mean scores of the two groups on the test of grammar on tenses, before the treatment.



**Figure 1.** Mean scores of the experimental and control groups on the grammar test on tense before the treatment

**Posttest**

After taking measures to ensure the homogeneity of the experimental and control groups and providing the experimental group with the treatment and the control group with a routine practice, a parallel researcher-made test, similar to the first grammar test, was administered to the participants in the control and experimental groups as the post-test. In the piloting stage, the reliability of the test turned out to be 0.86 and 5 items were removed from the test for being malfunctioning. The ultimate reliability of the test was estimated 0.87 afterwards (Table 6).

**Table 6.** *The Reliability of the Post-test*

KR-21 r	N of Items
0.87	25

After the main administration of the test, its descriptive statistics was calculated as reported in Table 7.

**Table 7.** *Descriptive Statistics of Post-test, Main Administration*

Groups	Mean	Mode	Median	SD	V	Min	Max	Skewness	Std.Error of skewness	Skewness ratio
Experimental	19.100	21.00	20.000	4.105	16.852	10.00	25.00	-.458	.427	-1.07
Control	15.900	17.00	16.000	4.397	19.334	8.00	24.00	-.012	.427	-.02

As Table 7 indicates, the two groups' scores enjoyed normal distributions as the skewness ratios of the two groups were within the range of plus and minus 1.96. Figures 2 and 3 display the histograms for the experimental and control groups' scores on the post-test, respectively.

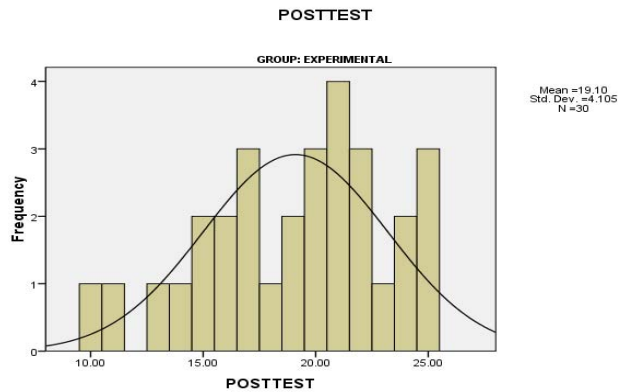


Figure 2. Histogram for the post-test (Experimental group)

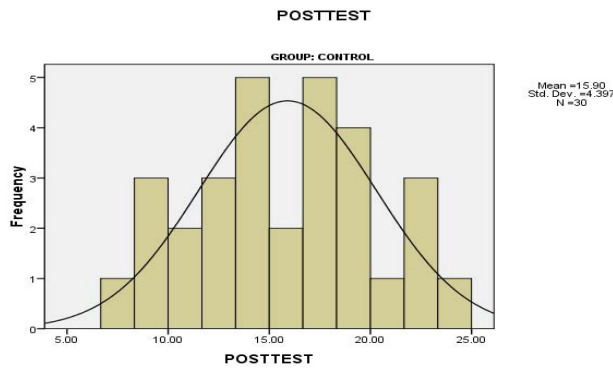


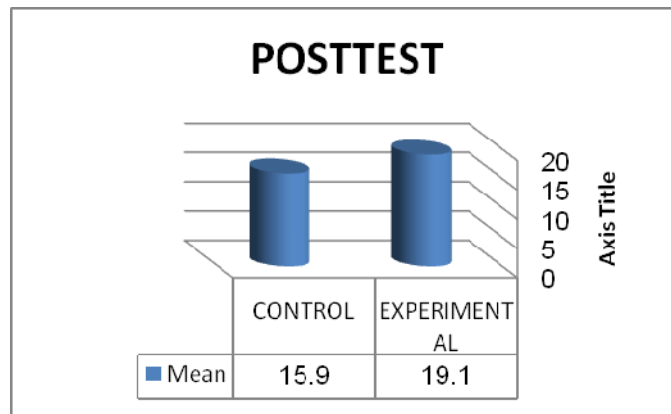
Figure 3. Histogram for the post-test (Control group)

In the next step, an independent samples *t*-test was run to compare the mean scores of the experimental and control groups on the posttest (Table 8).

