

**The Effectiveness of the E-mind Map Strategy in the Instruction of
Grammatical and Lexical Competences to Develop Writing Skills among
Al- Azhar Preparatory School Students**

فاعلية استراتيجية الخرائط الذهنية الإلكترونية في تدريس الكفايات النحوية والمفرداتية في اللغة
الإنجليزية لتنمية مهارات الكتابة لدى تلاميذ المرحلة الإعدادية الأزهرية

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فاعلية استراتيجية الخرائط الذهنية الإلكترونية في تدريس الكفايات النحوية والمفرداتية في اللغة الإنجليزية لتنمية مهارات الكتابة لدى تلاميذ المرحلة الإعدادية الأزهرية

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المستخلص

هدفت الدراسة الحالية إلى التعرف على فاعلية استخدام استراتيجية الخرائط الذهنية الإلكترونية في تدريس الكفايات النحوية والمفرداتية في اللغة الإنجليزية لتنمية مهارات الكتابة لدى تلاميذ المرحلة الإعدادية الأزهرية. استخدمت الباحثة أداتين لتحقيق أهداف الدراسة وهما استبيان لتحديد المهارات اللازمة للكتابة لطالبات الصف الثاني الإعدادي، الاختبار القبلي البعدي للكتابة مع مقياس التقدير التحليلي للكتابة لتقييم أداء الطالبات في الكتابة الوصفية وكتابة الرسائل الإلكترونية بعد التحقق من الصدق والثبات، ولتحقيق أهداف الدراسة اعتمدت الباحثة المنهج شبه التجريبي وطبقته على عينة بلغت (٦٠ طالبة) من معهد فتيات منشأة بولين الإعدادي الثانوي في منطقة البحيرة الأزهرية، حيث تم اختيارهم وتقسيمهم بشكل عشوائي إلى مجموعتين تجريبية وضابطة، تكونت المجموعة التجريبية من (٣٠) طالبة والمجموعة الضابطة من (٣٠) طالبة. وقد كشفت نتائج الدراسة عن وجود فروق ذات دلالة إحصائية عند متوسطات المجموعتين التجريبية والضابطة في اختبار الكتابة البعدي لصالح المجموعة التجريبية. طبقاً للتحليل الإحصائي لاختبار الفروض فإنه يمكن القول بأن استراتيجية الخرائط الذهنية الإلكترونية المستخدمة قد أثرت إيجابياً في تنمية مهارات الكتابة لدى طالبات الصف الثاني الإعدادي، وقد لاحظت الباحثة تقدماً واضحاً في استجابات الطالبات في اختبار الكتابة.

الكلمات المفتاحية: الخرائط الذهنية الإلكترونية، الكفاية النحوية، الكفاية المفرداتية، الكتابة.

The Effectiveness of the E-mind Map Strategy in the Instruction of Grammatical and Lexical Competences to Develop Writing Skills among Al- Azhar Preparatory School Students

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ABSTRACT

The current study aimed at investigating the effectiveness of the e-mind map strategy in the instruction of grammatical and lexical competences in developing the second year preparatory stage students' EFL writing skills. To achieve the purpose of the study, two instruments were used: a questionnaire to determine the writing skills appropriate to the participants, a pre-post EFL writing test with an analytic scoring rubric to assess the students' performance in descriptive writing and writing emails after checking its validity and reliability. The current study adopted the quasi-experimental method (the pre- test posttest equivalent- groups design). The participants of the study consisted of sixty students in Monshaat Boleen Preparatory/ Secondary Institute for Girls in Al Behira Zone. Two intact groups were randomly assigned to an experimental and a control group. Thirty students represented the experimental group, and thirty other students represented the control group. Results of the study revealed significant differences between the mean scores of the post administration of the two groups in favor of the experimental group. According to the statistical analysis of testing the hypotheses, it can be concluded that the electronic mind mapping strategy used had a positive impact in developing the writing skills of the second year preparatory students' EFL writing skills. The researcher observed clear progress in the students' responses in the writing test.

