



The Effect of Using Concept Mapping on Developing EFL Students' Writing Skills

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Abstract

Concept maps are tools for organizing and representing knowledge. They include concepts, usually enclosed in circles or boxes of some type, and relationships between concepts or propositions, indicated by a connecting line between two concepts. Words on the line specify the relationship between the two concepts. Concept maps measured students' understanding of the complexity of concepts, and interrelationships. Researchers found that concept mapping helped students improve the performance on high cognitive level questions, increase the accuracy and complexity of the students' knowledge, and have a more positive attitude toward learning science. This study aims to show the impact of using concept maps as a brainstorming to help students organize their own thinking (individual or group) and idea development process to improve their writing skills. It also reviews the traditional techniques used in teaching writing to EFL and identifies concept mapping techniques along with as an application procedure to enhance the writing skill. To achieve the aim of the study of verifying the effectiveness of the concept mapping strategy on the performance of the selected sample which is randomly chosen from the second year students of department of English at college of languages and human sciences / Garmian university, the adopted design which is "Posttest Only Control Group Design" is used.

In this design ,only the experimental group receives the independent variable (concept mapping). After that ,the two groups (control and experimental) are tested and their scores are compared to ascertain the effect of the independent variable .The statistical analysis of the data was carried out by using SPSS. The results indicated that the learners, who have been taught through concept maps produced well-connected paragraph , enough supporting ideas, improved cohesion and coherence, content paragraph structure and enough length in writing. The results manifested that the hierarchical structure of the concept mapping techniques used in the pre-writing process enhanced the EFL learners' writing.

1-Introduction

Higher education should focus on sustained conceptual understanding of relevant topics.

Guidance on how to construct adequate knowledge structures can support meaningful learning, Cognitive psychology introduces several processes by which schema,

propositions, concepts or specific prototypes are formed (Anderson, 2004), one of these process is concept maps which is a technique that represents information visually to translate complex ideas into easy-to-understand visual diagrams. Boxes, circles, and other shapes (sometimes called nodes) are connected by arrows and lines (connectors) that show connections and relationships of concepts and knowledge. Concept Mapping was firstly developed by Novak and his research group in Cornell University in the early 1970s as an approach to identifying knowledge structures of an individual. It is now used as a vehicle to represent and assess changes in students' understanding of science (Novak, 1990). Several researchers found that concept mapping helped students internalize new crucial concepts, improve the performance on high cognitive level questions, increase the accuracy and complexity of the students' knowledge, as well as integrate those concepts with previous knowledge, while revealing the students' level of knowledge and misconceptions. The concept map has become a useful instrument for teachers to aid student in understanding various subjects as it combines scientific rigidity with simplicity and flexibility. It also assists those who intend to generate, transmit, store and spread information and knowledge. Concept mapping is not new to academia, but is most often used in Education- and Psychology related courses where the technique originated and developed. Concept maps have a distinct advantage over many other types of instructional strategies when it comes to supporting higher education to support thinking skills.

2- The problem

Writing is an important skill for language production, it is an extremely difficult cognitive activity which requires the learner to have control over various factors, particularly in

English as a second language (ESL) contexts where students face many challenges in writing. Therefore, the present study was conducted with an aim to investigate the impact of concept mapping as a tool to demonstrate the students' understanding of a concept, and then improve their writing skills.

3- The aim of the study

This study aims to show the impact of using concept maps as a brainstorming to help students organize their own thinking (individual or group) and idea development process to improve their writing skills

4- The Hypothesis.

To achieve the aim of the study, it is hypothesized that using concept mapping techniques improve the performance of the students in academic writing .

5- The Sample.

Forty students are chosen randomly from the second year students of department of English at college of Languages and Human Sciences as a sample for the study,(20) are addressed as the control group who has been taught according to the traditional methods of teaching in writing performance. The other (20) students are addressed as the experiment that has been taught by concept mapping techniques .

6-Definitions

This study sheds light on some definitions which are used thoroughly, among them, concept maps are graphic tools that allow learners to present, relate, and communicate conceptual knowledge and build on existing cognitive structures or schemata (Novak & Gowin, 1984). It is a practical learning tool which falls into the

broad family of graphic organising tools that includes mind mapping and spider diagrams. However the characteristics of concept mapping set it apart from the others. (Horton et al. 1993) Daley(2004) states that concept mapping is a technique that represents information visually and is useful in translating complex ideas into easy-to-understand visual diagrams. Boxes, circles, and other shapes (sometimes called nodes) are connected by arrows and lines (connectors) that show connections and relationships of concepts and knowledge.

Zwaal and Otting(2012) define concept map as a graphical tool to activate and elaborate on prior knowledge, to support problem solving, promote conceptual thinking and understanding, and to organize and memorize knowledge.

