Using Concept Maps in Teaching Writing in the L2 Classroom

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ABSTRACT

This study investigates the effect of employing Concept Mapping (CM) as a pre-writing planning strategy on English Language Learners' (ELL) writing performance on different modes of writing. The present study also intends to investigate the effect of the explicit teaching of CM on ELL's knowledge and skills pertaining to vocabulary, organization, grammar and punctuation. An experimental design study is conducted at a female high-school in a foreign language setting. Fifty six eleventh grade students are divided in two equal groups: non-mapping group (Control) and mapping group (Experimental Group). To analyze the results, the study uses Independent Sample T-Test and ANOVA Test on composition scores. The results of the pre-tests and posttests of the two groups scored by two raters based on predetermined criteria (an analytical rubric) are compared. The findings indicate that the Experimental Group who uses CMs scored significantly higher than the Control Group in all areas of writing. It is concluded that CMs used effectively have the potential to enhance students' writing skills. As a result of the study some pedagogical implications and recommendations for using CMs in teaching writing to ELL learners are discussed.

Keywords: Writing; Concept Mapping; Teaching Writing in English as a Foreign Language.

Introduction

Students spend 12 years (grades 1-12) learning English as a foreign language in some public schools around the world. They are expected to have an acceptable command of the English language skills: listening, speaking, reading and writing upon graduation and joining university. However, watching them struggling to communicate in English particularly trying to write a well-organized, cohesive, error free and meaningful paragraph is daunting and heartbreaking. There is no doubt that writing in a foreign language is challenging and requires intensive instruction and practice. Having the appropriate and required training in using effective innovative instructional techniques and strategies is critical for teaching writing.

So as teacher trainers and teachers of English as a foreign language what could we do to help our students become capable of producing acceptable written documents in English such as a letter or an essay? No one disagrees that writing can be taught. All language skills including writing are skills that can be developed and learned. Many teachers believe that writing is a skill that should be taught and that pre-writing should be taught since it facilitates its acquisition (Antonazzi, 2005). To some extent, writing challenges can be overcome by using effective teaching strategies and thoughtful and skilled instruction (Neman, 1980; Al-Dosari, 2016; Jubran, 201, AIZyoud, 2017)

Smith (1982) argues that writers don't think then they write. Yet, these happen at the same time. Flores (2007) believes that the act of writing generates thoughts and, thus, can guide writers' flow of thought. He also believes that critical thinking includes active and intelligent display of higher-order thinking skills (analysis, synthesis, and evaluation) among students. Teachers should be aware of the cognitive processes involved in learning different modes of writing. Basically, the descriptive, narrative, and expository modes of writing can all be classified as empirical forms of writing that fundamentally describe linear cognitive processes (Schultz, 1991).

Mapping is one of the most fundamental tools for enhancing cognitive, organizational, logical and analytic thinking for a dynamic writing. Besides, it includes a complicated use of both grammar and vocabulary which implies that the

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cognitive process is involved (Schultz, 1991). It also encourages language acquisition itself. Avery, Baker and Gross (1996) emphasize that mapping helps further the intellectual personal growth of the learner. Mapping, especially Concept Mapping (CM), is a pre-writing technique which combines the verbal and the visual abilities of the learners. It takes place after brainstorming. This technique which takes place in the planning phase increases the flow of ideas and strengthens writers' essays. It is easy to use at any grade / ability level. It is completely an effective new tool for both teachers and learners to use. CM is an effective strategy that aids students to organize their thinking. This graphic scheme-mapping is not only visual but it is also verbal and therefore has all the benefits of those two symbolic modes, the presentational and the discursive (Buckley & Boyle, 1981).

Literature Review

Concept Mapping as a Prewriting Strategy

Concept Maps (CMs) can be utilized as a prewriting technique to ease students' thinking on their writing process. Schultz (1991) argues that the mapping process assists second- language learners to visualize their ideas as multidimensional buildings that resemble the movement of thought itself. The map layout can enlarge the intellectual input, without restraining thinking by the imposition of a rigid format such as a traditional linear outline where learners may feel forced to fill in numerals and letters. Moreover, the mapping process may help beginning student writers to focus and order their thoughts so as to begin to write essays (Buckley and Boyle, 1981).

Several empirical studies were conducted to investigate the effectiveness of CM as a prewriting strategy. For example, Ojima (2006) implements CM as a pre-task planning technique and investigated its potential for developing English as a Second Language (ESL) learners' writing skills. The researcher analyzes four compositions from each of the learners, written with and without CMs using measures of accuracy, fluency and complexity. The study shows that pre-task planning was linked positively with the overall measures of the students' written production during in-class compositions, with the exclusion of accuracy. He uses holistic measures of global quality, communicative quality, organization, argumentation, linguistic accuracy and linguistic appropriateness.

