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Thème

Using Concept Maps Software in Academic Writing Courses : The Case Study of First Year Master Students

Mémoire présenté pour l’obtention du Diplôme du Master

Langue : Anglais
Spécialité : Science du Langage

Présenté Par: Imane. CHAMEKH Sous la Direction de: Mr. Bouri ELHADJ

Examinateur : Mr. Taibi abdeslem

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In the name of Allah, Most Gracious, Most Merciful

I dedicate this work to my dear father, May God have mercy on his soul, I wish he was present to witness this day and support me.

I dedicate this work to my lovely mother, who always prays for me. I would like, now, to tell her: “You are my source of power and to you I owe this success… May god bless you”.

This work is also dedicated to my sisters, my brother Aymen and my brothers in law.

To my sweet nieces Khadidja, Selsabil and Sara, I love you all.
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I would also thank the students who participated in this research.
ABSTRACT

Within the last two decades, there has been an intensified claim in how technology upholds the learning and the teaching process. The present study is to investigate the effectiveness of using Concept Map Software on EFL learners writing skill. Concept mapping technique has been investigated to be a powerful tool in organizing one’s thought before writing. Using such technique in teaching becomes an up-to-date issue that most recent studies and present researches have tackled. According to a number of studies, the Integration of these innovative tools in classroom is said to be of high benefit especially for learners. It helps learners brainstorm, generate and relate main ideas especially in the writing task. This research attempted to investigate the effect of using concept map software on students’ academic writing as pre-writing activity to help them organize and generate ideas. Aiming at achieving an overall quality of EFL learners writing ability, since many students have problems to make good writing because of the lack of choosing appropriate ideas and combine them with each other. On this basis, we hypothesized that if Master one students do use concept mapping software, their academic writing abilities will be enhanced through organization of thoughts. A quasi-experimental design was used to investigate the effectiveness of this technique through the use of the software. A sixty one EFL students participated on this study, participants were divided into two groups the control and the experimental group. The latter was additionally required to construct concept maps at the pre-writing stage and develop compositions using the Cmaptools software after being trained to use it during the treatment period, whereas the control group followed the traditional method of instruction. Statistically, we proved that there is a significant improvement in the experimental group results. As a result, the implementation of concept mapping technique using the software is of benefit especially in organization of thoughts.
LISTE OF ABREVIATION

**EFL**: English as a Foreign Language

**ESL**: English as a Second Language

**CM**: Concept Map

**SPSS**: Statistical Package for Social Sciences
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GENERAL INTRODUCTION

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5. Structure of the Research
General Introduction

English has become an international language in the world, EFL/ESL learners should master it for the sake of communication. There are four language skills which are: listening; speaking; reading and writing. A number of students assume that writing is the most difficult subject among other language skills. Therefore, the students have problems to make good writing like the lack of generating ideas and combine them. Hence teachers should pay more attention to the existence of various teaching tools that help learners develop their writing skills. Among these teaching tools the concept map software. Concept mapping technique is invented by David Novak who inspired this idea from two theories which are: schema theory and Ausubel’s theory of human cognitive learning. The theories are about knowledge and the meaningful learning. Concept mapping technique is a visual tool that helps at organizing and visualizing knowledge in a graphical format. In addition, the concept maps are graphical tools that are used in organizing and representing knowledge. In fact, concept mapping has been proven to be an effective tool that facilitate the learning process allowing students to comprehend, create new ideas and build connections.

1. Statement of the problem

To teach the language successfully is a challenging task to be achieved. Therefore, students at the university may face difficulties in learning and acquiring a second or foreign language especially when attempting to master the four language skills. According to our experience, many students assume that writing is the most difficult subject among other languages skills. Since most students have difficulties that appear in the lack of organizing ideas and combining them before writing. Therefore, teachers should take into account the existence of the teaching tools for the sake of making the learning environment more enjoyable and facilitating the learning process. Concept mapping
software is one of the up to date tools that can be used to generate and organize thoughts before writing. Based on the background of the study, the problem of this research is how the writing skill could be improved through using concept mapping software in terms of organizing thoughts.

2. Purpose of the study

The aim of the study is about using modern methods such as concept maps software have significant effect on promoting learners writing skill. It aims at achieving an overall quality of ESL learners writing ability.

In addition, through this work, we are to shed light on the writing skill and to prove how helpful are concept maps software in facilitating the student’s task to write correctly. It intends at making the students explore their cognitive capacity since concept mapping technique helps at generating ideas, brainstorming and encourages creative thinking.

Finally, we want to convince the course designers to include such technique in the school curriculum to help learners to be more successful and skilled writers, and to increase the learners’ awareness towards the benefits of this tool.

3. Research questions and Hypothesis

The use of concept mapping technique has been viewed from various contexts and perspectives by a number of researchers, but there are few studies about the use of concept maps software.

Here we will ask two main questions:

1/ does the use of concept maps software affect the master one students’ academic writing through organization of thoughts?
Are there any differences between the learners who use concept maps software and the conventional method in the writing process?

Accordingly, we hypothesize that:

H1: If Master one students do use concept mapping software, their academic writing abilities will be enhanced through organization of thoughts.

H0: If learners do not use the concept mapping software, their academic writing abilities will not be enhanced.

4. Methodology

The population of the study embraces first year master students at the department of English at the university of Oum El Bouaghi during the academic year 2016-2017 adopting a quasi-experimental method. The sample consists of two groups: the experimental group and the control group.

The nature of the research compels us to adopt an experimental design because our objective is to look at effects of implementing the concept mapping technique using concept-maps software on the improvement of students academic writing. Two intact class groups from first year Master students have been chosen. Both groups, the control and the experimental one go through three phases of experimental design: the pre-test, the treatment period and the post-test. The first step in this process is the pre-test. Before instruction, the experimental and control groups take the same writing pretest. Then a period of treatment takes place concerning the experimental group by receiving training about the use of concept map software then to draw maps to writing compositions. The control group receives the same instruction of writing tasks. Finally, a post test is given to the control and experimental group. Afterwards, we compare the results of both tests.
collected from the two groups to determine whether there is any effect when implementing concept mapping technique using the software on EFL academic writing.

5. Structure of the study

Our study is divided into two chapters:

- Chapter one includes two sections; the first section deals with giving definition of concept mapping technique and an overview about concept map software. Section two deals with the writing skill.
- Chapter two is concerned with analyzing and interpreting the results of the experiment.
Chapter one: Literature Review

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Section One: A look at concept mapping

Introduction:

To make the learning more meaningful, the learner is required to interact with learning materials, where he/she is to integrate new knowledge into his/her existing knowledge. The implementation of concept mapping technique and the use of concept maps software are examples to achieve so. In this chapter, we shed lights on theories that support concept mapping which lead to the invention of the technique; we are to define concept mapping as a technique; its major components; and its various advantages that occur in giving an overview about a subject and represent it in a more concise fashion. A part would be devoted for the concept map software that is implemented in this research to have an idea about the application, how it works and how to use it. We also devote a part that deals with previous studies about concept mapping because of the few sources about advantages of the technique.

1.1.1 Learning theory supporting concept mapping

There are two learning theories that shape the theoretical framework for the use of concept mapping. These theories are Schema Theory and Ausubel’s Theory of human cognitive learning. In fact there is a misconception between mind mapping and concept mapping and people do use the terms interchangeably without knowing the existing difference, and that is why we have relied on the following theories to clarify the point.

1.1.1.1 Schema Theory

A schema is an abstract concept proposed by J. Piaget in 1926. Schemas are units of understanding that can be hierarchically classified as well as webbed into complex relationship with one another. According to (DiCecco & Gleason, 2002), schema refers to
the structure of knowledge of a person for a particular concepts. Cognitivist Jean Piaget believed that knowledge is constructed on cognitive structures, and he suggested that individuals develop cognitive structures by accommodating and assimilating information. Accommodation can be defined as the creation of new schema that will fit better with the new environment or adjusting old schema. In other words, accommodation is when an existing schema is replaced. However, assimilation is the reuse of schemata to fit the new information, i.e., assimilation occurs when you add information to your schema. Schemas are the essential building blocks of cognition and the main components on which knowledge processing depends (Weiss & Sachs, 1991). Schema Theory (Novak & Gowins, 1984) suggests that knowledge is organized propositionally. Schema theory proposes that there is not one perfect body of knowledge, quite individuals possess distinctive knowledge networks that they implement in specific situations. According to (Win & Synder, 1996), learners are expected to react in one of three ways when confronted with new information: accretion, tuning and restructuring. In accretion, the learner is to assimilate new knowledge into an existing schema outside replacing the overall schema. In tuning, the learner realizes that the existing schema is insufficient for the new knowledge and changes the existing schema. In restructuring, the learner makes a new schema which determines inconsistencies between the new knowledge and the old schema. Researchers propose that when graphic organizers such as concept maps are utilized in the learning process, they aid activating existing knowledge rapidly and effectively and help at providing a framework to fasten new knowledge. When key concepts are arranged in a graphic organizer, the concept map serves as a cue for retrieving information, because prior knowledge is activated and new knowledge is connected more readily.
1.1.1.2 Ausubel’s Theory of Human Cognitive Learning (1968)

Ausubel was influenced by the teaching of Jean Piaget, similar to Piaget’s ideas of conceptual schemes; Ausubel made a connection between this and his description of how people acquire knowledge. He believes that learning of a new knowledge begins with our observation and recognition of events and objects through concepts we already have. That is to say, we learn by constructing a network of concepts and adding to them. In fact, Ausubel stresses the importance of meaningful learning rather than rote learning.