Keywords: Electronic mind maps, Grammatical Competence, Lexical Competence, Writing

Introduction:

Language is a very important tool of communication used to communicate between two or more people in carrying out their daily activities and has main role to make people have mutual understanding. By using language, we can communicate with others. Thus, the reason our students learn a foreign language is that they learn to communicate with other people, to understand them, talk to them, write to them and read what have been written.

In fact, most educational systems around the world are attaching increasing importance to the learning of English as a foreign language. Listening, speaking, reading and writing are the major EFL skills. Listening and reading are considered receptive skills that help students receive and interpret information as the input of language, whereas speaking and writing are productive skills that make language output possible. Students need to be able to communicate their thoughts in writing (Morsi, et al., 2015).

Obviously, writing can bring many benefits for students. Firstly, writing is a good way to develop their ability of using vocabulary and grammar, so increasing the ability of using language. Secondly, writing is an essential tool to support other skills, if students have good writing ability, they can speak and read the text more effectively. Thirdly, writing is a way to approach modern information technology as well as the human knowledge (Huy, 2015).

As a matter of fact, the importance given to writing has increased as the features of communicative language teaching have been dominating in both foreign and second language contents. Writing was gradually recognized as a process of thinking and composing as a result of communicative language teaching. Writing has been regarded as an important "enterprise in and of itself in contrary to the traditional view which

considers that writing functions to support and consolidate oral language use, grammar and vocabulary" (Weigle, 2002).

Undoubtedly, EFL learners have a range of difficulties with learning English as a foreign language, so they make errors and mistakes. Most of the errors and mistakes made by the learner in learning English as a foreign language, due to difficulties in learning grammar and lexis. In learning a foreign language, learners produce many linguistic forms which are not produced by native students of the target language. The students commit various errors and mistakes in writing composition as a result of these difficulties (Al Akeeli, 2013).

For instance, Huy (2015) indicates that there are many problems that students have in learning writing skill. Firstly, students have a limitation of vocabulary because they do not know any effective ways to study vocabulary. Secondly, Students do not have a good way to study grammar. Moreover, there are no activities outside classroom to enhance students' grammar knowledge.

Also, Cuellar (2013) indicates that there was a problem among different groups of students, that is their low level of grammatical competence. Some of the problems caused by grammar inaccuracy were the abandonment of ideas, language switch, and long periods of hesitation. These grammatical difficulties also hindered students' written texts as their errors made it difficult to understand what they were trying to express.

In addition, Fareed, et al.(2016) states that the major problems in EFL learners' writing are insufficient linguistic proficiency (including command over grammar, syntax, and vocabulary), writing anxiety, lack of ideas, reliance on L1 and weak structures organization. These challenges are caused by various factors including ineffective teaching methods and examination system, lack of reading and writing practice, large classrooms, low motivation and lack of ideas.

To sum up, Writing is one aspect of language that has always posed problems among the other language skills. (i.e. reading, speaking and listening). Students have problems in fulfilling the requirements of writing due to low proficiency of the language. At the same time, students' lack of knowledge of English vocabulary, grammar, spelling, and production further contribute to the students' lack of interest in writing. English teachers at the same time are often confronted with the dilemma of choosing suitable teaching methods to overcome writing apprehension in their studies (Yusuf, et al., 2019)

It is acknowledged that lexis is an essential component in language acquisition. Limited knowledge of it could lead to learners' frustration since they cannot convey what they want to express when speaking or writing. This might be overcome by working on it systematically to increase lexical competence and overall communicative competence. Nation (1994) agrees that "a rich vocabulary makes the skills of listening, speaking, reading, and writing easier to perform" contributing to effective and successful communication (Alqahtani, 2015).