ÇAKMAK and KILIC(2013) also define concept map as a graphical tool that organizes, connect, and synthesize information. Concept maps show concepts in circles or boxes and one can indicate relationships between concepts by connecting lines or linking words. Furthermore, Salleh and Ismail (2013) state that concept map is an easily understood tool. It is a technique where concepts of knowledge are presented by graphical display that facilitates knowledge management and exchange.

Concept maps is considered by(Dorough and Rye, 1997) as a pictorial representation of a domain that consists of concepts represented as nodes that are connected to each other by arcs. The concepts are words or ideas that represent events, objects, or even emotions and feelings. The connecting arcs represent the conceptual links – showing that the concepts are conceptually and logically related in some manner – between two or more concepts within the concept map. However Schwendimann, (2014) defines it as a node-link diagram showing the semantic relationships among concepts. A concept map consists of nodes, arrows as linking lines, and linking phrases that describe the relationship between nodes. The

following figure represents the Model of a Concept Map by (Novak & Gowin, 1984).

7-Theoritcal background

Novak and Musonda(1991) as cited in Croasdeell, et.al(2003) explain that concept mapping was first developed as a research technique in 1974 to make sense of data gathered in clinical interviews. Since then, concept mapping has been used in numerous ways in education, psychology, and organizational settings .Concept mapping enables people to visualize both the specific relationships among concepts and the hierarchical structure and organization of these relationships.Two cognitive theories of memory are used to support concept mapping the first one is Ausubel's(1968) Assimilation Theory and the second one is Deese's (1965) Associationist Theory. The former theory states that memory is hierarchical, and new information is processed and stored as either a more general or more specific concept to other, related concepts, i.e., assimilated into the existing structure . Associationist theory states that memory consists of a network of concepts that is not hierarchical, though is supportive of hierarchies. Relationships between concepts are formed naturally when two concepts overlap on some dimension. This is akin to word association games, though in these games the relationships are not labeled. As learning occurs, this network of concepts and relationships becomes more and more elaborate and complex. In the end, the memory structure in Associationist Theory is quite similar to that of Assimilation Theory, except that hierarchies are not required. These two theories conclude that the concept map is intended to externalize an individual's cognitive structure, regardless of the theory behind it. The method for developing concept maps depends on which of the two theories is being followed.

Fraser (1993) shows some rules to govern the construction of concept maps, supported by Novak and Gowin (1984) and based on Ausubel's (1968) Assimilation Theory:

1. Concepts are located in rectangles or other geometric forms. Concepts can be represented by single key words or phrases or simple drawings. Arcs are lines used to connect the concepts. Linking words are sometimes written on the arcs to describe the relationship between the two concepts.

2. The linking words should specifically explicate the relationship between the two concepts. Together with the two concepts, the linking words form a proposition – such as “the grass is green” from the concepts “grass,” “green,” and the linking word “is.” It should be noted that the literature views these linking words as optional in terms of concept map construction.

3. No right map exists, as all maps are idiosyncratic to each individual. Different people may produce very different maps for the same conceptual domain. A concept map can be wrong, however, if propositions are incorrect, such as “the bear speaks English.”

4. The interconnections between concepts give rise to the power of the concept map. More interconnections and cross-linkages are an indication of a greater complexity and sophistication of understanding.

8-Literature Review

A number of studies are conducted using concept mapping as a pedagogical tool in all the discipline including Medical, Science, Education, and Management course etc. This research sheds light on previous studies of using concept maps in education:

8.1 Concept mapping in Education

Several researchers found that concept mapping helped students internalize new crucial concepts, as well as integrate those concepts with previous knowledge, while revealing the students' level of knowledge and misconceptions (Bhattacharya & Han, 2001). An experimental study was carried on in Chei-Chang Chiou et.al(2008), 124 participants who were enrolled for advanced accounting course at the school of management in Taiwan. Author examines whether concept mapping can be used to help student to improve their learning achievement and interest in comparison with traditional teaching method. The students were satisfied with the Meta learning strategy of concept mapping, which could be helpful in improving the skills. Gul Tokdmir et.al (2010), proposed a method to present course curriculum. University/Institutes or Organization have faced many problems such as diversity of the concept given in course. It is very difficult for students to see the picture of computer engineering domain. With the aid of concept mapping tool it is easier to build better concept relationships among theory and practice as well as among other concepts that are in the course. Concept mapping tools helps the learners build a relationship between previous knowledge and newly introduced concepts, encouraging meaningful learning rather than rote learning (memorizing concepts, new relationship to previous learning). In Grag Lammers et.al (2012), the study visualizes about the conceptual understanding attained by students in the area of parallel computing. A small group of students was selected to create a concept maps that illustrates their understanding. Paper concludes that, students show a wide variation in their abilities to represent parallelism concept in a concept map. The author recommends a shift to a performance oriented approach which may yield benefits in expanding the rate of student knowledge.