Meaningful learning can be contrasted with rote learning. In agreement with Ausubel Theory, to learn meaningfully, individuals have to make connection between new knowledge and relevant concepts they already know. Due to the fact that meaningful learning involves recognition of the links between concepts, it has the advantage of being transferred to long-term memory. Therefore, Ausubel believes that knowledge is hierarchically organized, that is to say, information is meaningful to the extent that it can be related to what is already known. Ausubel emphasized the importance of meaningful learning by saying that learning meaningfully allows the student to internalize and incorporate large amounts of new concepts, propositions and their meaning by integrating it with their prior knowledge, because the learner’s existing cognitive framework expands by incorporating new information which increases the individuals meaningful learning. Opposed to meaningful learning, rote learning can also incorporate new information in the pre-existing knowledge structure but without interaction. This type of learning is used to recall sequences of objects; it is of no use to the learner in understanding the relationship between objects.

Novak’s (2006) theory of meaningful learning, a continuation of Ausubel’s theory connects cognitive gains and emotional sensitivity, that is to say, learners integrate
knowledge within the context of what they know and feel. Novak described meaningful learning as dynamic in that it continues to grow and change and newly obtained information and experience are gained.

### 1.1.2 History of concept mapping

The technique of concept mapping was developed by Joseph D. Novak and his research team at Cornell university in the 1970’s as a means to understand changes in children’s knowledge of science. It is a tool used to visualizing ideas, concepts, processes and organizations. The origin of the idea goes back to the constructivist view which believes that learners actively construct knowledge.

Having a basis, David’s work is located with the cognitive theories of David Ausubel, who emphasized that learning of a new knowledge relies on what is already known. In other words, construction of knowledge begins with our observation and recognition of events and objects through concepts we already have.

Novak and his team were interested in observing the very specific changes in the concept or the prepositional meaning held by children as they progressed through school, in agreement with Ausubel’s cognitive theory. The study was longitudinal by means of audio-tutorial lessons (Canas, 2006). In fact, the study began in 1971 with children who received some audio-tutorial lessons; those children were interviewed on scientific topics such as: what is water and asked to make a concept map that represent their answers. As a result, Novak came with a conclusion which is the representation of thoughts visually do help learners in defining concepts, adding relating concepts, generating and linking similar ideas.
1.1.3 Overview about concept mapping

Concept mapping is a way of turning knowledge, ideas into a map. It is a technique used by individuals to organize knowledge into a graphical format. The graphical technique is based on graphically describing topics with one concept and/or the relationships found among different concepts. Canas (2006) assumes that this technique becomes a new powerful knowledge representation tool used in all sectors not only education.

Having some characteristics, concept maps are graphical tools for organizing and representing knowledge. They comprise concepts, generally surrounded in circles or boxes, and the association between concepts is shown by a connecting line linking two concepts. Words on the line referred to as linking words, or linking phrases.

Concept mapping has been proven to be an effective tool that facilitate the learning process and offers an atmosphere where structure and detailed organization are clear and easy to be accomplished by learners in gaining knowledge. Research provided that when a concept is created correctly, students will reach high level of cognitive performance because the learner will obtain the ability of discovering new concepts and the prepositions that link them. The students also will acquire the ability to integrate new concepts with older concepts and what Ausubel’s theory assumes.

1.1.4 Advantages of concept mapping

Concept mapping has been proven to be an effective tool that facilitate the learning process and offers an atmosphere where structure and detailed organization are clear and easy to be accomplished by learners in gaining knowledge. Research provides that when a concept map created correctly, students will reach high level of cognitive performance because the learner will obtain the ability of discovering new concepts and the preposition
that link them. The students also will acquire the ability to integrate new concept with older one and this is what Ausubel’s theory assumes.

Concept mapping is a highly visual process that shows the relationship ideas by writing key concepts. It has various advantages like the easiness in representing information visually, since the visual format of a map makes information easy to grasp. It is common that most students do have deficiencies in writing like the lack of generating ideas and combining them and concept maps are to solve that problem, because it visually organizes the concepts starting from a general idea or concept to more specific one. In addition concept maps help at giving a perfect overview about one’s ideas on account of helping at creating a deeper understanding of the topic. That is to say, the learner will get a complete overview about the all related ideas and help him/her to make links between thoughts to get connected ideas. According to Freeman (2004), the concept map is believed to aid in negotiation and balancing of conflicting needs and create mutual understanding.

On top of that, concept mapping helps at generating ideas, because when we generate ideas, we create, develop, and communicate ideas which are abstract and try to come up with many new ideas that have relation with our interest.

1.1.5 Components of a concept map

Concept maps represent one’s own creative style in visualizing ideas having at mind. Those tools offer an easy way to plan and organize ideas, because of the rich feature that have. Since each individual’s concept map is a unique reflection of his interpretation and his own way of looking at things, concept maps are based on some basic elements.

Concept map is a type of graphic organizer used as tool to help students organize, classify ideas and structure writing projects of a subject. Concept map is made up of concepts where we need to write key words; usually those words are enclosed in shapes
such as circles, boxes or triangles. The connections between concepts that are related are shown by arrows written on short explanation generally referred to as linking words or linking phrases.

Here it is an example of a concept map about concept mapping topic:

![Figure 1: An example of Concept mapping](image)

1.1.6 CmapTools software

CmapTools is a concept mapping software developed by the Florida Institute for Human and Machine Cognition (IHMC). It has several uses in which is employed as a visual learning tool used to organize, present and share knowledge. CmapTools enables learners to look at the relationship between concepts and understand them as part of understanding a single concept. The software encourages collaboration and has an advantage of sharing ideas and making comments. Transformative Applications in Education/CmapTools.(n.d). Retrieved May 08, 2017 from [https://en.wikibooks.org/wiki/Transformative_Applications_in_Education/CmapTools](https://en.wikibooks.org/wiki/Transformative_Applications_in_Education/CmapTools)

1.1.6.1 Description of Application

A concept map allows learners to identify knowledge within a particular context, typically by using a focus question. A list of core topics, or key concepts are developed and
identified that relate to the domain knowledge and the topics should be ordered in a hierarchical sense. One of the advantages of using software to participate in this process is that the reordering or restructuring of the hierarchy layout can be done easily. A concept map can be an ongoing project to be reconstructed as knowledge evolves. After the rough hierarchy has been enacted, links between the concepts should be developed showing the relationship between topics. This method of learning enables learners to understand that ideas are not isolated and free standing. Ideas and concepts are linked to additional ideas and concepts and learning how and why can help us to understand the main concept we are trying to learn. Retrieved May 08, 2017 from
https://en.wikibooks.org/wiki/Transformative_Applications_in_Education/CmapTools

1.1.6.2 How to Use CMap Tools

CMap Tools was developed at the Institute for Human and Machine Cognition, joining the concept mapping theory with a practical technology partner. The software can be downloaded for free, projects may be developed, used and revised at home by students or in the classroom. One of it's greatest strengths is the powerful collaborative community available to users. The concept map on CMaps can be enhanced by linking items that include images, documents, videos, charts, or other concept maps.

CMap Tools allows users to sketch out ideas with boxes or circles and show their interrelated ideas and concepts by linking these other boxes with arrows. The software permits users to add embedded links, so a user can click on a concept and be directed to a website or a separate file that gives more information about that concept. This is a free software that can be downloaded to any computer and so it is a wonderful tool for collaboration between defined learning groups or anyone who is interested. Retrieved May
1.1.7 Previous studies: or related work

A considerable amount of literature has been published on concept mapping since it is an up-to-date technique. These studies have been tackled concept mapping from limited perspectives. Much of the greater part of the literature on concept mapping pays particular attention to the use of the technique as an aid to enhance comprehension.

Martin (1994) Investigated the use of concept mapping as an aid to lesson planning following a longitudinal design. He found that concept mapping is useful in helping teachers develop lesson plans. Students planned to adopt such technique into their work even though it is a new method that needs training.

Soderston, Kleid and Crandell (1996) investigated the use of concept mapping as a revision tool and made an empirical evaluation on the utility of concept the technique. Results suggested that concept mapping is a useful revision tool for writers. Participants who experienced the usefulness of the technique as a revision tool showed a positive
attitude towards the benefits of concept mapping in improving accuracy, preparation and revision of materials.

Snead and Young (2003) adopted a quasi experimental design on the achievement of students with different ability levels. They investigated the effect of using CM in enhancing the African American students’ understanding in middle grade science. They concluded that concept mapping has effect on average (lower) ability level African American science students. In fact the technique helps students understand concepts and organize ideas in a workable form. It also helps them make connection between concepts and link these concepts which are already possessed. Students claimed that concept mapping is a useful tool for organizing ideas, it can enhance comprehension in a good way.