Besides, having appropriate grammatical competence will help the learners to possess such ability in producing the language. It is closely related to how to combine lexical resources as well as the rules correctly. Moreover, it is also related to the ability in understanding the message or the idea delivered while having interaction with other people. Therefore, it has such a significant role to make such communication takes place (Fikron, 2018).

Consequently, one promising strategy that may enhance grammatical and lexical competences in writing is mind mapping. Tony Buzan (1942-2019) (an English author and educational consultant) established the mind map strategy to enable learners arrange and classify ideas and tasks, and to improve reading, problem solving, and decision-making. Buzan's motivation for creating the mind map was his awareness of the

educational systems which mainly focus on the employment of the left side of the brain. The left side of the brain is responsible for the use of logic, language, arithmetic, sequencing, and details of any topic, and there was a complete negligence to the right side which is responsible for using images, imagination, emotions, colors and a comprehensive view of different subjects (Mohaidat, 2018).

In fact, mind maps do have this facility; they employ both sides of the brain. Words, images and colors are the core for the preparation of these maps. The title is placed in the center; sub-ideas begin to diverge in all directions in a radiation sequence through what is called radiant thinking, so this concept describes how the human brain treats various ideas and information (Al-Jarf, 2009).

In addition, by using mind map in the process of teaching, we can comb a lot of knowledge points, so that to make points present to students in order. The grammar knowledge that students receive can be intuitive and visualized by using mind map. The mind map, which contains images, colors and lines, can effectively tease out the connections between the grammar knowledge points (Wang, 2019).

Electronic mind maps

Electronic mind mapping is one of active learning strategies. It reinforces memory, retrieves information and generates creative ideas. It is designed by computer software or the internet or smart device applications.

It accelerates learning by drawing a graph that represents the main idea and sub- ideas. The student does this activity by himself (Abd Elrazik, 2016).

Electronic mind maps are designed by:

Office Suite: These are programs that are installed on the pupil's own computer such as Mind Mapper, Mind Genius, Inspiration, I Mind Map, Free Mind, Avis Thought mapper, and concept Draw Mind Map.

Web- based Programs: These are programs that run without downloading such as Map Myself, Mind 42, and Mind Meister (Restler, 2015).

The researcher will use one of office suite (Mindomo) program for these reasons:

- It helps students to produce mind maps that resemble the handy ones.
- It is characterized by simplicity, clarity and ease of use.
- It is appropriate for preparatory school students.

Several studies were conducted to investigate the effectiveness of the mind map (electronic or traditional). For example, Hallen & Sangeetha (2015) conducted a study to identify the effectiveness of mind maps compared to the traditional way in teaching English to the eighth level student. The sample comprised 60 students to whom the experimental method was applied and pre- and post-achievement tests were done. The study recommended that the experimental group was better than the control one as it achieved the objectives. This could be attributed to the attractiveness of Mind Maps that helped the experimental group acquire knowledge and improve understanding and application, indicating their effectiveness in motivating learning using images and colors.

Besides, Morsi (2015) aimed at developing second year experimental preparatory school students' summary writing skills. The study was confined to EFL (74) second experimental preparatory school students. The research has shown positive results as the mind maps strategy brought about significant improvement in enhancing the summary writing skills of the students.

To conclude, mind mapping has been used in a variety of language teaching. Yen (2010) implemented mind map in his teaching learning process as a visual media that allowed the student to brainstorm, arrange, and memorize new information and helped the students stimulate their logic of thinking practices. He further said that mind mapping could help the students alleviate their language anxiety. Al-Jarf (2011), in his research, explained how mind mapping software could be integrated in EFL courses in order to help the students improve their pronunciation skills. Another research aimed at investigating the effectiveness of mind mapping on vocabularies learning and exploring the students' attitude towards the use of mind mapping was carried out by Munsakorn (2012), the research results revealed that mind mapping had a significant effect on vocabulary learning, and it also encouraged the students to learn English language.