**Table 8.**Independent t-test for the post-test scores

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	.121	.729	2.914	58	.005	3.20000	1.09827	1.00156	5.39844
Equal variances not assumed			2.914	57.728	.005	3.20000	1.09827	1.00134	5.39866

According to Table 8, the two groups enjoyed homogeneous variances ( $F=0.121, p=0.72>0.05$ ). In addition, the result of the t-test revealed that the difference between the means of the two groups on the posttest was significant ( $t=2.91, p = 0.005 < 0.05$ ). Figure 5 below displays a bar graph representing the mean scores of the two groups on the post-test.



**Figure 4.** Mean scores of the experimental and control groups on the post-test

### Discussion and Conclusion

By virtue of the mean scores obtained by the two groups on the posttest, one can legitimately conclude that the experimental group outperformed the control group significantly. Therefore, it was concluded that applying fill-

in-the-map and construct-a-map techniques had a significant positive impact on EFL learners' knowledge of tenses.

The findings of this study might be accounted for based on the following explanations. Ritchie and Volkl (2000) demonstrated that having sixth grade science students create concept maps before working on lab activities produced better "long-term retention" than using the concept map after the completion of the exercise. The results of that study supports the theory that making important connections among concepts prior to doing any activity will lead to a more complete understanding of the material. Thus, the students their study will have learned the concepts rather than just memorizing them.

According to Novak (2001), concept mapping promotes and fosters meaningful learning. Novak's work was based on the learning psychology of Ausubel. Ausubel (1963, cited in Novak & Canas, 2008, p. 1) made the very important distinction between rote learning and meaningful learning. Meaningful learning requires three conditions:

1. The material to be learned must be conceptually clear and presented with language and examples relatable to the learner's prior knowledge.
2. The learner must possess relevant prior knowledge.
3. The learner must choose to learn meaningfully.

The concept map technique meets all these conditions by identifying large general concepts and by assisting in the sequencing of learning tasks though progressively more explicit knowledge that can be anchored into developing conceptual frameworks.

Another explanation might be that the purpose of concept mapping is the production of a visual layout. Visuals (diagrams, graphs, maps, etc.) can play an important role in learning. Humans are typically visually oriented, and the retention of the information presented in the visual form usually exceeds the retention of the information presented verbally (Levie & Lentz, 1982). According to Plotnick (1997), visual representations have other advantages:

- a. Visual symbols are quickly and easily recognized.
- b. Minimum use of text makes it easy to scan for a word, phrase, or the general idea, and
- c. Visual representation allows the development of a holistic understanding that words alone cannot convey.

Alvermann and Boothby (1983) used the concept-mapping tool to help students to organize information from expository texts and comprehend content area reading in their study. Findings from these study indicated that the concept-mapping tool helped students to select, organize, and recall relevant information as measured by posttests. Students were also able to transfer thinking and learning skills to novel situations and content.

Dual-coding theory can also explain how concept maps enhance students' learning in general. The dual-coding theory postulates the existence of two different storage systems for information, a verbal, and a nonverbal system (Mayer & Sims, 1994). Information, in a symbolic representation, is stored in the verbal system; information in a nonverbal, analog representation is stored in the nonverbal system. These systems are defined to be independent, allowing for additive effects in recall if information is coded dually (i.e. in both systems). A concept map presents a visual image as well as a body of verbal information and, therefore, taps into this dual-coding system.

The findings of this study may be of benefit to EFL teachers, EFL students, and material developers. Teachers can try concept mapping in large group activities, small group settings, and in individual projects. They can use concept maps with textbooks or supplement materials (newspapers, magazines, etc.) in their own classroom. Concept maps can help teachers to plan lessons and teach units. They can also be used by teachers as a way of assessing students' understanding of the material. Teachers can use concept maps to see if learners make associative links between the concepts of a text. The correct association shows a complete understanding and incorrect relationships are indicators of misunderstanding. Teachers may also structure lectures, discussions, and review sessions by constructing a concept map.