Kinchin, Streatfield and Hay (2010) examined the usefulness of concept mapping to enhance the research interview. They come up with a conclusion that Concept maps provide quick summaries of the interview quality and may help to identify topics to draw out information. The study proved that Concept Mapping could practically enhance the research interview as an evidence gathering tool and also as an interpretation tool.

Fahim and Rahimi (2011) studied the effect of using concept mapping strategy on the writing performance of EFL learners. The writing tasks were related to everyday topics which were familiar to students. Instructional materials and scripts to teach CM were hand outs contained some pictures and explanation about the technique and examples to clarify this concept. They found that the experimental group, as compared to the control group following the traditional approach, had a better performance.

Moreira and Moreira (2011) investigated the use of concept mapping technique on comprehension. The subjects of the study were college students of languages, taking the
discipline American Literature. The researchers’ aim was to determine the effects of CM in students’ performance related to reading understanding of poems. Results showed that CM technique is powerful tool in visualizing ideas. Participants enjoyed the technique because they had become aware of scenes, events and objects that are related to the poem. They also had retrieved relevant data stored in their memory and had acquired vocabulary.

In another investigation of the impact of concept mapping as a prewriting activity on EFL students’ writing ability as a pre writing strategy examining its effect on EFL learners’ writing achievement and interest, Shakoori and Kadivar (2015) found that learners who entertained concept mapping strategy training demonstrated better writing performance than others. They came with a conclusion in addition to other studies, concept mapping is an effective and helpful instructional tool for teaching writing.

Al-Shaer (2014) assumes that past evidence reviewed above seems to suggest concept mapping works for EFL students. This study, which experimentally examines the effect of concept mapping as a pre-writing strategy of Algerian English students’ ability to generate better ideas and thus better quality of academic writing, differs from previous studies in three ways. First, the use of concept mapping and idea generation is dealt with at a pre-writing stage which would provide EFL teachers and students with a focused instructional strategy. Second, the use of concept Map software is an up-to-date tool for learning; and using such technique as pre-writing skill is of advantage. Third, the implementation of the technique as a pre-writing step with master one students gives them the opportunity to practice academic writing for their requirement next year.

Conclusion

In this section, we dealt the concept mapping technique, its major components and advantages, the application of the concept maps software and its use. To sum up, concept mapping technique is a useful tool that helps generating ideas as a pre-writing stage. In
fact, through previous researches concept mapping technique is proved to be very helpful and learners demonstrated a better writing performance.

Section Two: writing skill

Introduction:

All students and professors need to write, and many endeavor to finish their stalled dissertations, journal articles, book chapters, or proposals; all these types are to be classified under academic writing. According to some scholars, writing is hard work and can be difficult to succeed in academic schedule. It is true that writing is a productive skill, but this does not mean it requires an innate skill or special traits rather specific tactics and actions. In this chapter, we are going to touch the writing skill, its importance, and the process that we go through to the difficulties that of writing.

1.2.1 Lights on writing skill

Language plays an important role for daily communication. Since English is considered as an international language, students should master it in order to survive in the global era. There are four language skills of English which are: listening and speaking; reading and writing. It is widely recognized that writing is the most challenging skills for students to master. In fact, writing has been defined from various perspectives. So, there is a need to define writing and explain its role and importance for EFL learners.

1.2.2 Definition of writing

Writing is one of the productive skills which is important for foreign and second language learners. Before there was a single definition for writing which; is the use of symbols and graphs to record speech. Byrne (1988) states that during the writing process, we do use graphic symbols that are letters or combination of letters which relate to sounds
we make when we speak. In both definitions, writing is described as a collection of graphic
representation neglecting its cognitive side.

The previous definitions look at writing as a collection of symbols, yet Brooks (1960) has
another perspective, he believes that writing is a collection of expressions that convey
meaning and carry a message, that is to say, writing is a form of expressions and
communication which enables learners to communicate ideas, feelings and different
attitudes in a written mode.

On the other hand, there are researchers who explained writing ability from a social
viewpoint. Hamp Lyons and Kroll (1997) assert that this skill is regarded as “an act that
takes place within a context, that accomplishes a particular purpose and that is
appropriately shaped for its intended audience” (p.8). Which means that writing is used for
specific purposes to achieve the goal of communication since there is a close connection
between texts production and writing purposes.

Writing needs a desire from the writer to be able to express his / her thoughts towards a
given topic. Therefore, writing is always considered to be one of the most language skills
to be mastered because writing involves a number of activities and strategies as selecting
appropriate language, brain storming, planning, outlining, organizing, drafting and
revising. Flower and Hayes(1981) has emphasized the effectiveness of pre-writing for
easing the writing difficulty because it helps writers in laying out goals, generating ideas
and organizing information. According to Boordin and Fayal (2000), proper prior planning
encourages writing performance, and in a contrary manner, insufficient planning may
cause poor writing performance.
1.2.3 Stages of writing process

Every writer follows his/her own writing process. Frequently the process is a routine that comes naturally, being conscious of one’s own writing process is very helpful. The act of writing involves many processes. In order to produce written material more efficiently, these processes can be broken down into stages as Oshima and Hogue (1990) mention them:

1.2.3.1 Pre- writing:

Pre- writing is the first stage in writing process. Two steps are taken into consideration. First, choosing and narrowing the topic, this means to define the topic and content area and limit it to specific angle that will be developed in written material. Second, gathering ideas; that is to say: brainstorming any ideas, thoughts that are relevant to the text. This includes coming up with the basic ideas, researching information that the writer has in mind.

1.2.3.2 Planning (outlining)

In this phase, students are required to organize their ideas that were generated by brainstorming in the previous stage. In planning, there is a need to predict what would be the final text through organizing arguments into an outline following a logical order that suits the structure of the text of opening, body and ending. Moreover, ideas need to be arranged in sub- groups that will later develop into paragraphs.

1.2.3.3 Writing and revising draft

Writing or drafting is the stage where real writing takes place. It is described as the stage where writers move from abstract (ideas) to the concrete (written text) when writing the first draft, the focus is to be on context only because the writer will try to find the best way to communicate his/her ideas and decide what to include to meet their reader’s needs.
1.2.3.4 Writing the final copy to hand in

it is the last stage in the writing process. Writers have to rework the written drafts into a final form and making some finishing touches then prepare them for presentation or publication.

1.2.4 Importance of writing

It is believed that writing is an important skill despite the fact of its complexity as a process, the importance of appears in developing the writer’s communication skills. That is to say, writing is a communication tool that translates the thoughts, ideas and feelings into language as Rogers (2005) mentions:

Writing is one of the most significant cultural accomplishments of human beings, it allows us to record and convey information and stories beyond the immediate moment. Writing allows to communicate at a distance, either at a place or at a time. Mastering writing is part of learning a foreign language. (p.1)

It holds a tremendous importance for native, second and foreign language learners, since developing writing proficiency whether in ESL or EFL setting is widely acknowledge as an important skill. Writing also intensifies the student’s knowledge because through their researches and investigations they collect and learn different information where they look at them from a critical perspective. So formal writing encourages critical thinking when writing essays, research papers and articles. In addition, it helps writers learn how to interpret the world around him in a meaningful manner. Moreover, writing fosters the ability to explain a complex position to readers. Within an educational setting, students write for specific needs and purposes like for example writing academic essays, letters or reports that fit the purpose they want to achieve. Barras (2005) argued that:
Writing is important in studying all subjects, and in all professions. Only by writing well can give you a good account of yourself as students or when applying for employment, Or in a career writing email, memoranda, letters, Instructions and reports. It is by your writing that many people judge you.(p.1)

Writing is considered to be a basic means for assessing knowledge of language because most exams require students to answer in a writing through asking them to write paragraphs, compositions or essays.

1.2.5 Writing difficulties

Writing is a complex task that requires the mastery and integration of a number of sub- skills. So having difficulties in one area can delay skill development. Like all learning problems, difficulties in writing were investigated by a number of researches. They classify them into three problem areas: psychological problems, linguistic problems cognitive problems.

1.2.5.1 Psychological problems

People communicate naturally using speech. It is used to in almost all circumstances that accustom having someone physically present when using language and getting feedback. Writing in contrast, is basically a solitary activity, the writer needs to write on his/her own. It is claimed some researchers that psychological problems source is the lack of probability of interaction or the quality of the feedback. Can (2009) claims that conflicting feedback provided by instructors from different departments in an institution may influence the student’s confidence in their writing skills.