As a prewriting activity, CM helps students to "map out" their thoughts before writing (Avery, Baker and Gross, 1996). Wan and Omar (2008) conduct a study to investigate the effect of using CMs on facilitating the writing process. A group of Master's level students have been asked to write a paper. Next, they have been asked to build a CM based on their term papers. After that, they are asked to do a reflection about their feelings after using CMs. Results demonstrate that most students have realized that using CMs has assisted them to arrange their ideas and to flow from one paragraph into another. Besides, they have recognized that if they have done the CM before undertaking writing there papers, a lot of time would have been saved. Analysis of the students' reflection papers reveal that MA students believe that CMs helps them to focus on the topic and in sequencing the flow of their ideas. Besides, it facilitates writing and helped in planning. Moreover, they see it as a visual representation of what is going to be written and so it should be constructed prior to writing. Further, they discover that CMs helps in understanding what needs to be written and that they are able to see what is lacking in their papers.

Investigating the effect of CMs as a prewriting activity on English as a foreign language learners' ability is a study conducted by Pishghadam & Ghanizadeh, (2006). The participants are twenty female students at the upper intermediate level. Ten are trained to use CMs during the prewriting stage. The results of the pretests and posttests show that CMs has a positive effect on improving students' writing skills. The scores as well as the interviews indicate a quality generating, arranging and linking thoughts. The findings suggest that CMs are efficient for both affective and cognitive developments. In addition,Negari's (2011) study aims at examining the effect of CM technique on EFL learners' writing performance. Sixty Iranian students at the intermediate level of language proficiency have taken part in the study. The output of the Analysis of Covariance reveals that the instruction of using the CM strategy has a positive effect on the EFL learners' writing achievements.

Concept Mapping Effectiveness

Talebinezhad (2007) has conducted a study to investigate the effect of CM as a teaching strategy on students' self-regulation. Six university English Literature and Translation majors have participated in the study. They are at the intermediate level in their English skills. The tool uses to collect data about students' self-regulation is the Motivated Strategies for Learning Questionnaire. The results reveal that students got higher self- regulation, thought more independently and felt more responsible for their own learning in their writing tasks as a result of the explicit explanation using the CM strategy. In another study Talebinzedah and Negari (2011) have conducted a study on the effect of the explicit teaching of CM as a learning strategy in teaching expository writing on EFL learners' self regulation. It is found that learners gained higher self-regulation in writing tasks as the result of the explicit instruction of the CM strategy.

Similarly, Charlute and Debacker (2003) have investigated the effectiveness of using CM as an instructional strategy in teaching English as a Second Language (ESL) students. They have investigated the effect of CM on students' achievement when learning from English language texts, students - reported use of self-regulation strategies (e.g. self-monitoring and knowledge acquisition strategies), and students- self-efficacy for learning from English-language texts. The findings show a statistically significant interaction of time, method of instruction, and level of English proficiency for self-monitoring, self-efficacy, and achievement. The CM group shows significantly greater gains from pre-test to post-test than the control group pertaining to all the aforementioned variables.

CMs effectiveness is also investigated in children learning as well. Cassata-Widera (2008) has conducted a qualitative study by analyzing some conversations in teacher-guided CM activities in a single kindergarten classroom over eight weeks. The study explores the ways in which CM enhances three main aspects of developing literacy. First, expository language genres can be used to attain or offer de-contextualized information. Secondly, relationship exists between the parts of printed or symbolic representation and words in a spoken proposition. Finally, creating text is an innately social process, with the aims of sharing one's thinking with others. Results show that CM makes expository language explicit to young children through the arrangement and summative representation of reasonable propositions. CM permits for interchanging and understanding of experiences, including novel ways of representing and arranging knowledge apart from the instant context, and new linguistic shapes to convey and talk about concepts. Besides, the physical, componential nature of CM makes the task a natural tool for raising children's awareness of individual words within sentences.

Moreover, Castillo, Mosquera and Palacios (2008) argue that CMs may also support hearing- impaired children to achieve better reading comprehension skills. The study involves only one deaf child, a 13-year-old girl with profound hearing loss in a Panamanian School. The researchers argue that the structure of CMs may ease reading comprehension because sequences of thoughts, and relationships among them, are presented in a graphic format more accessible to deaf students. In this exploratory study, comprehension of an ordinary reading passage is compared with comprehension with its transcription to a CM format, both with and without illustrations. The results suggested that the CM format led to a greater understanding of the reading passage, as evidenced by the answers of the subject to the questions posed by the researchers, as well as the questions posed by the subject herself and her comments about the topic itself. The CM format has also awakened and maintained the deaf student's interest more than the ordinary text format.

To examine the effectiveness of CMs in language classrooms, Saadati (2011) stresses the need to use fill-in-the-map and construct a map as a pre- task planning. He uses these tools to teach Iranian male students aged between 12 to 16 years old the use of tense in oral production. The researcher believes that this technique would make the use of tenses meaningful for learners and help them to organize and improve their knowledge in this area. Results suggest that CM as a form of pre- task was beneficial in allowing learners to make gains in using tense in oral accuracy. According to the researcher's beliefs, this was because CM enhanced meaningful learning. Another explanation might be that the aim of CM is the production of a visual design. Visuals (diagrams, graphs, maps, etc.) can play a significant role in learning. In addition, Abu Nada (2008) conducts a study to examine the effect of CMs on learning English grammar by ninth grade male students. The findings indicates that there are statistically significant differences in the ninth grade students' achievement of English grammar due to using CMs as an instructional strategy.