Students can also use concept maps as a tool for self-assessment. While students construct their maps, it becomes obvious, either through the difficulty in construction or the lack of creative links, that their knowledge is not sufficiently developed. Students can compare their maps with others' in their class, or even compare it to the teacher's master map. Any inconsistencies become apparent; students can sort through conflicts. That is, if their concept maps were different from one another, they could discuss the differences together.

Material developers can likewise make use of concept map techniques for the development of knowledge of tenses in the exercise section of different grammar books. They can incorporate different concept maps with sentences and texts.

It can be pointed out that applying fill-in-the-map and construct-a-map techniques can be more interesting to the learners. Concept maps can increase the amount of understanding and reduce the amount of difficulties in using tenses in written and spoken forms.

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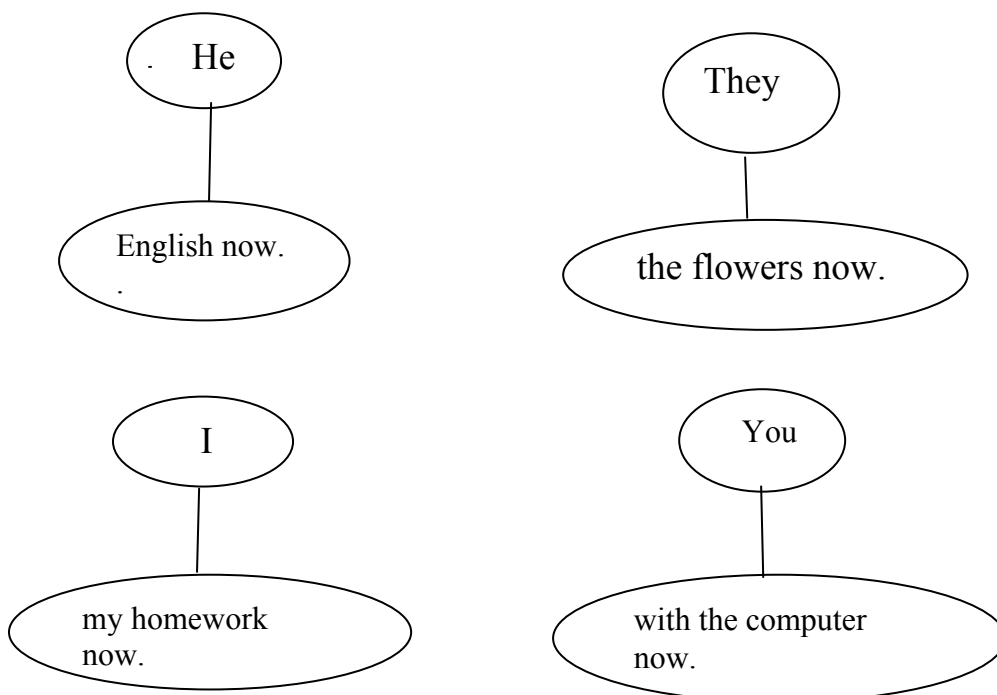
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### Appendices

#### Appendix A:

- Use the best form of the given verbs to fill-in the maps.  
study- work (not)- do- drink (not) - climb- water



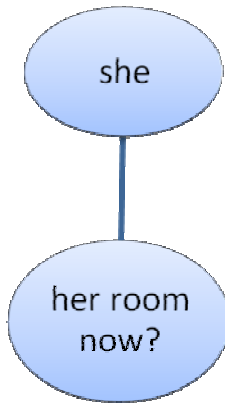
**Appendix B:**

**Question Form**

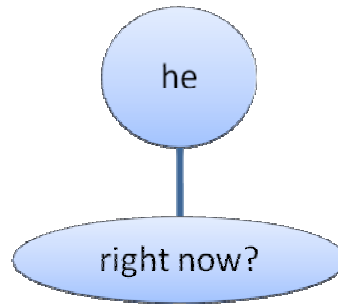
**Present progressive tense**

- Choose the best verb/ wh word from the list, make necessary changes and then fill in the maps.