1.2.5.2 Linguistic problems

Djabllah (2013) assumes that the linguistic problems encounter many issues like: grammar, ideas and organization, vocabulary, mechanisms, and first language interference.
Inadequate mastery of grammar by students is considered as a language difficulties because good writing is certainly beyond grammar manipulation. Nevertheless it will be a difficult task for students to compose clear, logical and fluent paragraphs if they are incapable to reasonable, simple and accountable piece of writing. Moreover, the spontaneous way of speech and written text construction exhibits very important differences in organization and language employed. Most of writing follows much defined discoursed organization, however; speaking differs than writing at the level of correctness and formality; that is to say, speakers always produce incomplete or often ungrammatical sentences, make poses and repeat because speech is normally unplanned and spontaneous, having little time to think on organization of sentence structure or even connecting sentences. Written language, in the other hand, tends to be more formal than the spoken one, trusted in legal agreement and acquired through explicit education. The majority of students is attributed to the lack in finding the appropriate words they need to express their ideas. Reading is the source of poor vocabulary, so in this respect learners are in need to have an extra text where they are exposed to authentic material of different topics to acquire most frequent used words. About the mechanics of writing, it include the inability of mastering parts of speech, Punctuation and capitalization. Knowing the parts of speech, using them correctly, and understanding how they relate to one another is an important early step in creating strong writing skills. Punctuation marks are signposts used by writers to give directions to their readers about which way a sentence is going. Using punctuation properly is one of the most crucial elements in making the meaning of the sentence absolutely clear. learning proper capitalization takes on a whole new meaning and it is of importance especially in learning how to make distinction between capitonyms. Sometimes, students apply knowledge from their native language to the second language due to habit, the writer’s bilingualism background and the limited vocabularies of target
language mastered. All in all, students have much to gain from mastering and learning well the mechanics of writing.

1.2.5.3 Cognitive problems

Djaballah (2013) claims that when talking about spoken and written language development, it is important to distinguish between the different component skills of both. For spoken language, we distinguish four domains: phonology, grammar, semantics and pragmatics. When talking, participants appear to speak without much conscious attempt or thought where they show a kind of personal or social interest that what speaking skill is special with. When we consider written language, we notice that writing is learned through process of instruction, hence there is a need to grasp the written form and to learn some structures that are not present in speech, rather are necessary in written communication. Overall, we have to learn how to organize our ideas in a way that can be understood by readers.

1.2.6 Connection between reading and writing

Before, reading and writing have been thought as separate processes, regarding reading as receptive skill and writing as productive skill. Despite this classification, they seem to be completed activities. Supplementally, writing and reading are two important academic skills which have a very close relationship. Both were linked to language and communication as well as reasoning. Idol and Jones (1991) supported the idea of combining the reading and writing that does not only increase the language experiences rather reading experiences. It is known that those who make reading are greatly expected to develop their proficiency in writing. Williams (2003) upholds this idea by claiming that “good writers are usually good readers and good readers are good writers”. (p.156). Consequently, better readers tend to produce more syntactically correct writing.
Moreover, reading passages as simple step has effects on writing. Through reading passages learners will acquire new vocabulary where they expand knowledge and gain new lexicon. Since reading provides prior knowledge, ideas and information learners are to develop their language in a perfect way. In addition, they will be aware about the possible structures and how ideas are related so that they will make a significant progress. It is agreed on that integrating the reading and writing skills in the EFL classrooms under a single course can help learners enhance their writing skill.

1.2.7 Academic writing

1.2.7.1 Definition of Academic Writing

Academic writing has been a crucial area of research in TESOL (Teaching English to Speakers of Other Languages) field. No one can deny the importance of academic writing not only in mastering the English language, yet being successful in other disciplines. In fact, academic writing can be defined as a mental and cognitive act because it is the product of the mind (Al Fadda, 2012). It means that it is a process of breaking down ideas, using reasoning and producing and analyzing knowledge. Greene and Lidinsky(2008) report that “In the strictest sense, academic writing is what scholars do to communicate with other scholars in their fields of study, their disciplines”. (p. 1). The idea holds that academic writing functions as a communication tool for conveying acquired knowledge. In other words, academic writing refers to a particular style that researchers adopt to define the intellectual boundaries of their disciplines and their areas of research.

1.2.7.2 Characteristics of Academic Writing

Having some characteristics, academic writing has a formal tone, special language and structure. Like all kinds of writing, academic writing has its own tone, which dictates the choice of words and phrasing. So there is no need to use slang words, jargon and abbreviations. It also tends to be objective, concise and formal. It depends on the subject
area and discipline that writers work on. Simple, understandable use of language is of importance in academic writing. Well – structured paragraphs and clear topic sentences make readers able to get meaning easily. Kinds of structures are required when making academic writing for example for essays and papers, there is an introduction, body and conclusion; for reports there is introduction, discussion, conclusions and recommendations. All In all, academic writing has certain characteristics that make it different to personal one.

1.2.8 The main elements of academic paper

1.2.8.1 Introduction

The introduction is a piece of writing, it is defined as the broad beginning of a paper because it starts from general to specific. This view is widely shared by Lichtfouse (2003,p.28) who stated that : “The text must lead the reader from the general to the specific; from global challenges and problems to specific or local issues”. The introduction typically begins with a general statement of the problem area, with a focus on a specific research problem, to be followed by the rationale or justification for the proposed study. The statement of the problem is often referred to as the focus of the study then contextualizing the topic by referring back to what is currently known about the problem under investigation and show its significance and your purpose of studying it. There must be brief description of major issues and sub-problems of the research. In addition, identifying the key independent and dependent variables of the research and formulation of the research question(s) and hypotheses are necessary and of importance.
1.2.8.2 Abstract

The abstract is a brief summary of the whole proposed work, usually in one paragraph of three hundred word or less. It includes: the research problem, the rationale (the purpose) for the study, the hypothesis, the method and the main findings. Descriptions of the method may include the design, procedures, the sample and any instruments that will be used and also the findings and the implication from the study. It is claimed that authors fail to show readers two important points. The first one is that the abstract should provide explanation of the background, challenges and value of the study in comprehensible way for all types of audience. The second one is that the end of the abstract must stress meaning, implications and potential benefits (Lichtfouse, 2003).

1.2.8.3 Literature review

A literature review discusses published information in a particular subject within a certain period of time. It is a simple summary of sources that follows certain organizational pattern and combines both summary and synthesis. A summary is a recapitulation of the important information of the source, but a synthesis is a reorganization of that information. It might give a new interpretation of old material or combine the interpretation of old material with the new one. Or it might trace the intellectual progression of the field including major debates. It might also evaluate the sources and gives the reader an overview about the most pertinent or relevant ones.

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1.2.8.4 Methodology

The method section describes the rational for the application of specific procedures or techniques used to identify, select and analyze information applied to understand the research problem. The methodology includes the research design, subjects or participants, instruments, data collection and analysis procedure. First, the research design includes the
A conclusion is a whole summary for what is being discussed in the research. It includes the main results and the interpretation of what is being discussed. It intends to help the reader understand what the research is about because it synthesis the key points and limit the research area. The conclusion identifies the gap in literature through describing previous studies and demonstrating the importance of ideas.

https://en.wikibooks.org/wiki/Transformative_Applications_in_Education/CmapTools

**General Conclusion**

This chapter accounted for the concept of writing by giving a definition and reviewing what scholars have said about the concept. We also covered the stages that the writer may go through when writing to the importance of writing the skill then identifying where the difficulties and complexities lay. Moreover, we presented how reading plays an important role in developing the writing skill in addition to the close relationship between them. We came with a conclusion that the writing skill is a difficult task that requires efforts from both the teacher and the learner, that is to say having essential knowledge and information for the sake of making learning the writing skill easier.
Chapter two: Field Work

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Chapter Two: Field Work

Introduction

This chapter includes a detailed description of the experiment we undertook in the framework of this study: the subject involved, the method used, the stages and procedures followed and also the design of the study. The chapter presents also a detailed description of the pre-test and the post-test and an analysis of their results.

2.1 The Course of Writing in English Department at Oum El Bouaghi University

In the English department, writing is taught as a separate module. The teachers of writing design the content of this module according to the students’ needs. Objectives of writing syllabus are different from one level to another. In the “Licence” degree starting with the first year, the objective of the module is to teach students types of sentences the simple, the complex, and compound ones. In addition to the rules of punctuation to make the meaning of the sentence absolutely clear. So the teachers’ role is to help students to write accurate sentences. In the second year, the syllabus objective is to help students write accurate paragraphs of different types devoting time for teaching them cohesion and coherence. Within this level teachers guide students to organize their ideas in a logical way so as to produce coherent paragraphs with a topic sentence and relevant supporting ideas. In the third year, students learn how to write the different parts of an essay including introduction, body, and the conclusion using different modes of discourse.

In the “master” degree, the master one students have a module labeled “academic writing” and its main objective is to make students writing more academic. The module’s syllabus describes all the steps students go through to write an academic paper. The steps include: the general introduction; abstract; literature review; methodology and
conclusion. Through this module, master one students are prepared on the next year to write their dissertations, having in mind all steps and rules that must be followed.

2.2 Population and Sample

The population for our research is first year master students at the department of English, University of Larbi Ben M’hidi for the academic year 2016/2017. The aim behind choosing this level is that master one students are prepared next year to defend their thesis, having a module labeled “academic writing”. The module’s structure involves all steps students should go through in writing an academic paper which is the subject of this research.

The total number of Master One students is 71, but our sample consists of 61 students due to the number of absentee; this is why we have divided the sample into two groups: the control group with 30 students and the experimental group with 31.

2.3 Choice of the Method

The choice of the method is of importance because it has an impact on the work. The choice of the method depends on certain factors which are: the nature of the research; the objectives to be achieved and the sample chosen to conduct the research. The methodological approach taken in this study is quantitative. The nature of the research obliges us to adopt an experimental design because our objective is to look at effects of implementing the concept mapping technique using concept-map software on the improvement of students academic writing. An experiment can be defined as a test under controlled conditions that is made to demonstrate a known truth or examine the validity of a hypothesis (Muijs, 2004:p13).