The present study

The current study investigates the effectiveness of using CMs in teaching writing to11th grade female secondary school students. These students have been learning English as a foreign language for approximately 11 years. It is worth mentioning that, where the study has been conducted, English is a mandatory subject that all students begin learning starting at first grade. In particular, the present study is designed to provide answers to the following research questions:

1) Are there any significant differences between the essays that students write when taught writing using the Concept Mapping strategy and the essays they write when taught writing using the traditional outline approach?

2) Does Concept Mapping have any effect on students' ability to recall taught vocabulary as a result of teaching essay writing using this strategy?

3) Does teaching essay writing using the Concept Mapping strategy improve students' ability to recall significant ideas necessary to write acceptable essays?

4) Does teaching students essay writing using the Concept Mapping strategy have any effect on improving students ability to write grammatically correct sentences?

5) Does teaching students essay writing using the Concept Mapping strategy have any effect on improving students' ability using punctuation marks?

6) Does Concept Mapping strategy have an effect on the participants' writing performance when writing tasks are conditioned?

Method

To provide research-based answers to the above questions, the study employs a quantitative research method. After a pilot test of training materials the researchers conduct the main study, in the first phase, with a quasi-experimental design. This design was appropriate for this study and was best suited when subjects were in intact classes(McMillan, 2000).

The study is conducted using two groups (experimental and controlled) engaged in seventeen writing sessions. To assure comparability subjects are randomly assigned into two groups. Then, the Experimental and the Control Groups had a pre- test of writing. Seventeen compositions per subject are scored with an eight-component rubric. The components are: Thesis Statement, Organization, Vocabulary, Spelling, Grammar Use, Punctuation, the Writing Process and Handwriting. Eight subscales and total scores of compositions are used in analysis as dependent variables. The Independent Sample T-Test is used to examine the statistical difference between the Control and the Experimental groups. The writing tasks produced by the subjects of both groups are scored by two raters.

In terms of internal validity, the study attempts to supply instructional conditions equal in the Experimental and Control groups except for the direct treatment variable: using the CMs. The researcher set instructional protocols for each writing class, led and monitored all the training and writing sessions. The subjects of the study have been exposed to the same textbooks and same instructional plan. In terms of essay scoring, the researcher, as well as another experienced English teacher, who taught the pilot study are trained with a scoring rubric. A pilot test of the rating rubric reveal that there is high inter-rater reliability (Cronbach's Alpha.775).

Participants

The study is conducted using two 11th grade classes randomly chosen at a public secondary school. The random sample consists of 56 female students. All participating students are 17-years old. They are all non-native English speakers who have been learning English as a foreign language for approximately 11 years (from grade 1-11). The students are evenly distributed into A or B classes on the basis of their English marks from the previous year. The choice of the experimental and the control groups was randomly assigned. Section (A) is the control group and section (B) is the experimental group. Each class has 28 subjects.

Instruments and procedure

Both the experimental and control groups have participated in a pre-test. It is a 40-minute-in-class writing session. The students have written an essay based on a given writing prompt. After that both groups participated in 17 writing sessions. The writing sessions are administered over the 2011 -2012 academic school year starting in Sephave tember and ending in late April. The teacher has shared and explained to both, the experimental and the control groups, the essay assessment rubric and informed students that their essays would be evaluated based on the shared rubric.

Though this study employs a quasi-experimental design in which the experimental and the control groups are randomly assigned, a pre-assessment measure of pre-learned writing skills is used to ensure their equivalence. For the pre-assessment of writing, the subjects have written an essay based on the writing prompt provided by the teacher. Without any specific instructions on the writing process, the subjects are asked to write short essays in class. During the pre-test, students are not allowed to discuss their topic with peers. Students are allowed to ask the instructor for the meaning or spelling of any word they want to use.

With the experimental group, the CM training involve a presentation of CM techniques, followed by two guided practice sessions. At first, the researcher introduces the general idea of CM technique and the methods for constructing CMs and using maps as a pre-writing planning strategy. The instructor provides the participants with some CMs about the writing components (Hogue, 1996). In the first class, a CM is introduced about "The Components of a Good Essay", in general. Then, each component is taught separately in a separate CM. This way, CMs are presented to the Experimental Group. Regarding the Control Group, they have the same instruction but without the aid of using CMs. Moreover, the second practice focuses on constructing a CM to plan an argumentative essay. The researcher models how to transfer ideas from maps to written paragraphs during a whole class exercise. The second practice lasts for two-weeks.

Following the writing practice of using CMs the students in both groups have engaged in seventeen writing sessions. The experimental and the control groups are provided with the same writing prompts. The teacher emphasizes and explains the writing planning process by explaining that the writing process requires multiple tasks such as planning, drafting, and editing. The subjects of both groups are encouraged to spend some time planning their writing with or without CMs. The researcher provides students with handouts of the essay rubric and explains the categories of essay scores based on the rubric. The writing instruction took about 20 minutes. The in-class-writing tasks are the ones that are required in the students' English textbooks. The types of writing tasks which the researcher focuses on are expository, descriptive and argumentative essays. The stimuli for writing are written prompts. The writing objective, text structure, themes are defined by the writing prompts. Prompts addressed knowledge students had from the reading passages they were taught at the beginning of each unit to minimize student differences in declarative knowledge (Sturm & Rankin-Erickson, 2002).