In Lauri Lahti et.al (2011), an experiment was conducted on students of introductory java programming course to draw concept maps representing technology about topic programming. Authors analyzed the drawn concept map in respect to the learner's self-evaluation about amount of earlier programming experience. It aims to augment traditional wiki technologies for creating, editing and applying knowledge in learning based on data base of collaborative contribution supplied with user profiles. In Gwo-Jen Hwang et.al (2012), an experiment has been conducted to evaluate the effectiveness of the approach on students learning performance, learning satisfaction and cognitive load in an elementary school social studies course. The results show that the concept map integrated approach can significantly enhance the student's web browser approach in solving a problem. Authors found that students in concept mapping group revealed higher cognitive load than those in the control group. As a consequence authors concluded that the integrated concept mapping and web-based problem solving approach is helpful to students in guiding them to learn in a more effective way. Furthermore an exemplary concept map generated during the beginning of a university course is evaluated.

9- Construction of Concept Maps

Canas (2003) as cited in Schwendimann(2014) states that concept map can be created by hand using paper and pencil, flashcards, post-its, or by using computer software (Exemplars are the freeware tool Cmap (<http://cmap.ihmc.us/> or commercial tool Inspiration (<http://www.inspiration.com>)). Research indicates that using concept mapping software can facilitate construction, revision, and addition of hyperlinks and multi-media. Concept map setups can vary from open-ended to very constrained forms. Concept mapping

tasks with few constraints can provide learners with a focus question while giving them free choice to select their own concepts and links. Medium constraint forms can provide learners with pre-made lists of concepts or linking phrases but give free choice of which concepts to connect. Highly constrained forms of concept maps can provide learners with a skeletal network structure and pre-made lists of concepts or linking phrases to be filled into blanks in the structure. Concept mapping requires initial training to familiarize learners with the concept mapping generation principles, and criteria for concept map evaluation.

Croasdell, et.al(2003) shows concept map is a pictorial representation of a domain that consists of concepts represented as nodes that are connected to each other by arcs. The concepts are words or ideas that represent events, objects, or even emotions and feelings. The connecting arcs represent the conceptual links – showing that the concepts are conceptually and logically related in some manner – between two or more concepts within the concept map. Fraser (1993) Gives some rules to govern the construction of concept maps, depending on the theory of Novak and Gowin (1984) ,and based on Ausubel's (1968) Assimilation Theory:

1. Concepts are located in rectangles or other geometric forms. Concepts can be represented by single key words or phrases or simple drawings. Arcs are lines used to connect the concepts. Linking words are sometimes written on the arcs to describe the relationship between the two concepts.

2. The linking words should specifically explicate the relationship between the two concepts. Together with the two concepts, the linking words form a proposition – such as “the grass is green” from the concepts “grass,” “green,” and the linking word “is.” It should be noted that the literature views these linking words as optional in terms of concept map construction.

3. No right map exists, as all maps are idiosyncratic to each individual. Different people may produce very different maps for the same conceptual domain. A concept map can be wrong, however, if propositions are incorrect, such as “the bear speaks English.”

4. The interconnections between concepts give rise to the power of the concept map. More interconnections and cross-linkages are an indication of a greater complexity and sophistication of understanding. Concepts and key words may vary in their relevance to a lecture topic.

ÇAKMAK and KILIC ,(2013) add that to construct a good concept map, it is important to create a context that will help to determine the hierarchical structure of the concept map. It is also helpful to select a limited domain of knowledge for the first concept maps.

A good way to define the context for a concept map is to construct a (Focus Question), that is, a question that clearly specifies the problem or issue the concept map should help to resolve. Every concept map responds to a focus question. Usually 15 to 25 concepts will suffice. These concepts could be listed, and then from this list a rank ordered list should be established from the most general, most inclusive concept, for this particular problem or situation at the top of the list, to the most specific, least general concept at the bottom of the list.

It is important to help students recognize that all concepts are in some way related to one another. Therefore, it is necessary to be selective in identifying cross-links, and to be as precise as possible in identifying linking words that connect concepts. In addition, one should avoid “sentences in the boxes”, that is, full sentences used as concepts, since this usually indicates that a whole subsection of the map could be constructed from the statement in the box. “

Finally, the map should be revised, concepts re-positioned in ways that lend to clarity and better over-all structure, and a “final” map prepared.

When computer software is used, one can go back, change the size and font style, and add colors to “dress up” the concept map.

Thus, concept maps are not only a powerful tool for capturing, representing, and archiving knowledge of individuals, but also a powerful tool to create new knowledge.