Review of Literature

Part One: Writing

As one of English language skills, writing is important to be learnt by students at school. According to Nunan (2003) writing is the mental work of inventing ideas, thinking about how to express them, and organizing them into statements and paragraphs that will be clear to a reader. So, the students need to master writing skill because it can be used to express the students' ideas as well as feelings and communication with others.

Archibald (2001) says that writing is a skill that needs knowledge and proficiency in many areas, it is a multidimensional skill, and it is a complex skill that results from the interaction of the writer's knowledge, experience, skills and the cognitive demands of the task.

Orwig (1999) gives a definition of writing as a skill saying that: It is a productive skill that is more complicated than it seems at first, and often seems to be the most difficult of the skills since it has a number of micro skills such as: using orthography correctly,

spelling and punctuation conventions, using vocabulary in a correct way and using the appropriate style.

Teaching Writing

Harmer (2001) explains four reasons for teaching writing to students of English as a foreign language. They are reinforcement, language development, learning style and writing as a skill.

- **Reinforcement;** some students acquire languages in an oral/ aural way; others get benefit from seeing the language written down. “The visual demonstration of language construction is invaluable for both understanding and memory”. It is useful for students to write the new language shortly after studying it.
- **Language development:** the process of writing is different from the process of speaking; the former helps us to learn as we go along. “The mental activity of constructing proper written texts is part of the ongoing learning experiences.”
- **Learning style:** some students are quick at acquiring language just by looking and listening. Others may take longer time spent in producing language in a slower way is invaluable. So, writing is appropriate for those learners.
- **Writing as a skill:** the most essential reason for teaching writing is that, it is a basic language skill like speaking, listening, and reading. Students need to know how to write letters, compositions, essays and reports and how to use writing’s conventions.

Approaches for Teaching Writing

1. The Controlled to Free Approach

This approach was first introduced by Raimes (1983) and is based on the audio-lingual approach which dominated second language learning in the 1950s and early 1960s. It is a sequential approach to writing which involves copying, manipulating

or changing texts. Students' first practice with words and sentences, then move on to paragraphs and longer compositions. They are required to grammatically manipulate a given input, for example, changing sentences (statements to questions or questions to statements, negative to affirmative), transforming tenses (present to past, present to future) and voice (active to passive) or number (singular to plural). This approach focuses on grammar, syntax, and mechanics, and emphasizes accuracy rather than fluency. It does not pivot on creativity but rather on imitating, modeling and adapting preexisting samples of content and format.

2. The Free Writing Approach

Byrne argues that “many students write badly because they do not write enough” (Byrne, 1988, p. 22). With this caveat in mind, the free writing approach focuses on quantity rather than quality. It is based on the principle that any given topic can generate vast amounts of writing, which should flow freely, abundantly and with minimal error correction. According to Scrivener (2005), this kind of writing may contain a lot of waste, but the valuable ideas that are born in the process may subsequently prove useful for the real writing assignment.

3. The Paragraph-Pattern Approach

This approach stresses the importance of organization. It is based on the principle that communication is constructed and organized differently in different cultures and according to different contexts. Because this approach is centered on organizational patterns, students work with paragraphs which they copy, analyze and imitate. Exercises can include re-arranging scrambled sentences (in a paragraph), mixed paragraphs (in a longer composition), identifying general and specific information, writing a suitable topic sentence for a paragraph, writing supporting details for a main idea, or identifying the main idea that covers an enumeration of details.

4. The Grammar-Syntax Approach

Introduced by Raimes in 1983, this approach advocates simultaneous elements to be taken into account: grammar, syntax and organization. Starting from the premise that successful writing stems from an effective combination of discrete language skills, the grammar-syntax approach is designed around writing tasks that require students to pay attention to organization while focusing on grammar accuracy. Clear organization derives from the efficient use of more than appropriate vocabulary; it requires informed knowledge of verb and tense structure, linking devices and even sentence structure in order to produce a coherent and cohesive paragraph. In preparing students to address a task, all the mentioned elements must be either taught for the first time or reviewed as separate elements, and only after inserted into the larger written product. More importantly, such an approach links the purpose of a piece of writing to the linguistic instruments needed to convey the respective message (Chavez, Espinosa & Tapia, 2011).