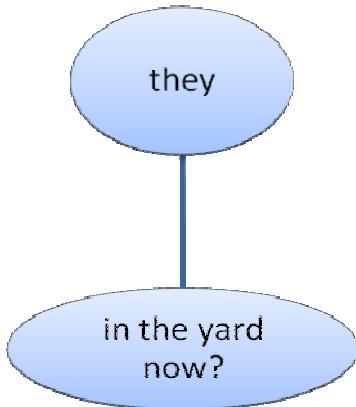
wash- study- play- clean-do-go- what- where



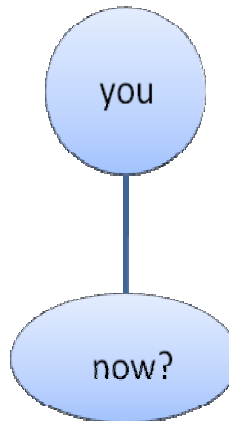
Yes, she is.



He is doing his homework.



No, they aren't.



I am going to the park now.

**Appendix C:**

- *Fill in the blanks with the correct form of the verbs and then construct-a-map for this passage.*

Amanda is a scout. She ..... (meet) with other members once a week. She ..... (not, make) a lot of new friends. She ..... (do) what her parents tell her and she always ..... (say) “thank you”. She never ..... (take) thing that does not ..... (belong) to her. She ..... (help) a lot at home. She ..... (to be) not afraid of new things. She ..... (wear) brown short and blue shirt.

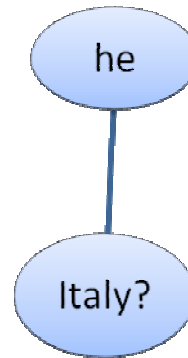
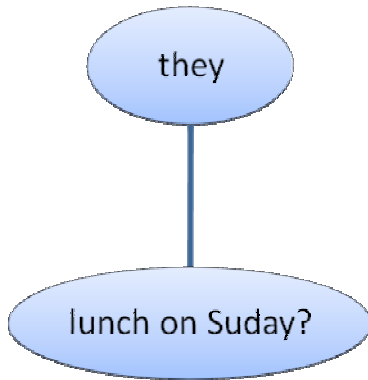
**Appendix D:**

**Question Form**

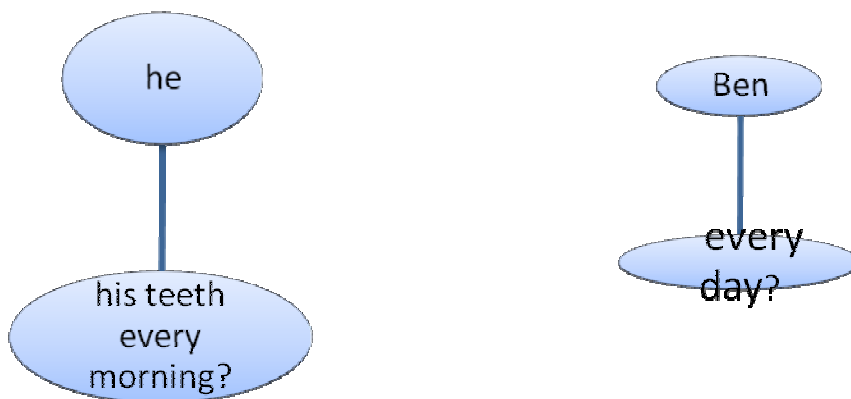
**Simple present tense**

- ❖ Choose the best verb/ wh word from the list, make necessary changes and then fill in the maps.

eat- come from- brush- do- when- what



They eat lunch at 12:00.