10- Kinds of concept maps

Croasdell, et.al(2003) states that according to the University of Illinois, US (2002), there are kinds of concept map. The most commonly used kinds of concept are:

1. A Spider concept map is a kind of map that is used to investigate and enumerate various aspects of a single theme or topic. It helps student to organize their thoughts. Outwardly radiating sub-themes surround the center of the map. It looks a bit like a spider's web, as its name suggests. See figure (2)

2-The hierarchy concept map, as shown below, presents information in a descending order of importance. Step by step the student noted down the relevant context in the given boxes/circles. It helps to understand and co-relate the subjects. an example to the hierarchy concept map. See figure(3):

3- The flowchart concept map organizes information in a linear format. See figure(4):

11- Uses of concept mapping

ÇAKMAK and KILIC ,(2013) summarize the use of concept maps as:

1) As a method of learning: The use of concept maps has been widely investigated in teaching .Concept maps allow learners to think deeply by helping them to better understand and organize what they learn, and to store and retrieve information more efficiently.Learners also articulate and challenge their thoughts when they discuss their maps with each other.

2) As a Teaching Method: Concept maps are also valuable tools for teachers because they provide information about students' understanding and misconception that student have. Teachers can examine how well a student understands science by observing the inclusiveness of their concept map. Concept maps can help teachers to identify, understand, and organize concepts . At first, students will find concept maps very strange and may even try to memorize them, rather than use them as a thinking tool. It should be noted that it is temporarily, each student has a different capacity to handle this method. So instructors shouldn't give up in such cases.

3-As a Curriculum and Lesson Planning Method: The use of concept maps can also assist the curriculum specialists in developing a curriculum. Concept maps proceed from the more general, more inclusive concepts to the more specific information. It usually leads to encouragement and enhance meaningful learning. Hence it is become obvious that students are required to learn the details of new and unfamiliar disciplines before they have acquired an adequate body of relevant aliments involvement at an appropriate level of inclusiveness.

4-One of the powerful uses of concept maps is not only as a learning tool but also as an evaluation tool, thus encouraging students to use meaningful-mode learning patterns. Concept maps are also effective in identifying both valid and invalid ideas held by students. They can be as effective as more time-consuming clinical interviews

Concept maps are useful "As a Curriculum and Lesson Planning Method" for teacher and student in following ways:

-Using concept maps in planning a curriculum on a specific topic helps relating various ideas within a unit format and makes the instruction "conceptually transparent" to students.

-Using concept maps is helpful on revising the existing curriculum in both process and product. Concept maps are useful in planning interdisciplinary instructions by developing a conceptually compatible, congruent program.

-As an Evaluation Method of Students' Understanding: Concept mapping could be a key for developing strong performance assessments that how students are applying concepts and to observe the deep understanding that students are gaining. Student may be provided with a set of unlinked concepts with which they have to construct a map or they may be asked to construct a concept map after the teacher has taught the topic in order to examine their conceptual comprehension.

According to Novak (2010), concept mapping is one of the most powerful evaluation tools, "encouraging students to use meaningful-mode learning patterns".

Scoring of a concept map is based on several criteria such as:

- Validity of propositions and relationships connecting the concepts.
- Number of hierarchical levels and correctness of the hierarchical level.
- Number of cross-links and The validity of cross links
- Number of links and Extent of latitudinal and longitudinal branching.
- Number of examples and Appropriateness of general and specific examples.

12- The benefits of concept mapping

Davies(2011) states that aim of all mapping tools is similar. The students are more likely to understand those relationships of concepts , remember them, and be able to analyse the parts. Maps are also much easier to follow than verbal or written descriptions (Mayer & Gallini, 1990). However maps utilise the often under-utilised parts of the brain associated with visual imagery. This enables more processing power to be used, hence leads to a greater capacity for learning.

Maps allow the separate encoding of information in memory in visual and well as propositional form, a phenomenon called “conjoint retention” or “dual coding”. visual representations are synchronously organised and processed simultaneously and verbal representations are hierarchically organised and serially processed (Vekiri, 2002).

Different explanations by Schwendimann, (2014) have been proposed to explain the observed benefits of using concept maps. Concept maps activities can support eliciting existing concepts and connections and serve as a memory aid by off-loading them as external node-link diagrams. Concept maps can support learning science by identifying central concepts from different contexts. The explicitness and compactness of concept maps can help keeping a big picture overview. Additionally, concept maps use a simple syntax for propositions (node-link-node) and limited amounts of text to represent concepts. Fast information retrieval from concept maps can be beneficial for communication in collaborative settings. Viewing or generating concept maps may integrate concepts in both verbal and visuo-spatial memory.

Mapping may be seen as a type of brainstorming especially in writing. Both mapping and brainstorming may be used to encourage the generation of new material, such as different interpretations and viewpoints: however, Mapping relies less on intentionally random input.