Our study raises the following questions:
The use of concept mapping technique has been viewed from various contexts and perspectives by a number of researchers, but there are few studies about the use of concept mapping software.

Here we will ask two main questions:

1/ does the use of concept map software affect the master one students academic writing through organization of thoughts?

2/ Are there any differences between the learners who use concept map software and the conventional method in the writing process?

The questions can be reformulated as follows:

Is there a statistically significant difference at the level of the quality of the students’ academic writing between those who were exposed to the technique and worked with the software, and those who were taught with the conventional method?

Therefore we raise the following hypothesis:

H1: If EFL learners do use concept mapping software, their writing ability will be enhanced through organization of thoughts.

To state the matter differently, there would be a statistically significant difference in the level of the quality of writing between students who implemented the technique and those who did not adopt. Accordingly, the null hypothesis would be:

H0: If learners do not use the concept mapping software, their writing ability will not be enhanced.

The nature of the research, therefore, requires a quasi-experimental design in which we have pre-chosen two intact class groups from 1st year Master students Science of
Language stream. Both groups, the control and the experimental, go through three phases of experimental design: the pre-test, the treatment period and a post-test.

2.4 The Pre-test Phase

The first step in this process was the pre-test. Before instruction, the experimental and control groups took the same writing pretest. The test was a production exercise which required them to write an introduction. The pre-test was administered two weeks before the treatment period for both groups. The students were asked to work on the test individually. The task was completed in forty five minutes. We have administered the pretest to proof that both groups have the same level.

2.5 The Treatment Phase

After the pre-test, both groups, the experimental and the control group, received the treatment that lasted 4 sessions, 45 minutes each. During the period of treatment we integrated a concept mapping software labeled “Cmaptools” in class writing instruction as a pre-writing activity to help students generate, organize and relate main ideas. The software was downloaded for free of charge. In the first week of treatment, with the experimental group we devoted time to talk about the concept mapping technique and its benefits as an instructional tool and as a graphical organizer. We also trained the students to use the Cmaptools using a data show. We also provided a guide labeled Cmaptool Help for students to aid them be familiar with the software or in case they get lost because the guide explains all steps needed in creating a concept map. Then we asked them to install it in their personal computers.

In the first session, we asked students to write an abstract. The students’ first task was to draw the concept map of most ideas to be developed in an abstract using the
software. They included a number of concepts that must be covered in the abstract such as: research problem, purpose of study, hypothesis, methods and findings. Then, students were asked to write the composition based on the already drawn map. So making the concept map of the abstract is a pre-step that may help students generate their ideas and connect them in an easy way.

In the other sessions we followed the same steps in writing, instructions were asking students to write compositions about literature review, methodology and conclusion. Each session, the students were asked to write a composition about a subject. The students’ first task was to draw the concept map of the subject to be developed using the software. Then starting the writing task based on the map.

2.6 The Post-Test

The post-test was the same production exercise as in the pre-test. The aim was to measure changes and progress in participants’ productive skill. The post-test took place at the end of the treatment period of 45 minutes. As in the pre-test, students were asked to write individually.

2.7 Scoring

The maximum score for both pre and post – test is twenty (20), we scored five criterion which are: spelling mistakes; grammar mistakes; punctuation; cohesion and coherence and flow of ideas i.e. content. First, about spelling mistakes we have not focused on this criterion because students at this level are supposed to make no such mistakes. The same case with the grammar and punctuation mistakes (macro skills of writing). This is why much focus was on measuring the flow of ideas.

Scores are as follow:
1- spelling mistakes …………… (2 points)
2- grammar mistakes………….(2 points)
3- punctuation……………….….(2 points)
4- cohesion and coherence……(3 points)
5- content (flow ideas)………..(11 points)

2.8 Instruments

In making the analysis of this study, we used the software SPSS to represent data and to draw figures to facilitate interpretation.

2.9 Data Analysis

This section is to deal with the interpretation of data. We followed two types of analysis: a descriptive statistical analysis and inferential statistical analysis. In the descriptive statistical analysis, we organized data for the sake of having a clear picture of the obtained results, we compared means and we provided figures that represent data. In addition, the inferential statistics is to prove results obtained through using the t-tests.

2.9.1 The control and the Experimental Group’s Results in the Pre-test

Table 1

The control and the Experimental Group’s Results in the Pre-test

<table>
<thead>
<tr>
<th>N</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>7</td>
</tr>
</tbody>
</table>
The following figure displays the scores as frequently repeated in the experimental and the control group pretest:

![Figure 3. Scores Frequency Distribution of the Pretest](image)

In the above figure, the experimental and the control groups scores in the pretest are clearly arranged and organized by the frequency. This figure clearly shows that the experimental and control groups scores frequencies are approximately similar in most cases which means having the same level. Considering the experimental group scores, we can see that students’ scores range from 6 to 15. This implies that the median corresponds to the value 10, while the mode is represented by the value 10 too.

On the other hand, the control group scores frequency display the highest score 14, and the lowest score 6. Both values are close to those of the experimental group. In
addition, this figure shows clearly a mode of 9 and a median of 10 for the control group pre-test results. From this analysis, we can deduce that the pretest scores in the experimental and the control groups are around the same area of scores from 6 to 15.

2.9.1.1 Comparing the Means

In this section, we calculate and compare the means in order to find out the difference between the obtained results in the experimental and control group.

\[ \bar{x}_{ex} = \frac{\sum x_i}{N_1} \]  
\[ (\text{mean of the experimental group}) \]

\[ \bar{x}_{co} = \frac{\sum y_i}{N_2} \]  
\[ (\text{mean of the control group}) \]

\[ d = x_2 - x_1 \text{ or } d = y_2 - y_1 \]  
\[ (\text{difference between the individual scores}) \]

\[ d = \bar{x}_{ex} - \bar{x}_{co} \]  
\[ (\text{difference between the means}) \]

2.9.1.2 Experimental Vs. Control Group Means (Pretest)

in the quasi-experiments design, there must be a pre-test to confirm the homogeneity of students' level in the control and experimental groups before starting the treatment. The following table represents the comparison of both groups means in the pretest in addition to the difference found between them.

\[ \bar{x}_{co} = \frac{\sum x_i}{N_1} \quad \bar{x}_{co} = 9.96 \]

\[ \bar{x}_{ex} = \frac{\sum y_i}{N_2} \quad \bar{x}_{ex} = 10.25 \]

\[ d = \bar{x}_{ex} - \bar{x}_{co} \quad d=0.29 \]

Table 2

The Means of the Experimental and Control Group in the Pretest
Experimental group | Control group | The mean difference
d<sub>ex</sub> | d<sub>co</sub> | d
--- | --- | ---
The mean | 10.25 | 9.96 | 0.29

According to this table, the students’ levels in both groups are comparable since the means of both groups are approximately the same ≃ and the mean difference d is not significant. As a result, the changes or development that may occur in the posttest are undoubtedly related to the treatment period, i.e., the use of concept maps software. In order to confirm this result, we make use of the “the independent-sample t test” that helps in finding out whether or not there is a significant difference between the students’ levels in the experimental and control groups. There must be steps used in order to conduct this test:

The null H<sub>0</sub> and Alternative hypotheses H<sub>1</sub>:

\[ H_0 : \mu_1 = \mu_2 \]
\[ H_1 : \mu_1 \neq \mu_2 \]

Calculating the means \( \bar{x}_{co} \), \( \bar{x}_{ex} \) and the variances :

**The mean of the control group** (\( \bar{x}_{co} \))

\[ \bar{x}_{co} = \frac{\sum x}{N1} \]

\( \sum x \): the sum of the gain results of the control group

N1: the number of students

\[ \bar{x}_{co} = \frac{299}{30} = 9.9667 \]

The control group did not get the average in the pre-test.
The variance of the control group

To calculate the variance, we take each difference, square it, and then average the result:

\[ \sigma_x^2 = \frac{\sum (x - \bar{x}_o)^2}{N} \]

\[ \sigma_x^2 = 4.51 \]

Depending on the formula above, the variance of the control group in the pre-test is 4.516.

The standard Deviation of the Control Group

\[ \sigma_x = \sqrt{4.51} \]

\[ \sigma_x = 2.12 \]

The standard deviation of the control group in the pre-test is 2.12.

The mean of the experimental group (\(\bar{X}_{ex}\))

\[ \bar{X}_{ex} = \frac{\sum y}{N_2} \]

\(\sum y\): the sum of the gain results of the experimental group

\(N_2\): the number of students in the experimental group

\[ \bar{X}_{ex} = 318/31 = 10.2581 \]

The experimental group scored above the medium average (10.2581) and higher than the control group in the pre-test.

The Variance of the Experimental Group

To calculate the variance, we take each difference, square it, and then average the result:

\[ \sigma_y^2 = \frac{\sum (x - \bar{X}_{ex})^2}{N} \]
\[ \sigma_y^2 = 6.4645 \]

Depending on the formula above, the variance of the control group in the pre-test is 6.4645.

**The standard Deviation of the experimental Group**

\[ \sigma_y = \sqrt{6.4645} \]

\[ \sigma_y = 2.54254 \]

The standard deviation of the experimental group in the pre-test is 2.54254.