5. The Communicative Approach

The communicative methodology also links two essential elements in the above-mentioned diagram: purpose and audience. Furthermore, such an approach adds authenticity to the writing task and the product thereof, as students are encouraged to behave like writers in real life contexts and ask themselves some crucial questions that will guide their writing: Why am I writing this? (Purpose) Who will read it? (Audience). Although the teacher alone has traditionally been the audience for the students' written products, this approach shifts the focus from the (somewhat) sterile instructional purpose, by extending the readership to suit a more authentic communicative goal. The formulation of the task is the place where the larger audience is located and consequently the students are offered a contextualized purpose for their writing, one that helps them select the most appropriate language, content and level of formality. This approach –

with specific focus on reason and audience – illustrates Byrne’s (1988) belief that writing tasks should be as authentic as possible and that real-life contextualization motivates students to write better.

6. The Process Approach

As indicated by the syntagm, the process approach reallocates writing resources towards the process rather than towards the product itself (Harmer, 2001). It is a comprehensive approach that successfully marries the why, the who and the how of writing, while systematically organizing the content. It is a complex technique, which involves various stages of research and effectively combines receptive skills in the pre-writing stage (reading, listening) with oral (discussions, debates) and then written responses (Golkova & Hubackova, 2014). Wider and more abstract topics are explored in detail, with specific attention given to language (lexis and grammar) and research is encouraged so as to build up on content and generate ideas. The main advantage of this approach is that it fosters creativity, allows students to work at their own pace and offers them a chance to revisit their work and improve it along the process. In the words of White and Ardnt (1991), “the goal of this approach is to nurture the skills with which writers work out their own solutions to the problems they set themselves, with which they shape the raw material into a coherent message, and with which they work towards an acceptable and appropriate form for expressing it.”

The Role of the teacher in writing lessons

To help students become better writers, teachers have a number of tasks to perform. Harmer (2004) discussed five tasks a teacher can do before, during and after student writing. They are:

- 1- **Demonstrating:** Students should be aware of writing conventions and genre constraints in specific kinds of writing. So, teachers have to be able to put these features into their consideration.

- 2- **Motivating and Provoking:** teachers should motivate, help and provoke students to get ideas, then use them with the value of the task and persuade them what fun it can be.
- 3- **Supporting:** teachers need to be supportive in writing lessons and help students to overcome difficulties that students face in writing.
- 4- **Responding:** teachers should react to the content and construction of a piece of writing supportively and make suggestions for its improvement.
- 5- **Evaluating:** when evaluating students' writing, teachers can indicate the positive points, the mistakes that students made and may award grades.

Writing: Assessment and Evaluation.

Davison and Dowson (1998) discuss three kinds of writing evaluation: self-evaluation, peer evaluation and teacher assessment of writing.

- **Peer evaluation:** This kind of evaluation can be guided by prompt questions established by the teacher, or in negotiation, which draw attention to matters such as the total impression a piece of writing is intended to make on readers, and the effect it has, specific strengths in relation to matters such as its use of genre, its selection of content, its appropriateness for its audience and its technical accuracy, general points which the writer could address in redrafting or revising the text. It is useful if the teacher can intervene in peer evaluation processes respond to self-evaluations before the writer takes action, both to provide further advice and to monitor the responses which are being made to writing. Students' comments can be important and informative about the development of their writing.
- **Self- evaluation:** It is particularly valuable when students produce especially sensitive or personal writing, or when they use genres such as poetry. Writers,

who are asked to discuss what they were trying to achieve, and to indicate the source of their ideas, can provide a teacher with very important guidance as to what kind of response is appropriate. The self –evaluation forms a kind of objectification of the personal, and the teacher needs to pay attention not only to the quality of the work, but also the extent to which the writer is able to distance him or her from the content, in deciding how to respond.