An important goal in writing instruction is to help students develop the skills needed to successfully manage the complexities of the writing process. The researcher develops instructional materials and scripts for CM training and writing instruction, which are used with the Experimental group. In the CM training, the researcher shows using an overhead projector a sample CM designed to introduce the general ideas of this tool.After the presentation, the researcher supplies the Experimental Group with two writing in-class assignments to practice CM.

The assessment of the writing assignments is rubric-referenced since authentic assessment should be criterion-based. The researcher develops an analytic richly defined five point, eight-trait rubric that is believed to improve the reliability and validity of assessment (Mueller, 2011). The reasons behind choosing an analytical rubric are: a) to increase consistency in grading. b) to give students a target. c) to allow the raters to provide justification for grades assigned. d) to save time in the grading process, and e) to help the raters analyze students' strengths and weaknesses. The descriptions of the likely levels of attainment for each of the criteria or dimensions of performance are explained fully enough to make them useful for judgment. The justification as to why a specific criterion is given a specific score has been very important in terms of both the rater (teacher) and the rated (student), as well as for the objectivity of the assessment itself.

The rubric looks at the main elements of writing and assesses them independently from one another. It is an influential tool that far surpasses the restricted information a single grade or score provides. It offers a regular and honest feedback

(Culham, 2003). The rubric used is based on a rubric developed by Fry, Kress & Fountoukidis, D. (2004). It is modified to fit the purpose of the present study. The researcher, with the help of the judges and the pilot study teacher, divides some areas to be scored separately. For instance, vocabulary should be separated from spelling to avoid confusion while evaluating. Moreover, "thesis statement" should be separated from "organization and form" since this rubric will assess different kinds of essays. In the description of the area "organization and form" two distinctions are made; one for assessing a paragraph and the other for assessing a whole essay. Also, "grammar and sentence structure" and "punctuation" are assessed separately.

The final measures cover eight components of writing performance including thesis statement, organization, vocabulary, spelling, grammar use, punctuation, writing process and handwriting. The total mark for each component is further broken down into numerical ranges that correspond to five mastery levels: excellent, good, almost good, needs work and needs very hard work. The scoring criteria address the objectives stated in the writing prompt. The scoring rubric met criterion validity, using detailed scoring that ensures the validity of the assessment. The two forms of reliability in classroom assessment and the rubric development involved two raters. Rater reliability generally refers to the consistency of scores that are assigned by two interdependent raters (inter-rater reliability) and that are assigned by the same rater at different points in time (intra- rater- reliability).

Evidence is gathered to support the inferences drawn from the students' responses on the test. Objectives are written to ensure content validity because the test clearly defined the achievements that the researcher measured. To increase reliability and avoid any possible subjectivity, it is decided to include two raters in the study. The raters who participated in the study voluntarily are two high school experienced EFL teachers. The two raters always have brief meetings to discuss the drawn CMs, writing assignments and the analytical rubric. The researcher and the second rater have independently rated different kinds of essays using the analytical measure. Raters are trained with sample papers using the scoring method until inter-rater reliabilities between the two raters exceeded a Pearson r correlation of 0.78. Due to the large amount of papers to be corrected, the other teacher (the teacher of the pilot study) sometimes corrected half of the papers and at other times took a sample of the essays and corrected them. After that, the teacher has checked with the researcher if the marks were similar to those of the researcher. Opinions have been exchanged between the raters, whenever required.

Data Analysis

This study employs a quasi-experimental design. To answer the first questions, an independent sample t-test is used with the total writing scores as well as the sub scores. The total composition score is formed from the sum of eight components scores focusing on the important feature of composition. The eight writing components are equally weighted as follows: thesis statement (5 points), organization and form (5 points), vocabulary and length (5 points), spelling (5 points), grammar (5 points), punctuation (5 points), the writing process (5 points) and handwriting (5 points). Finally, to answer the last question, one way analysis of Variance (ANOVA) is used. The independent variable is the three writing task conditions, and the dependent variable is the 17 post-test essays scores. To determine whether there is a significant difference between the Control and the Experimental Groups' gain scores under the three writing task conditions, an ANOVA test followed by Post Hoc tests (i.e. LSD method) are conducted.

Results

To assess students' writing, an analytical rubric was used. The writing elements that the rubric assessed include: "thesis Statement", "organization and form", "vocabulary and length", "spelling", "grammar and sentence structure", punctuation", "writing process" and "handwriting". These elements were weighted equally. Two English as a foreign language experienced teachers assessed students writings. The results of these assessments were seventeen scores for each student. Both the control group and the experimental group students were assessed in the same way.