Here are some benefits of mapping, which will become more apparent in writing as explained in Buzan (1982):

- 1- It clearly defines the central idea, by positioning it in the center of the page.
- 2- It allows to indicate clearly the relative importance of each idea.
- 3- It allows to figure out the links among the key ideas more easily. This is particularly important for creative work such as essay writing

4- It allows to see all basic information on one page

5-As a result of the above, and because each Map will look different, it makes recall and review more efficient.

6- It allows to add in new information without messy scratching out or squeezing in.

7- It makes it easier for to see information in different ways, from different viewpoints, because it does not lock it into specific positions..

8- It allows to see complex relationships among ideas, rather than forcing you to fit non-linear relationships to linear formats, before you have finished thinking about them.

9- It allows to see contradictions, paradoxes, and gaps in the material—or in students' own interpretation of it – more easily, and in this way provides a foundation for well-structured material.

13-Concept mapping for Writing Skill

Buzan(1993,2002) and (Gardner,1999),mention that concept mapping is the useful way to develop information in a human mind and take information from out of brain. It is a creative and an effective way that map our ideas. Maps are easier to follow than the long tardy note taking or listing techniques where ideas are kept in a top down sequence and it becomes difficult to make connection of the last idea to the first in the list.

Concept maps is a tool to facilitate the learners to plan ideas in the pre-writing process. Concept mapping techniques are good to be applied in the pre-writing stage to explore ideas and generate thoughts on the topic for writing. However it allows gathering concepts in relation to the main theme. The concepts gathered this way are coherent without the linear or inflexible structure of outlines, clustering or listing ideas. The use of this strategy can present information using images, symbols, key words, codes and color to the level one wishes to do.

This type of organization of ideas can capture the spatial, bodily-kinesthetic, and visual intelligences of some learners. As the content resembles that's found on a topic outline, the structure of the concept map is nonlinear and lends itself to personalization by the student.

14-The Procedure.

The concept mapping is designed in an attempt to obtain an answer to the research question about the extent to which this method can enhance students' performance in writing and control the educative factors to which a learner or a group of learners is subjected during the period of inquiry as it is an ideal tool to measure the growth of students' knowledge interconnections, because of representing ideas using one's own word. The experimental design can be used in this type of educational to investigate the effect of concept mapping which is subjected during the period of inquiry and observes the resulting achievement Christensen (1980:35).

15-The Research Design

The two groups of students has been taught by the researcher . The experimental group (20 students)is taught by adopting concept mapping tool during paragraph writing lectures ,the students have taken the material of practicing writing different types of academic paragraph (descriptive , narrative , analytical ,argumentative) which are found in writing subject with practicing concept maps design. The students have been asked by the researcher to write an academic paragraph to test their writing skills depending on concept mapping strategy. Whereas the control group writing their paragraph depending on using the traditional strategy without using concept mapping approach .

16- Post Test.

After two weeks intervention the two groups of the students were submitted to a production test out of (20) marks on writing one topic among the types of paragraphs that they have been learned during the first term of the academic year. The written post-test in its final form consists of a question to measures the students' performance at production level of learning . Both the control and experimental groups have been tested .The experimental group(20) students was asked to write a paragraph on a certain topic depending on their knowledge of applying concept maps as a pre-writing step of brainstorming to arrange the ideas logically .Whereas the controlling group (20 students) was asked to write the paragraph without applying the concept mapping ,i.e depending on their traditional method of wiring. The test scores have been compared by the researcher. Students' responses are evaluated by scoring the students' answers on , the production task depending on their construction of concept map as apre-writing step .The results are shown in table (1)for the experimental and the controlling groups, also table (2) shows the percentages of the students responses of both groups .

17-The Results Analysis

To verify the hypothesis of the study and to achieve its aim, the hypothesis is tested against the students' responses of both the control and the experimental groups. Generally , writing test's analysis of this research focused on paragraph structure(topic sentence , supporting sentences ,concluding sentence) ,

length of the paragraph ,content , cohesion and coherence. The rating scale contained the performance scale for the division of levels accordingly (20) is the highest level and(0) is the lowest level. The collected data were analysed quantitatively through SPSS software

The overall performance of the students is investigated by using the t-test formula for one sample for both groups to find out the level of the subjects on the whole test, and then the results are compared against each other as is shown in table (3):

As is shown in table (3), the theoretical mean value of the experimental group which represents (16.55) is higher than the theoretical mean of the control group which represents (12.70), generally this means that the students' performance of the experimental group is higher than the performance of the control group.

T-test value of Independent Samples is further investigated to verify the hypotheses and to know the significant difference of the overall performance of the students for both groups, as table (3) shows that the calculated T-value is (5.576) which is higher than the tabulated T-value which is (2), so this means that there is a difference which is statically significant between the experimental and control group at the level significance 0.05 with df (39). These results indicate that the test is dependable and that the performance of the students who have been taught by using the concept mapping instruction is generally good with less mistakes, highly structured, coherent and well-connected paragraph in comparison with the performance of the control group.