- **Teacher assessment:** Teacher assessment of writing should also draw attention to the issues indicated for peer and self-evaluation. Many teachers begin their responses to writing with comments which indicate their reaction to the way in which the piece has made meaning, and may include emotional responses as well as analytical ones. Positive achievements should always be identified and the teacher should then target a limited and manageable number of areas for further development. The formative assessment and evaluation of writing should take the form of a developmental dialogue between the teacher and students and among groups of students. And also Richards (2003) says that assessment refers to the variety of ways used to collect information on a learner's language ability or achievement. It is therefore an umbrella term includes such diverse practices as once- only class tests, short essays, reports writing portfolios or large-scale standardized examinations. In the classroom, any assessment can be formative or summative. Formative assessment is designed to identify a learner's strengths and weaknesses to affect remedial action.

Part Two: Grammatical and Lexical competences

Grammatical competence consists of two words, they are grammatical which derives from the word grammar and competence. Initially, grammar is emphasized in combining words or phrase to produce sentences using some rules. Thornbury (2000) defines grammar is conventionally seen as the study of the syntax (the agreement of

sentence) and morphology (how to arrange words). Now, definition of grammar is more comprehensive. Freeman (2003) pointed out that grammar is one of three dimensions of language that are interconnected. Being able to use grammar structures does not only mean using the form accurately, it means using them meaningfully (semantics) and appropriately (pragmatic).

Additionally, Kirkham (2010) summarizes grammar at its core, as the rules of language. But how these rules are imagined and what these rules encompass vary greatly from definition to definition. As a result, the common understanding of grammar differs in subtle but important ways from the linguistic sense of the term. In the same way, Richards (2016) discloses that grammar is the system of rules used to create sentences refers to the knowledge of parts of speech, tenses, phrases, clauses and syntactic structures used to create grammatically well- formed sentences in English. The rules for constructing grammatically correct sentences belong to sentence grammar.

Based on the definition of grammar presented above, it can be inferred that the scope of grammar includes the vocabulary, word formation, sentence information, spelling which is used meaningfully and appropriately. According to Frank (1972) it consists of participial phrase, gerund phrase, infinitive phrase, absolute constructions, abstract noun phrase, and appositive constructions.

Then, the term of competence according to Oxford advanced learners dictionary (1995) means being able to do something well. Another similar definition about competence is defined by Savignon (1997), she states competence as an underlying ability. In her opinion, competence can be observed, developed maintained and evaluated only through the performance.

Grammatical competence may be defined as knowledge of, and ability to use, the grammatical resources of a language.

The formation of grammatical competence involves formation of its three main components.

1. The ability to understand and formalize certain semantic units in the form of statements constructed according to the rules of the foreign language being studied.
2. Formed knowledge of grammatical rules, according to which the sequence of lexical units of a foreign language is transformed into a meaningful utterance.
3. Formed skills and abilities that allow the speaker to adequately use the grammatical phenomena of the language being studied in accordance with the communication situation and the communicative tasks of the given language speech act.

According to Nassaji and Fotos (2011), grammatical competence is the speakers' knowledge of the forms and meaning that exist in grammar, and a theoretical knowledge of how to use them. This type of knowledge is reflected in the grammar rules. In other words, competence is in the head. Tasks that are sentence- based typically develop the grammatical competence.

However, Larsen- Freeman (2010) explains that grammatical competence has a different starting point than formal grammar, and the focus is mainly on social interactions, communication and why some forms are more appropriate than others. Some say that language is not considered to be a set of rules, since language used is important. This is somewhat problematic because grammar does have to do with rules and the structure of the language. It cannot be claimed that grammar is purely functional, although it has functions and these functions are of utmost importance.