Table (1) The Pre- test Writing Mean Scores for the Control and the Experimental Groups and the Independent Sample T-Test

	Class						Sig. (2-tailed)
	Control Group			Experimental Group			
	N		Mean	N		Mean	
	Valid	Missing		Valid	Missing		
Thesis	28	0	.00	28	0	.00	
Organization	28	0	.00	28	0	.00	
Vocabulary	28	0	.96	28	0	1.04	1.000.
Spelling	28	0	1.11	28	0	1.18	.502
Grammar	28	0	1.11	28	0	1.04	.859
Punctuation	28	0	1.03	28	0	1.04	.053
Writing Process	28	0	.00	28	0	.00	
Hand Writing	28	0	2.18	28	0	2.46	.630
Total	28	0	6.36	28	0	6.75	.959

Pre-test Performance

After administering the writing pre-test, the researcher compared the means of the rubric scores for the Control and the Experimental Groups. The pre-test prompt asked the students to write an essay about any topic they like or interested in. No teaching strategy was yet applied before or during this prompt. As shown from Table (1), both the Control and the Experimental Groups exhibited weakness in all the writing elements. As Table (1) shows (p=.959), there is no difference between the pre-test scores of the control and the experimental groups. Further the mean scores of the pretest showed approximately the homogeneity of the two groups.

To show the CM effects on specific features of students' writing, the Independent Sample T-Test was performed on four writing component (Vocabulary, Organization, Grammar Use and Punctuation). Means and standard deviations for the four selected elements of writing are presented below in Tables (2, 3, 4 & 5). The mean scores were also calculated for these four areas. The following is the results of the study pertaining to each one of the first five research questions.

Research Question 1: Are there any significant differences between the essays that students write when taught writing using the Concept Mapping strategy and the essays they write when taught writing using the traditional outline approach?

Table (2) The Mean-Scores and the T-Test Results for the 17 Post Tests

Group	N	Mean	T	Df	Std. Deviation	Sig. (2-tailed)
Control	28	14.55	-10.622	54	4.74431	.000
Experimental	28	27.10			4.07163	

As table (2) shows, the mean scores of the post-tests for the Control and Experimental groups were 14.87 and 27.69, respectively. To determine whether there was a significant difference between post-test scores for both the Control and the Experimental Groups, the researcher used the Independent Sample T-Test. As it is evident from Table (2), a significant difference was observed between the post-test scores of the Control and the Experimental Groups (i.e. p=.000<.05). The results indicate that the CM strategy was effective and improved the learners' writing.

Research Question 2: Does Concept Mapping have any effect on students' ability to recall learned and acquired vocabulary as a result of teaching essay writing using this strategy?

Table (3) shows that the mean scores of the post-test regarding Vocabulary for the Control and the Experimental groups were 2.01 and 3.70, respectively. According to the statistical analysis in the above table there is a difference between the post-test scores, which indicates that the difference is notable in the Experimental Group. To assure the

differences in both groups, the researcher runs the Independent Sample T- Test. As shown it Table (3) the difference is statistically meaningful (p=.000<.05). Thus, the Independent Sample T-Test results indicate that the effect of teaching writing using the CM strategy pertaining to students' ability to recall learned and acquired "Vocabulary" was significantly different between the two groups.

Table (3) The T-Test and the Mean Post- test Scores Regarding Vocabulary

	Group	N	Mean	T	df	Std. Deviation	Sig. (2-tailed)
Vocabulary and Length	Control	28	2.01	-10.375	54	.65944	.000
	Experimental	28	3.70			.55735	

Research Question 3: Does teaching essay writing using the Concept Mapping strategy improve students 'ability to write well-organized essays?

Table (4) The T-Test and the Mean Post- test Scores Regarding Organization and Form

	Group	N	Mean	Std. Deviation	T	df	Sig. (2-tailed)
Organization and Form	Control	28	1.92	.67673	-9.924	54	.000
	Experimental	28	3.61	.59822			

According to Table (4), the means for the post-test written essays for the Control and the Experimental groups regarding organization and form were 1.92 and 3.6, respectively. A close look at the mean scores of the Control and the Experimental groups during the post-test reveals that the mean score of the Experimental Group exceeds the mean score of the Control Group. In order to see whether the difference between the groups is meaningful or not, the researcher utilized the Independent Sample T- Test. Table (4) reveals that difference between the post-test scores of the Control and the Experimental groups (p=.000<.05) is significant.

Research Question 4: Does teaching students essay writing using the Concept Mapping strategy have any effects on improving students' ability to write grammatically correct sentences?

Table (5) The T-Test and the Post- test Mean Scores Regarding Grammar

	Group	N	Mean	Std. Deviation	t	Df	Sig. (2-tailed)
Grammar	Control	28	1.67	.57553	-11.196	54	.000
	Experimental	28	3.30	.51489			

Table (5) shows that the means of the post-test written essays regarding the grammar component for the Control and Experimental groups are 1.67 and 3.30, respectively. Differences in the mean scores indicate that the CM strategy was helpful in improving learners' grammar. The effect of using the CM strategy in teaching writing on improving learners' English grammar was also assessed by conducting an Independent Sample T-Test. According to Table (5) there is a significant difference between the two groups regarding grammar improvement (p=.000<.05).