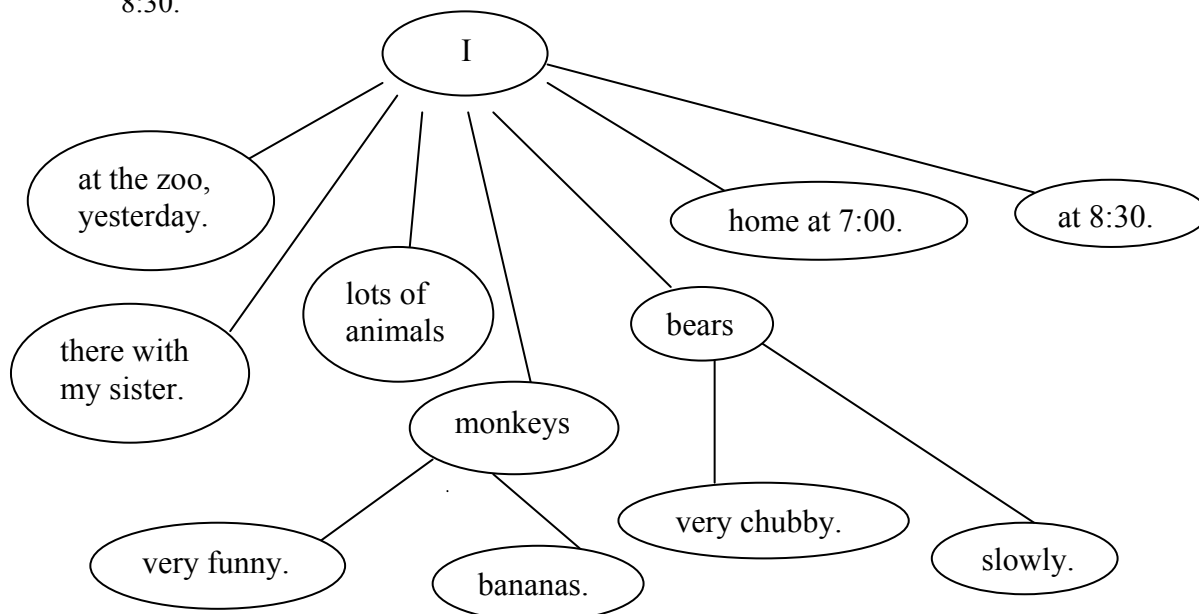


He studies at the library.

### Appendix E:

- *Fill in the blanks with the correct form of the verbs and then fill-in the map.*

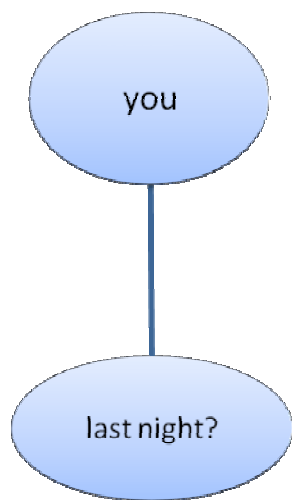
Yesterday, I was at the zoo. I ..... (go) there with my sister. I ..... (see) lots of animals at the zoo. I ..... (like) monkeys. They ..... (to be) very funny. They ..... (eat) bananas but they ..... (not, like) chocolate. I ..... (love) bears. They ..... (to be) very chubby. They ..... (move) slowly. I ..... (come) home at 7:00. I ..... (sleep) at 8:30.



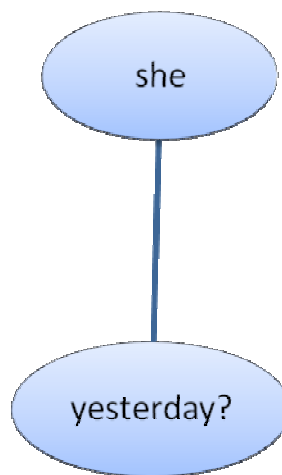
**Appendix F:**  
**Question Form**  
**Simple past tense**

❖ Choose the best verb/ wh word from the list, make necessary changes and then fill in the maps.

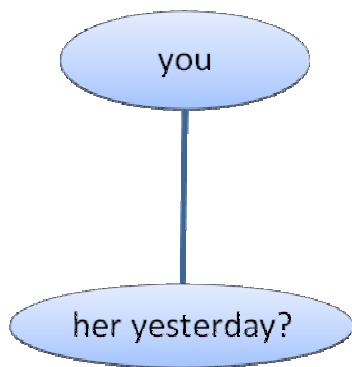
visit- go- sleep- call- where- when



I went to my sister's house.



Yes, she did.



I called her at 8:00.