**The t-test**

The t-test is one type of inferential statistics. It is used to determine whether there is significant differences between the means of two groups.

\[
t = \frac{\bar{x}_{co} - \bar{x}_{ex}}{\sqrt{\frac{\sigma_x^2}{N_x} + \frac{\sigma_y^2}{N_y}}} \]

\(\bar{x}_{co}\) : the mean of the control group

\(\bar{x}_{ex}\) : the mean of the experimental group

\(\sigma_x^2\) : the variation of the control group

\(\sigma_y^2\) : the variation of the experimental group

\[ t = 0.34 \]

Depending on the t table at 45 degree ( df=n1+n2−2), we find that the t value of 0.630 at the 0.05 level of confidence. The calculated t value is lower than the observed t value (0.34<0.630). Thus, we can assume that the two groups are similar; there is no
significant difference between them. The findings lead us to accept the null hypothesis, which in turn confirms the non-significant difference between the experimental and the control groups.

2.9.2 Control Group (Pretest Vs. Posttest)

To have a clear picture of the control group scores in the pretest and posttest, the following figure displays the frequency of these scores and helps in finding out whether there is or not any improvement.

Figure 4. Scores Frequency Distribution of the Control Group

Considering the above figure, the reader can notice that the pretest and posttest scores show clearly a close relation. The pretest scores range from 9 to 15. This means that the median of this statistical series, as mentioned before, is 10, while the mode is 9. With
regard to the posttest, most scores are between 6 and 15, which are not far from the first ones. The median of this test scores is 10, while the mode corresponds to 10. This statistical analysis shows that most scores are comparable and the slight change that appears is only at the level of the marks frequency. We notice that the highest score is 15, in the pretest increased to 15 in the posttest.

2.9.2.1 Control Group Means (Pretest Vs. Posttest)

In order to see whether or not the control group scores have changed in the pre and posttest, the following comparison of the means ought to answer this question

$$\bar{x}_{pre} = \frac{\sum x}{N1}$$
$$\bar{x}_{post} = \frac{\sum x}{N1}$$

$$\bar{d} = \bar{x}_{post} - \bar{x}_{pre}$$

<table>
<thead>
<tr>
<th>Table3: Control Group Means in the Pretest and Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest mean</td>
</tr>
<tr>
<td>9.96</td>
</tr>
</tbody>
</table>

As shown in the Table, there appears to be no significant difference between the means of the pretest and posttest. This confirms that the control group has not achieved any progress during the treatment period.

2.9.3 Experimental Group (Pretest Vs. Posttest)

Before comparing the means of the experimental group scores in the pretest and posttest, we draw the frequency distribution of these scores to make the picture of these scores clear and intelligible for the readers. The following figure molds these scores according to their frequency in the pretest and posttest:
Figure 5 shows a significant difference between the pretest and posttest scores of the experimental group. For the pretest, we can notice that most scores are ranged between the values 6 and 15. This implies that the mode of this series corresponds to 10, while the median is 10. On the other hand, the posttest scores series is arranged between 7 and 16, which shows a significant difference in a comparison to the first ones. In this statistical series, the mode is 12, while the median, as shown in the above figure, is 12. To sum it up, this figure displays a noticeable change in scores from the pretest to the posttest, which means that students have developed their writing skills during the treatment period.

**Compare means:**

**2.9.3 Experimental Group Means (Pretest Vs. Posttest)**

First, we begin by calculating the means and their differences of the pretest and Posttest

\[ \bar{x}_{pre} = \frac{\sum x}{N_1} \quad \bar{x}_{pre} = 10.25 \]
2.9.3.1 Experimental Group Means in the Pretest and Posttest

**Table 4**

*Experimental Group Means in the Pretest and Posttest*

<table>
<thead>
<tr>
<th></th>
<th>Pretest mean</th>
<th>Posttest mean</th>
<th>The mean difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>The mean $\bar{x}$</td>
<td>10.25</td>
<td>12.09</td>
<td>1.84</td>
</tr>
</tbody>
</table>

From this table, we can deduce that there is a noticeable difference between both means of the experimental group. This difference is traced back to students’ improvement during the treatment period.

2.9.4 The Control Group and the Experimental Group’s Results in the Post-Test

**Table 5**

*The Control Group and the Experimental Group’s Results in the Post-Test*

<table>
<thead>
<tr>
<th>Students</th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
<td>14</td>
</tr>
</tbody>
</table>
7  11  11
8  10  15
9  13  9
10  14  13
11  10  10
12  8  9
13  14  8
14  10  12
15  10  10
16  9  10
17  8  14
18  8  12
19  9  12
20  10  15
21  11  12
22  15  13
23  14  12
24  9  15
25  10  9
26  9  12
27  10  16
28  11  15
29  8  16
30  13  12
The following figure displays the scores as frequently repeated in the experimental and the control group posttest:

![Scores Frequency Distribution of the posttest](image)

**Figure 6:** Scores Frequency Distribution of the posttest

In the above figure, the experimental and the control groups scores in the posttest are clearly arranged and organized by the frequency. This figure clearly shows that the experimental and control groups scores frequencies are different which means there were significant changes. Considering the experimental group scores, we can see that students’ scores range from 7 to 16, having 16 as the highest score. This implies that the median corresponds to the value 12, while the mode is represented by value 12 too.

On the other hand, the control group scores frequency display the highest score 15, and the lowest score 7. It entails that there was a slight change. In addition, this figure shows clearly a mode of 10 and a median of 10 for the control group post-test results. From this analysis, we can deduce that the posttest scores in the experimental and the control groups are different.
2.9.4.1 Comparing the Means

we calculate and compare the means in order to find out the difference between the obtained results in the experimental and control group.

\[ \bar{x}_{ex} = \frac{\sum x_i}{N_1} \]  
(mean of the experimental group)

\[ \bar{x}_{co} = \frac{\sum y_i}{N_2} \]  
(mean of the control group)

\[ d = x_2 - x_1 \text{ or } d = y_2 - y_1 \]  
(difference between the individual scores)

\[ d = \bar{x}_{ex} - \bar{x}_{co} \]  
(difference between the means)

2.9.4.2 Experimental Vs. Control Group Means (posttest)

\[ \bar{x}_{ex} = \frac{\sum x_i}{N_1} \quad \bar{x}_{co} = 10.70 \]

\[ \bar{x}_{ex} = \frac{\sum y_i}{N_2} \quad \bar{x}_{ex} = 12.09 \]

\[ \bar{d} = \bar{x}_{ex} - \bar{x}_{co} \quad \bar{d} = 1.39 \]

Table:6

<table>
<thead>
<tr>
<th>Scores frequency distribution of the posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The mean</strong></td>
</tr>
<tr>
<td><strong>The mean</strong></td>
</tr>
</tbody>
</table>

According to this table, we notice that there is difference between both mean’s groups. The difference took the value 1.39, it means the mean difference d is significant. As a result, the changes or development that occurred in the posttest are undoubtedly related to the treatment period, i.e., the use of concept maps software by the experimental group during the period treatment. In order to confirm this result, we make use of the “the independent-sample t test” that helps in finding out whether or not there is a significant difference between the students’ levels in the experimental and control groups.
The null $H_0$ and Alternative hypotheses $H_1$:

$H_0 : \mu_1 = \mu_2 \quad H_1 : \mu_1 \neq \mu_2$

Calculating the means $\bar{X}_{CO}, \bar{X}_e$ and the variances:

**The Mean of the Control Group ($\bar{X}_{CO}$)**

$\bar{X}_{CO} = \frac{\sum x}{N_1}$

$\sum x$: the sum of the gain results of the control group

$N_1$: the number of students

$\bar{X}_{CO} = \frac{321}{30} = 10.70$

After applying the formula, we calculated the mean to be 10.70. The control group’s average increased in the post-test.

**The variance of the control group**

To calculate the variance, we take each difference, square it, and then average the result:

$\sigma^2 = \frac{\sum (x - \bar{X}_{CO})^2}{N}$

$\sigma^2 = 4.493$

After calculating the variance of the data with the proposed formula above, we find that the variance of control group in the post-test is 4.493.

**The standard Deviation of the Control Group**

$\sigma_x = \sqrt{4.493}$
\[ \sigma_x = 2.11969 \]

The standard deviation of the control group in the pre-test is 2.11969.

**The mean of the experimental group** \((\tilde{X}_{ex})\)

\[ \tilde{X}_{ex} = \frac{\sum y}{N_2} \]

\(\sum y\): the sum of the gain results of the experimental group

\(N_2\): the number of students in the experimental group

\[ \tilde{X}_{ex} = 375/31 = 12.09 \]

The experimental group scored above the medium average (12.09) and higher than the control group in the pre-test.

**The Variance of the Experimental Group**

To calculate the variance, we take each difference, square it, and then average the result:

\[ \sigma^2 = \frac{\sum (x - \bar{X}_{ex})^2}{N} \]

\[ \sigma^2 = 6.690 \]

Depending on the formula above, the variance of the control group in the pre-test is 6.4645.