Research Question 5: Does teaching students essay writing using the Concept Mapping strategy have any effect on improving students' ability using the punctuation marks correctly?

Table (6) The T-Test and the Post- test Mean Scores Regarding Punctuation

	Group	N	Mean	Std. Deviation	T	df	Sig. (2-tailed)
Using Punctuation Marks	Control	28	1.52	.57728	-12.763	54	.000
	Experimental	28	3.41	.53227			

As Table (6) shows the difference between the post-test scores regarding students ability to use punctuation marks is significant (p=.000), which also shows the effectiveness of using the CM strategy in teaching writing. Further, the T-Test shows that a significant difference was observed between the post-test scores of the Control and Experimental groups on the students' ability to use "Punctuation". This finding shows the effectiveness of using such a strategy in teaching English composition to foreign language students.

Research Question 6: Does Concept Mapping strategy have an effect on the participants' writing performance when writing tasks are conditioned?

Finally, the last research question focused on evaluating the effectiveness of the CM strategy on the participants' writing performance under the three writing task conditions. These are: in-class writing, under an exam atmosphere and at home as homework assignments. There were two variables involved in this research question. The independent variable was the three writing task conditions, and the dependent variable was the 17 post-test essays scores. To determine whether there was a significant difference between the Control and the Experimental Groups' gain scores under the three writing task conditions, an ANOVA test followed by Post Hoc tests (i.e. LSD method) were conducted. The following tables show the analysis of the results.

Table (9) Descriptive Statistics of the 17 Post-test Essays Total Gains by the Groups According to Writing Conditions

Condition	Group	N	Mean	Std. Deviation
Exam	Control	28	15.1679	4.39840
	Experimental	28	24.4071	4.61864
home assignment	Control	27	8.8111	7.63853
	Experimental	27	26.5519	3.39834
in class	Control	28	16.0429	4.71612
	Experimental	28	28.2500	3.92065

Table (9) shows the descriptive statistics of the 17 post-test essays categorized according to the three writing task conditions collected from the Control and Experimental groups. The pair-wise comparisons demonstrated that the Experimental Group outperformed the Control Group. The noticeable differences in means indicate that the CM training of the Experimental Group under all writing task condition was effective and has improved the writing ability of the learners. Based on the One Way Analysis of Variance (ANOVA), the findings revealed that the Experimental Group got the highest scores in in-class writing tasks. Moreover, the Experimental Group did better in home-assignments than in under exam conditions. Yet, the difference was small. On the other hand, the Control Group got the highest mean in in-class writing tasks. In addition, they did better in writing tasks under exam condition atmosphere than in writing tasks written at home as homework assignments.

Table (10) presents the One-Way Analysis of Variance results for the three writing conditions. The One Way Analysis of Variance test reveals that there is a significant difference between groups (F= 12.90409, P=.000). The results suggest that learners (both the Experimental and the Control Groups) performed differently across the three writing task conditions.

Table (11) displays the results of the post hoc tests using the LSD method to investigate which pairs of comparisons among the writing task conditions led to significant results. These results show that significant mean differences were found among the pair-wise comparisons within two condition levels. Distinctively, the comparison groups showed significant differences except one pair-wise comparison for the control group which include comparison between the in-

class and exam conditions and two condition levels for the Experimental Group. They are between home assignment and exam conditions and the other pair-wise comparison is between the in-class and home assignments conditions. Thus, this table shows that a significant difference exists between in-class and exam conditions. Based on the above results, overall, the condition factor contributed significantly to distinguishing learners' written performance.

Table (10) Results of One Way Analysis of Variance Test of the Three Writing Conditions on Total Composition Scores

Group		Sum of Squares	Df	Mean Square	F	Sig.
Control	Between Groups	851.642	2	425.821	12.90409	.000
	Within Groups					
	Total	2639.896	80	32.999		
	Between Groups					
	Within Groups	3491.538	82			
Experimental	Total	207.654	2		6.433	.003
		1291.256	80	103.827		
		1498.910	82			
				16.141		

Table (11) Post Hoc LSD Results (Multiple Comparisons) for the Three Writing Task Conditions by Group

Group	Dependent Variable	(I) Writing Conditions	(J) Writing Conditions	Mean Difference (I-J)	Std. Error	Sig.
Control	Total	Exam	Home assignment	6.35675(*)	1.54942	.000
		In- class				
		In-class	Exam	.15357	.24759	.537
Experimental	Total	Home assignment	Home assignment	7.23175(*)	1.54942	.000
		In- class	Exam	2.14471	1.08363	.051
		In- class	Exam	3.84286(*)	1.07374	.001
			Home assignment	1.69815	1.08363	.121

* The mean difference is significant at the 0.05 level.

Discussion

The purpose of this study was to investigate the effectiveness of using CMs in teaching writing to secondary school English as a Foreign Language Learners. The results presented in the previous section provided strong evidence for its usefulness and effectiveness.The first research question in the study focused on the effect of using CMs on students' writing skills in general.The results showed that students who were taught writing using CMs produced much better quality pieces of writing than those who had been taught using the traditional outline approach. The overall analysis of the mean rubric scores indicated that the use of CMs has a statistically significant effect on the students' writing skills. Such results support similar positive conclusions reached by other researchers such as Lee (2010),Ojima's (2006) Zipprich (1995) and Cronin, Meadows, and Sinatra (1990).