As is shown in table (4), the extent of homogeneity of the degrees of the experimental group and the control group was confirmed by using the Levene's test, which is (1.178) at the significance level (0.285), so it is higher than the approved significance level (0.05). These results showed that there was no statistically significant difference between the differences in the degrees of achievement of the students of the experimental and the control group.

To find out the effect of the experimental group on student achievement, the researcher used an (Eta square) test to calculate the size of the

effect of the independent variable (concept mapping) in the dependent variable, which is (writing skills), and to ensure that the size of the differences produced using the t-test are real differences due to the independent variable and not to other variables, as the effect size is determined if it is large, medium or small, as shown in table(5):

Therefore, the square of Eta (η^2) is calculated the value of the as shown in Table(6).

It appears from table (6) that the effect of (concept mapping) on (performance of the students) is large, because the value of the square (η^2) which is (0.450) which is higher than (0.14), that indicates the effect of concept mapping on the achievement of students of the experimental group is very high. It became evident that the concept mapping can rationally be used to enhance students' performance and improve their writing.

18-Discussion

The present study aims at identifying the application concept mapping as a pre writing technique to teach writing skill to the selected samples as a representative of EFL learners to enhance their writing ability. the researcher applied the concept mapping technique in real classroom situation. As also mentioned in the literature review, the concept maps are a creative and effective way to map the ideas. When the learners (experimental section) attempted the post-test after the treatment, the evaluated results show that there is a significant difference in the mean was found after the results of the pre-test and post-test were compared, this proved that using concept mapping develop the paragraph structure, content, cohesion, and coherence, as the learners organize the entire main and sub ideas along with relevant supporting details on the topic. Also it has been proved by using (Eta square) test the effect of using concept mapping is successful for EFL learners. It is obvious

through the improvement of the learners' results that the application of this technique enhanced the performance of the students in writing.

19-Conclusion

Writing is a complex task for EFL. The use of new effective instructional design is useful to establish conditions for learning with a particular attention to activities that generates awareness and perfect transfer of course contents at a particular subject with less time and effort. The researcher applied the concept mapping technique in real classroom situation. As also mentioned in the literature review and proved in practical part of the study, the concept maps are a creative and an effective way to map the ideas for effective learning generally and writing particularly. A placement test was taken to determine the language proficiency of concept mapping. The research's focal point of using the concept maps was specifically for the enhancement and development of the areas of content, coherence and the paragraphing structure. Apply the concept mapping techniques during pre-writing stage organize the entire main and sub ideas along with relevant supporting details on the topic. So that the application of the concept mapping proved successful when the results were evaluated. When the learners (experimental group) attempted the post-test after the treatment, a significant difference in the mean was found. It became evident through the improvement in the results of the learners that the application of the concept mapping techniques in the pre-writing stage enhanced learners' performance. The result of the learners taught through some usual techniques also confirmed the fact that the traditional techniques or methods applied to teach writing to the EFL learner may not give fruitful benefits to the learners or the teachers as the learners (experimental) achieved a significantly different results with the help of the

structured techniques applied to teach them the skill.

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Figure (1) Model of a Concept Map by (Novak & Gowin, 1984).