**The standard Deviation of the experimental Group**

\[ \sigma_y = \sqrt{6.690} \]

\[ \sigma_y = 2.58657 \]

The standard deviation of the experimental group in the pre-test is 2.58657.
The t-test:

\[ t = \frac{\bar{x}_{co} - \bar{x}_{ex}}{\sqrt{\frac{\sigma x^2}{N_x} + \frac{\sigma y^2}{N_y}}} \]

\( \bar{x}_{co} \): the mean of the control group

\( \bar{x}_{ex} \): the mean of the experimental group

\( \sigma x^2 \): the variance of the control group

\( \sigma y^2 \): the variance of the experimental group

\[ t = 3.97 \]

Consulting the t table at 45 degree ( \( df=n1+n2−2 \)), we find that the t value of 0.63 at the 0.05 level of confidence. The calculated t value is higher than the observed t value (3.97 > 0.63). Thus, we come with a result that there is a statistically significant improvement achieved by the experimental group compared to the control group. Thus, we refuse the null hypothesis.

To prove more the results discussed above, we need to make a paired-sample t-test for both groups.

2.9.5 Paired-Sample t- Test of the Experimental Group

2.9.5.1 Experimental Group’s Results in the Pre-test and Post-test

Table 7

Experimental Group Scores Difference
<table>
<thead>
<tr>
<th>Students</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Difference</th>
<th>$d^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>14</td>
<td>14</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>16</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>9</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>13</td>
<td>14</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>14</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>10</td>
<td>11</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>14</td>
<td>15</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
<td>9</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>13</td>
<td>13</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>9</td>
<td>10</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>9</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>7</td>
<td>8</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>11</td>
<td>12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>10</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>6</td>
<td>10</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>17</td>
<td>14</td>
<td>14</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>18</td>
<td>11</td>
<td>12</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>9</td>
<td>12</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>20</td>
<td>7</td>
<td>15</td>
<td>8</td>
<td>64</td>
</tr>
<tr>
<td>21</td>
<td>10</td>
<td>12</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>22</td>
<td>13</td>
<td>13</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23</td>
<td>12</td>
<td>12</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>24</td>
<td>10</td>
<td>15</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>25</td>
<td>10</td>
<td>9</td>
<td>-1</td>
<td>1</td>
</tr>
<tr>
<td>26</td>
<td>9</td>
<td>12</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>27</td>
<td>9</td>
<td>16</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>28</td>
<td>13</td>
<td>15</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>29</td>
<td>10</td>
<td>16</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
<td>12</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>31</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>N</td>
<td>318</td>
<td>375</td>
<td>57</td>
<td>$d^2 = 205$</td>
</tr>
</tbody>
</table>

From Table 7, we can see clearly the positive differences in the results, which indicate a significant improvement in students’ level. These results are more illustrated in the following figure:
Figure 7 confirms the previously mentioned results of the comparison between experimental group scores in the pretest and posttest. Indeed, it displays that most students’ scores in the posttest are higher than the pretest scores. Most students’ pretest scores increased in the posttest and only a few of them decreased in the posttest. Relying on these results, we can deduce that students in the experimental group showed a significant improvement in the posttest, which indicates that the use of concept map software contributed to the development of students’ writing skills in this group. However, we ought to conduct the paired samples t-test following these statistical procedures.

The Mean Difference

\[ \bar{d} = \frac{\sum d}{N} \]

\( \bar{d} \): The difference scores

\( N \): The number of students in the experimental group.

\( \sum \): The total sum
\[ \bar{d} = \frac{57}{31}, \bar{d} = 1.83 \]

The standard deviation of the differences:

\[ S_d = \sqrt{\frac{\Sigma d^2}{N} - \bar{d}^2} \]

S: The variance

\[ \Sigma d^2 = \text{The sum of the square difference scores.} \]

\[ S_d = \frac{205}{31} = 3.34 \]

\[ S_d = \sqrt{3.26} \]

\[ S_d = 1.80 \]

The standard error of the mean difference

\[ \text{SE} (\bar{d}) = \frac{S_d}{\sqrt{N}} \]

\[ \text{SE} (\bar{d}) = \frac{1.80}{5.56} \]

\[ \text{SE} (\bar{d}) = 0.32 \]

The t-statistic

\[ t_{N-1} = \frac{\bar{d}}{\text{SE} (\bar{d})} \]

\[ t_{31-1} = \frac{1.83}{0.32} \]

\[ t_{30} = 5.7 \]
The t value (5.7) is higher than the critical t at the level 30 (5.7 > 4.702). We can conclude that the difference between the experimental group’s means in the pre-test and post-test is therefore due to the independent variable, i.e., the manipulation and the use of the concept mapping software during the treatment period.

2.9.6 Paired Sample t-test of the Control Group

2.9.6.1 Results of the Control Group in the Pre-test and the Post-test

Table 8

Results of the Control Group in the Pre-test and the Post-test...
From the results in table 6, we can notice that “-1” score differences and the “1” are the most common difference in this statistical series. There are more scores differences with positive values than those with the negative ones. These statistical differences indicate an approximate consistency in the scores in both tests, exemplified in the following figure:
Figure 8 depicts clearly the non-significant difference between the control group scores in the pretest and posttest. In fact, a few number of students have not shown any improvement in the posttest results, since their pretest and posttest scores are the same. Besides, a considerable number of students’ scores improved with a maximum of 3 points. However, this figure shows that posttest scores decreased in comparison to pretest scores. According to these finding, we can say that students in the control group showed approximately the same level in both pretest and posttest since most of their scores in the pretest are similar or lower than the posttest scores.

The Mean Difference

$$\bar{d} = \frac{\Sigma d}{N}$$
\( \bar{d} \): The difference scores

\( N \): The number of students in the experimental group.

\( \Sigma = \) The total sum

\( \bar{d} = \frac{22}{30}, \bar{d} = 0.73 \)

The standard deviation of the differences:

\[
S_d = \sqrt{\frac{\Sigma d^2}{N}} - \bar{d}^2
\]

\( S \): the variance

\( \Sigma d^2 = \) The sum of the square difference scores.

\[
S_d = \frac{146}{30} - 0.53
\]

\( S_d = \sqrt{4.33} 
\]

\( S_d = 2.08 \)

The standard error of the mean difference

\[
SE (\bar{d}) = \frac{S_d}{\sqrt{N}}
\]

\[
SE (\bar{d}) = \frac{2.08}{5.47}
\]

\( SE (\bar{d}) = 0.38 \)

The t-statistic

\[
t_{N-1} = \frac{d}{SE (d)}
\]
$t_{30-1} = \frac{0.73}{0.38}$

$t_{29} = 1.92$

$T$ calculated is less than the critical value (1.898 > 2.11) at the df=29; therefore, the progress achieved by the control group is mainly due to chance.

### 2.10 Summary of the results

We adopted a quasi-experimental design for our research to look for an answer for the question whether using concept maps software as pre-writing strategy has an effect on EFL students’ academic writing in terms of organization of thoughts. We can figure out the total results as follows:

From the descriptive statistical analysis of the control and experimental group scores in the pre and post test, we infer the following points. the experimental and control group started the experiment with approximately the same level, the experimental group scored 10.70 and the control group scored 9.96 in the pretest. In fact, the difference is 0.74 which is not significant. In the posttest, the experimental group scored higher than the control group in the writing task using the concept map software. The experimental group scored 12.09 and the control group scored 10.25. Therefore, the experimental group achieved a significant progress compared with the pre-test results where it scored 10.70, i.e. there is a significant difference that amounts approximately to 2.

This result was confirmed by the inferential analysis of “the independent-sample t test” conducted between the pretests and the posttest of both groups. As a result, we guaranteed that any improvement or changes in the pretest scores of the experimental groups would be related to the manipulation of the independent variable.
2.11 Pedagogical Implications

Depending on our research, we can deduce some pedagogical implications. First, the importance of implementing an up-to-date techniques such as concept mapping in EFL classes. Learning and teaching would be much easier and more enjoyable if this technique is implemented and Learners will be motivated because they are usually looking for new skills and strategies that facilitate for them the learning process. However, adopting such technique in EFL classe’s needs training for teachers and learners. Thus, course designer should include such technique in their curriculum to help learners to be more successful and to raise their awareness towards the benefits of this tool. In fact, concept mapping significantly promotes students’ self-regulation. In other words, students become more autonomous learners. That is to say, in the beginning they need guidance and training from the teacher, but later they become less dependent on him. Therefore, learners should adapt such technique for more good performance and success.

General Conclusion

Our research adopted a quasi experimental design to investigate the effectiveness of concept maps software on academic writing, we came with conclusion that concept mapping technique is a helpful tool in achieving an overall quality of learners. As a result, students of experimental design showed a significant improvement in their writing in comparison to the control group. Moreover, our research questions are answered and alternative hypothesis is confirmed through the statistical measures.