This positive effect of using CMs in teaching writing was also evident when comparing the mean scores of the Experimental and the Control Group on the seventeen post-tests and pre-tests. To find if there are significant differences

between the two groups, the researchers administered the Independent Sample t-test. Results of the test (p = 0,000 <, 05) indicated that the difference between the two groups is significant. That is, the experimental group performed better as a result of using the CM strategy when taught writing. Thus explicit instruction on the process of writing using CM did alleviate some of the challenges that students encounter when asked to write a letter or an essay.

The analysis of some of their writing samples showed an improvement in writing a clear and easily identifiable thesis statement, well-organized essays, good use and choice of related words, less grammatical and sentence structure errors and correct punctuation. Although we were unable to see the composing process that the subjects followed in their minds, the pieces of writing that they produced provided us with some insights into the skills and knowledge that they used during the writing process. Analyzing, for example, the overall grammatical structure of the essays provided the researches with an indication of how the students organized their writing and managed its complexity.

The effect of using CMs on recalling taught vocabulary was the focus of the second research question. It was clear that CMs helped students to correctly choose appropriate words from the brainstorming activity prior to the CM planning phase. Thus, we could argue that CMs helped students to activate the use of their vocabulary in meaningful propositions. That is, it did improve the number of words they wrote in their essays without examining the accuracy of spelling and the other writing components. The students' ability to recall main key words and concepts was better than the subjects of the control group as the results showed. Indeed, students in creating their CMs used keywords that represent the specific concepts chosen.

It appears that CMs helped the students in retaining and remembering the information explained. This was evident in the connections they made and their abilities to synthesize as a result of meaningful learning using this technique. The CM technique had brought students to such a high level that they could begin to choose the relevant vocabulary that is suitable for each text pattern. For example, they were able to identify the significant vocabulary that helped them describe, argue, compare and contrast. Thus, CMs helped the students to organize their thoughts in pictorial representations. Also it increased their conceptual understanding which, in turn, helped them organize their ideas.

It is important to note that the subjects in the Experimental group had higher gains than the subjects of the Control Group in writing well structured essays and organizing their ideas (research question 3). It is evident that using CMs helped students to write essays with an interesting and well-developed introduction, body and a conclusion. Further their essays had related thesis statements and the order of the ideas make sense. The researchers could argue that using CMs, as a teaching strategy made a tangible difference in assisting students to write well-organized essays, retain main and supporting ideas and they enhanced their idea generation, organization and association. They helped students approach the writing process of their essays in a structured framework. This helped them write well- focused essays with few errors.

Writing essays with few grammatical errors as a result of teaching writing using CMs was evident in the mean gains and the t-test results. Students' mean scores were significantly higher than those in the Control Group. However, as the results showed, grammar use has the lowest mean. This might be the result of strong interference from students' first language (L1). Students, for example started their sentences with a verb. Also, they sometimes forgot to put a verb or a linking verb. This is actually very similar to the nominative sentences in their mother tongue (Arabic). Moreover, they kept using the conjunction "and" which is similar to the use of "wa" in Arabic. Furthermore, some students put the adjective after the noun. It was apparent that they were transferring grammatical rules from their native language.

Pertaining to the fifth question (using punctuation), as the results showed the Experimental Group gained higher than the Control Group. The results of the current study were in contrast with those of previous research that reported no effect of CMs on writing mechanics such as punctuation marks (Ahangary and Behzady, 2011). Yet, further experiments should confirm the results reported here.

Finally, the last question focused on the effect of CMs under three writing task conditions. Indeed, to the best of the researcher's knowledge, this study is the first to look at the effect of using CMs on English Language Learners' writing performance under three writing task conditions: in-class writing tasks, exams and home assignments conditions. To answer the last question, the study utilized the One Way ANOVA test. The analysis showed a significant difference

between the post-tests scores of the Control and the Experimental Groups (i.e. p=.000<.05). The results indicated that the CMs training of the Experimental Group was effective and improved students' writing skills. The findings revealed that the Experimental Group gained the highest scores on in-class writing tasks. There was a significant difference between the in-class written essays scores and the essays written under an exam atmosphere as the in-class writing scores were higher than the under the exam condition scores. This could be attributed to the main ideas brainstorming activity that prior the writing assignment. Another reason might be the prompts that activated the student's ideas and prompted them to add thoughts and to expand what they had already generated. In addition to this finding that the Experimental Group did better in home-assignments than in under exam conditions.

Gauging student' performance under exam conditions was significant especially under strict time limitations and in an atmosphere of stress and anxiety. Students' performance under the exam conditions allowed for a comparison between essays which were written under identical circumstances. It is worth mentioning that the topics participants wrote about were familiar since they had some knowledge about them from previous written assignments. In reviewing their scores, one can easily see that the Experimental Group students did better than the Control Group. Students had to brainstorm silently. Exam conditions meant time restrictions. Students thus had to plan and organize their thoughts in about forty minutes. The great performance of the Experimental Group under exam conditions with a very limited time showed how using CMs assisted them in thinking and showing what they know.