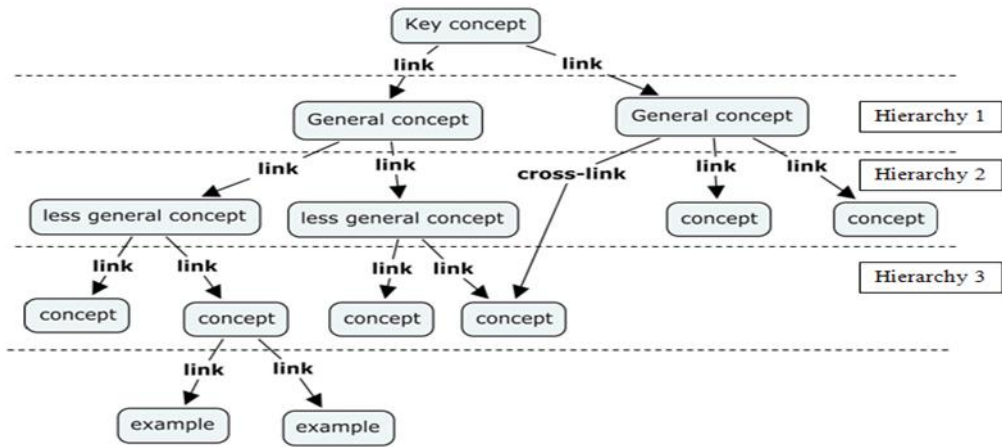


Figure (2) Spider Concept Map

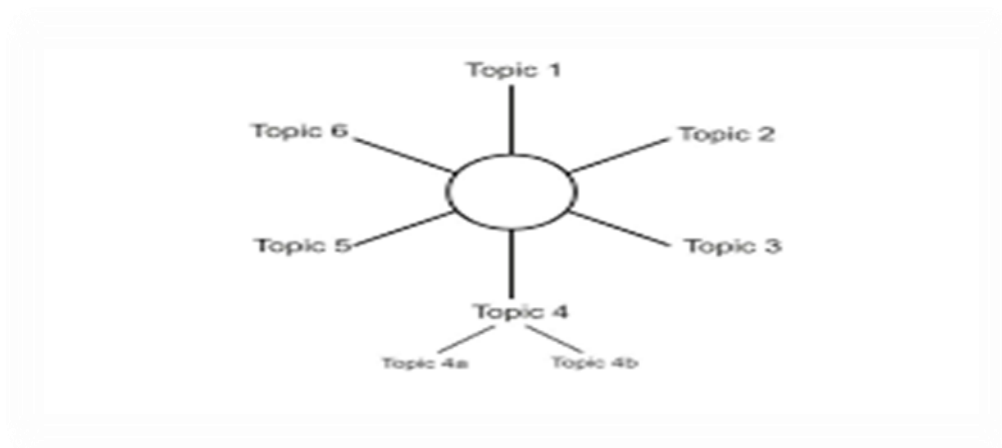


Figure (3) Hierarchy Concept Map

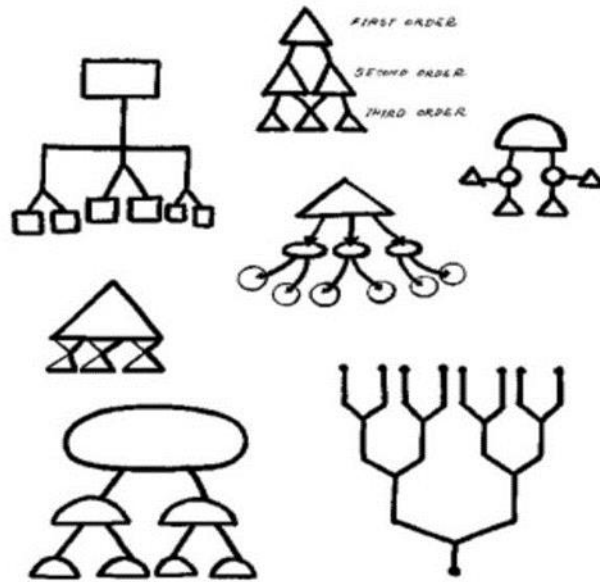


Figure (4) The flowchart Concept Map

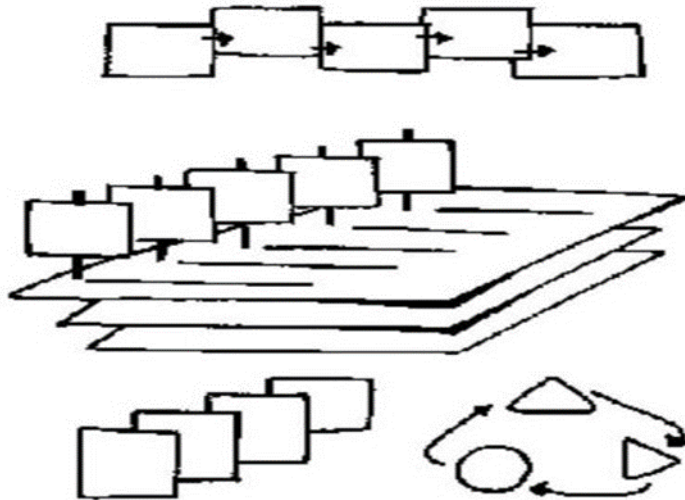


Table (1)**Overall Performance of the Experimental and Controlling Groups**

| No. Controlling Group | Marks Out Of 20 | No. Experimental Group | Marks Out Of 20 |
|-----------------------|-----------------|------------------------|-----------------|
| 1 | 12 | 1 | 16 |
| 2 | 13 | 2 | 17 |
| 3 | 14 | 3 | 17 |
| 4 | 15 | 4 | 18 |
| 5 | 16 | 5 | 19 |
| 6 | 16 | 6 | 17 |
| 7 | 15 | 7 | 18 |
| 8 | 13 | 8 | 17 |
| 9 | 14 | 9 | 18 |
| 10 | 14 | 10 | 14 |
| 11 | 15 | 11 | 13 |
| 12 | 8 | 12 | 13 |
| 13 | 11 | 13 | 19 |
| 14 | 9 | 14 | 18 |
| 15 | 12 | 15 | 16 |
| 16 | 14 | 16 | 16 |
| 17 | 13 | 17 | 15 |
| 18 | 12 | 18 | 14 |
| 19 | 9 | 19 | 17 |
| 20 | 9 | 20 | 19 |