Conclusion

The aim of the dissertation was to investigate the effect of using concept maps software in academic writing courses on the Algerian EFL students. We aimed to proof that there are differences between learners who implement concept mapping technique and learners who follow the conventional method. Our research was tackled in two chapters,
the first chapter covered theoretical part of the research. The first chapter included two sections. Section one devoted to concept mapping, its components and advantages, application of the Cmaptools software and its uses and previous studies to review literature and find the gap. In the second section, we dealt with definition of writing, its steps, difficulties of writing, and part devoted to academic writing and the main elements of academic paper. The second chapter was about data analysis and interpretation of results. It reveals that the use of concept maps as a pre-writing step significantly improved the students writing. All in all, concept mapping technique is a best way of organizing ones thoughts before writing and concept maps are very helpful in visualizing knowledge.
List of References


LIST OF APPENDICES

Appendix A: A Sample of a Map for a Literature Review of a Student From Experimental Group

Appendix B: Sample of a Literature Review of Student from Experimental Group
Appendix A: A Sample of a Map for a Literature Review of a Student From Experimental Group

Research topic:
The effect of the anticipation of reward on students’ motivation in learning grammar

B.F. Skinner
(the behaviorist perspective)

The psychological approach

Introduction

The literature review

History

Approach

Methodology

Filling the gab

Experimental study

Grammar is best learnt when

68
Appendix B: Sample of a Literature Review of Student from Experimental Group

The literature review:

Achieving a good competency in grammar was and still one of the most important objectives that every foreign language classroom aims to fulfill. There is no doubt that learning a language requires learning its grammar, as one cannot communicate in the foreign language unless he or she possesses at least basic knowledge about the grammatical items that constitute its linguistic system. The issue with grammar, however, lies in the method of teaching and the attitudes of both students and teachers towards it. This explains why teachers of English very often wonder about the reasons that make grammar lessons less lively and consequently students less motivated to learn it. One could think of raising learners' enthusiasm for learning grammar and this seems a good solution to the problem but the question that one should ask is how to increase learners' motivation and what are the techniques that can best help with this?

In order to answer the question above, we have assumed that lack of motivation is due to the lack of rewards in the class. For this reason, the reward system was introduced in grammar teaching to see to what extent the learning process can be more effective, and thus students' outcomes can be better. This research work aims at explaining how motivation can be increased through the anticipation of rewards in grammar classes. It studies the effects of rewards on learners' results in Second Year Grammar classes at L’arbi Ben M’hidi University, Oum El Bouaghi. In this research, 130 students participated in the main study; they have been randomly chosen to take part in the experiment. One group was designed as the Control Group and the two other groups as two experimental groups. Students in the Control Group have been taught within the usual grammar instruction, while students in the two experimental groups have been subject to the new reward strategy introduced by the researcher. The fact that we have selected two experimental groups aims at validating the assumed results of the experiment.

The researcher has observed the behaviour of the participants in the three groups during the training period, and after the administration of the post-test, a comparison of the pre-test results and the post-test results was made in the three groups. In fact, the participants in the two experimental groups were noticeably different from those in the Control Group. In other words, they have become more enthusiastic, more active, and they participate more in the class. However, in the Control Group, students showed no special development in their behaviour. In addition to this, the improvement means in the three groups showed that the marks of the students in the two experimental groups in the post test are much better than those obtained in the pre-test. However, in the control group; the development of the students’ marks in the post-test was so tiny and of a little importance. The analysis of the results and the interpretation of the researcher’s observations showed how rewards can be very effective in raising students’ motivation in grammar classes and in increasing their potential to learn new grammatical items.

Previous studies, following a psychological approach, have demonstrated that learners' motivation can be raised through the use of reward and feedback. The application
of reward systems in the educational endeavour has its roots in Skinner's theories. In fact, the American psychologist Skinner (1904-1990) was one of the first psychologists who investigated the process of language acquisition in terms of language behaviour. His theory remains one of the most controversial theories which still have their impact on the language teaching methodology. Among the various theories of language acquisition and language learning, the theory of operant conditioning remains one of the most influential principles in language teaching methodology. Skinner and other behaviourists carried out several investigations concerning learning. In his theory, Skinner distinguishes three main stages that are involved in the learning process: the stimulus or situation (S), the behaviour (B), and the reinforcement (R). Stimulus is the situation in which the learner's performance will take place. Behaviour is the performance itself. An utterance may be considered as behaviour since a language response may be produced in a single utterance, reinforcement refers to any reaction from the part of the teacher towards the learner's behaviour. Obviously, the learner who gives correct answers and performs different tasks and then receives positive reinforcement (R+) is more likely to answer correctly and perform other tasks. In this sense, the learner who gives answers which are incorrect and his performance is low should receive (R-) in order to remove his wrong responses.
Résumé

Au cours des deux dernières décennies, il y a eu une revendication accrue dans la façon dont la technologie confirme l'apprentissage et le processus d'enseignement. L'étude récente vise à étudier l'efficacité de l'utilisation de cartes mentales sur les compétences d'écriture des apprenants EFL. La technique de cartographie conceptuelle a été étudiée pour être un outil puissant pour organiser sa pensée avant l'écriture. L'utilisation d'une telle technique dans l'enseignement devient une question du jour que les études récentes et les recherches actuelles ont abordé. Selon un certain nombre d'études, l'intégration de ces outils innovants dans la classe est considérée comme un grand bénéfice surtout pour les apprenants. Cela aide les apprenants à développer, à générer et à relier les principales idées, en particulier dans la tâche d'écriture. Cette recherche a tenté d'étudier l'effet de l'utilisation de logiciels de cartes conceptuelles sur l'écriture académique des élèves comme activité de pré-écriture pour les aider à organiser et à générer des idées. Viser à atteindre une qualité globale de la capacité d'écriture des apprenants EFL, car de nombreux étudiants ont des problèmes pour faire une bonne écriture en raison du manque de choix des idées appropriées et de les combiner les uns avec les autres. Sur ces bases, nous avons émis l'hypothèse que si les élèves de Master un utilisent un logiciel de cartographie conceptuelle, leurs capacités d'écriture académique seront améliorées grâce à l'organisation de pensées. Une conception quasi expérimentale a été utilisée pour étudier l'efficacité de cette technique grâce à l'utilisation du logiciel. Une soixantaine d'étudiants EFL ont participé à cette étude, les participants ont été divisés en deux groupes du groupe témoin et expérimental. Ce dernier était en outre nécessaire pour construire des cartes conceptuelles au stade de la pré-écriture et développer des compositions à l'aide du logiciel Cmaptools.
après avoir été formé à l'utiliser pendant la période de traitement, alors que le groupe témoin suivait la méthode traditionnelle d'instruction. Statistiquement, nous avons prouvé qu'il y avait une amélioration significative des résultats des groupes expérimentaux. En conséquence, la mise en œuvre de la technique de cartographie conceptuelle à l'aide du logiciel bénéficie notamment de l'organisation des pensées.
ملخص

في غضون العقود الماضيين، كانت هناك مطالبة مكثفة في كيفية دعم تكنولوجيا التعلم وعملية التدريس. هذه الدراسة ستحقق في فعالية استخدام الخرائط الذهنية باستخدام البرمجيات على طلاب اللغة الإنجليزية. وقد تم التحقق من قربية رسم الخرائط ليكون أداة قوية في تنظيم فكر واح楚 الكتابة. استخدم هذه التقنية في التدريس لتصبح قضية محدثة التي تتناول معظم الدراسات الحديثة والبحوث الحالية. ووفقاً لعدد من الدراسات، قال إن دمج هذه الأدوات المبتكرة في الفصول الدراسية ذات فائدة عالية وخاصة للمتعلمين. وهو يساعد المتعلم على تبادل الأفكار، وتوحيد وربط الأفكار الرئيسية وخاصة في مهمة الكتابة. وقد حاول هذا البحث التعرف على تأثير استخدام برنامج الخريطة الذهنية على الكتابة الأكاديمية للطلاب. أكتشاف ما قبل الكتابة لمساعدتهم على تنظيم الأفكار وتوحيدها. تهدف إلى تحقيق الجودة الشاملة للمتعلمين اللغة الإنجليزية كلغة أجنبية الكتابة الفردية، لأن العديد من الطلاب لديهم مشاكل لجعل الكتابة الجيدة بسبب عدم اختيار الأفكار المناسبة وجمع بين بعضها البعض. على هذا الأساس، أفترضنا أنه إذا استلم طالب سنة أولى ماستر برنامج رسم الخرائط الذهنية، فإن ذلك له تأثير يمكن في تعزيز قدراتهم في الكتابة الأكاديمية من خلال تنظيم الأفكار. تم استخدام تصميم شبه تجريبي للتحقيق في فعالية هذه التقنية من خلال استخدام البرنامج. وشارك في هذه الدراسة واحد وستون طالباً من طلاب اللغة الإنجليزية كلغة أجنبية. وقد تم تقسيم المشاركين إلى مجموعتين، هما المجموعة التجريبية والضابطة. كما كان هذا الأخير ضعفًا لبناء خريطة ذهنية في مرحلة ما قبل الكتابة وتطوير التركيبات باستخدام برنامج "سيمايتولز" بعد تدريبه على استخدامه خلال فترة التدريب، في حين اتبعت المجموعة الضابطة الطريقة التقليدية للتعليم. إثباتاً لذلك، أثبتت أن هناك تحسناً كبيراً في نتائج المجموعة التجريبية. ونتيجة لذلك، فإن تطبيق تقنية رسم الخرائط الذهنية باستخدام البرنامج مفيد بشكل خاص في تنظيم الأفكار.