Conclusion

The present study provided evidence that the use of the Concept Mapping strategy had a positive effect on students' writing skills. The results showed that students writing skills improved in terms of using vocabulary, writing correct grammatical sentences, using punctuation, and writing well-organized cohesive essays. As a result of teaching writing using Concept Maps students became more aware of the writing process. Concept Mapping assisted them in understanding and organizing their thoughts in graphic representations. That is, graphical representation of thoughts increased students' conceptual understanding which in turn helped them organize their thoughts. The findings of the study also revealed that CM as a cognitive tool can enhance learners' thinking skills.

Finding out students' perceptions and attitudes towards the use of CMs in teaching writing will be the next topic that the authors will investigate. Future research should also compare hierarchical and relational CMs with different kinds of graphic organizers for the same activity. The layout and structure of the graphic organizer may influence the effects on student's writing abilities. Furthermore, additional research is needed to better understand how this strategy can support students with writing difficulties and its effect on different modes of writing. Further research could be conducted examining the effects of using hierarchical and relational CMs in teaching English writing to students at varied levels. Research across a range of contexts and different modes of writing is needed to understand several issues concerning the inherited traits of CMs and the traits of writing compositions more completely. Such research would ideally enlarge the approach to include a thorough analysis of the content of students' essays and their errors. Moreover, introspective think-aloud studies examining CM strategy could aid researchers to find what happens in students' cognition and meta-cognition when creating their CMs.

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استخدام الخرائط المفاهيمية في تدريس كتابة المواضيع الإنشائية
لمتعلمي اللغة الانجليزية كلغة أجنبية

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ملخص

هدفت هذه الدراسة الى معرفة أثر الخرائط المفاهيمية على الأداء الكتابي لمتعلمي اللغة الانجليزية في أنماط الكتابة المتعددة وذلك عند استخدامها استراتيجية تخطيط تمهد للكتابة. وهدفت هذه الدراسة أيضًا إلى معرفة أثر التعليم الصريح للخرائط المفاهيمية على معرفة ومهارات متعلمي اللغة الانجليزية المتعلقة بالمفردات، وتنظيم الافكار، والنحو وعلامات الترقيم. اتبعت هذه الدراسة التصميم التجريبي وتم تطبيقها في مدرسة ثانوية للبنات تدرس اللغة الانجليزية فيها كلغة اجنبية. تم تقسيم ست وخمسين طالبة من طالبات الصف الحادي عشر إلى مجموعتين متساويتين: واحدة لم تستخدم الخرائط وسميت بالمجموعة الضابطة، وأما الأخرى قامت باستخدام الخرائط ولذلك سميت بالنجريبية. ركزت هذه الدراسة على الاختلافات الناتجة من استخدام الخرائط التي ترسم وبشكل فردي تحت شروط ثلاث: الانشاء الذي يكتب داخل الغرفة الصفية في الظروف الطبيعية، والانشاء الذي يكتب كاختبار صفي، والانشاء الذي يكتب في المنزل كواجب بيتي. قبل أداء التجربة، تم إعطاء امتحان قبلي لضمان تكافؤ المجموعات وليكون أساسًا للمقارنة مع الامتحانات الكتابية التي تم إعطاؤها فيما بعد. وتركز التعليم لهذه الاستراتيجية على أنواع الكتابة الوصفية والجدلية للمجموعة التجريبية، أما المجموعة الضابطة فاتبعت الطريقة التقليدية في كتابة هذه الأنماط من الإنشاء. ولتحليل النتائج، استخدم الاختبارين الإحصائيين التاليين: Independent Sample T-Test و ANOVA لتحليل علامات الطالبات. و قد قورنت نتائج الامتحانات القبلية والبعدية التي صححت من قبل الباحث ومعلمة أخرى ذات خبرة وفقاً لمعايير محددة ومفصلة (Analytical rubric). وقد دلت هذه النتائج على أن المجموعة التجريبية وبسبب استخدامها للخرائط المفاهيمية كانت علاماتها تفوق علامات المجموعة الضابطة في جميع المهارات الكتابية. قدمت هذه الدراسة دليلاً تجريبياً على أن استخدام الخرائط المفاهيمية كاستراتيجية تخطيط للكتابة مفيدة في تعليم اللغة الانجليزية كلغة اجنبية. و قد استنتج أنه إذا تم استخدام الخرائط المفاهيمية على نحو فعال، فستكون لها القدرة على تعزيز مهارات الطلبة الكتابية. ونتيجة لهذه الدراسة، تم مناقشة بعض التضمينات والتوصيات التربوية لاستخدام الخرائط المفاهيمية في تدريس الإنشاء في اللغة الإنجليزية كلغة اجنبية.

الكلمـات الدالـة: الخرائط المفاهيمية، الكتابة، تدريس الإنشاء في اللغة الانجليزية كلغة أجنبية.