Table (2)**Percentages of students' responses**

| Marks out of (20) for Control group | Percentage | Marks out of (20) for experimental group | Percentage |
|-------------------------------------|------------|--|------------|
| 12 | 60% | 16 | 80% |
| 13 | 65% | 17 | 85% |
| 14 | 70% | 17 | 85% |
| 15 | 75% | 18 | 90% |
| 16 | 80% | 19 | 95% |
| 16 | 80% | 17 | 85% |
| 15 | 75% | 18 | 90% |
| 13 | 65% | 17 | 85% |
| 14 | 70% | 18 | 90% |
| 14 | 70% | 14 | 70% |

| | | | |
|----|-----|----|-----|
| 15 | 75% | 13 | 65% |
| 8 | 40% | 13 | 65% |
| 11 | 55% | 19 | 95% |
| 9 | 45% | 18 | 90% |
| 12 | 60% | 16 | 80% |
| 14 | 70% | 16 | 80% |
| 13 | 65% | 15 | 75% |
| 12 | 60% | 14 | 70% |
| 9 | 45% | 17 | 85% |
| 9 | 45% | 19 | 95% |

Group's statistics

| Group | N | Mean | Std. Deviation | t- test | Std. Error Mean | Df | Sig (2-tailed) |
|--------------|----|-------|----------------|---------|-----------------|----|----------------|
| experimental | 20 | 16.55 | 1.905 | | .426 | 38 | 0.000 |
| Control | 20 | 12.70 | 2.430 | 5.576 | .543 | | |

Table (4)

Independent Samples Test

| | Levene's Test for Equality of Variances | | T-test value for Equality of Means | | | |
|-------|---|-------|------------------------------------|-------------------|----|-----------------|
| | F | Sig. | Calculated t-value | Tabulated t-value | df | Sig. (2-tailed) |
| Score | 1.178 | 0.285 | 5.576 | 2 | 39 | .000 |

test.

Figure (5)

Overall Students' performance

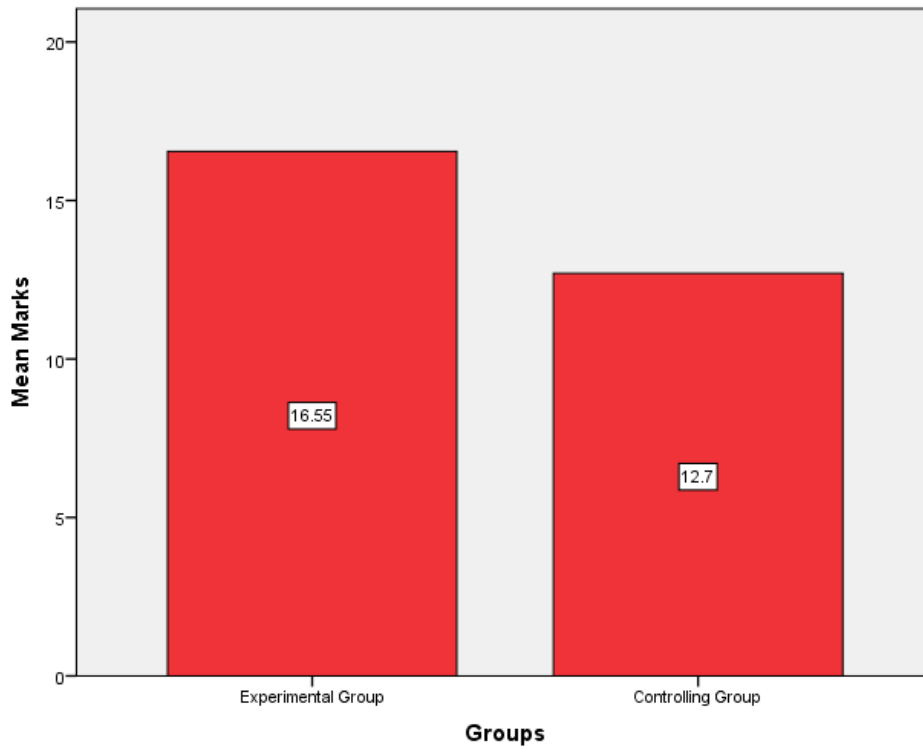


Table (5)

The standard table of effect size value

| Large | Effect size | | Tool |
|-------|-------------|-------|----------|
| | Medium | Small | |
| 0.14 | 0.06 | 0.01 | η^2 |

Table (6)

The values of the effect size

| The effect size | η^2 | t-test | Dependent variable | Independent variable |
|-----------------|----------|--------|--------------------|----------------------|
| Large | 0.450 | 5.576 | Performance | Concept mapping |