Finally, Ellis (2007) explicates grammatical competence in relation to implicit and explicit knowledge. Ellis distinguishes two senses of grammatical difficulty: 1) the

difficulty learners have in understanding a grammatical feature and 2) the difficulty learners have in internalizing a grammatical feature so that the students are able to use it accurately in communication. Ellis further argues that the first sense of grammatical difficulty relates to explicit knowledge, while the second since relates to implicit knowledge.

From the theories presented above, it can be concluded that grammatical competence is proposed as person's knowledge of the grammatical rules of language including some scopes that are participle phrase, gerund phrase, infinitive phrase, absolute constructions, abstract noun phrase, and appositive constructions. It means that person who has grammatical competence will be able to apply those scopes of grammar in grammatically correct sentences form in appropriate context.

The concept of lexical competence

One of the first appearances of the concept of lexical competence can be found in Richards (1976). This researcher does not use the expression lexical competence but instead refers to knowing a word. The basic premises of his proposal are listed below:

- 1- Vocabulary knowledge of native speakers continues to expand in adult life, in contrast to the relative stability of their grammatical competence.
- 2- Knowing a word means knowing the degree of probability of encountering that word in speech or print. For many words, we also know the sort of words most likely to be found to be associated with the word.
- 3- Knowing a word implies knowing the limitation on the use of the word according to variations of function and situation.

- 4- Knowing a word means knowing the syntactic behavior associated with the word.
- 5- Knowing a word entails knowledge of the underlying form of a word and the derivations that can be made from it.
- 6- Knowing a word entails knowledge of the network of associations between that word and other words in the language.
- 7- Knowing a word means knowing the semantic value of the word.
- 8- knowing a word means knowing many of the different meanings associated with a word (Richards, 1976)

Richard 's proposal is the starting point of a significant number of studies with different research approaches and has served as a framework for further studies on lexical competence. The most recognized and used taxonomy that complies and further elaborates on Richard s components is Nation's (1990). He made explicit distinction between the receptive and the productive knowledge of vocabulary, pointing out that production involved a higher level of knowledge of vocabulary than reception did. Later, Nation (2001) revised his early framework to point out that the knowledge of a word or, in other words, includes the three kinds of knowledge:

1. knowledge of form (spoken form, written form and word parts).
2. Knowledge of meaning (form and meaning, concept and referents, and associations), and
3. Knowledge of use (grammatical functions, collocations and the constraints on use).

The Dimensions of lexical Competence

A common feature in vocabulary studies is to look at lexical competence in terms of a number of easily measurable dimensions. One of the most commonly accepted views of vocabulary acquisition is that the acquisition of word knowledge occurs along a

continuum of development. The fundamental idea is that the word knowledge develops in some kind of a hierarchical order. In line with the content perspective, Henriksen (1999) proposed a three- dimensional model of lexical competence:

- 1) Partial- to- precise knowledge,
- 2) Depth of knowledge, and
- 3) Receptive to productive dimension.

The first dimension, partial- to- precise knowledge deals basically with the breadth or size of vocabulary knowledge, and is conceptualized as a kind of journey of the learner from simple word recognition moving through several stages of partial knowledge to a precise comprehension level resulting from a widening of the knowledge base of the learner. However, vocabulary size cannot be the only dimension by which the author can come to an understanding of the lexical competence of a language user. In this context, the second and third dimensions of Hendrickson's model gain importance. The second dimension, depth of knowledge, pertains to the relationship of a word to other words in the lexicon. The relationship could be paradigmatic (antonymy, synonymy, hyponymy, etc.) or syntagmatic (collocational restrictions). The third dimension, the receptive- to- productive dimension, pertains to the level of mastery of vocabulary knowledge reflected in the learner s comprehension and production abilities. Receptive vocabulary is obviously bigger and size since it pertains to the ability to comprehend a lexical item only. On the other hand, productive vocabulary entails the ability to use a lexical item in production. In comparison with Henrikson's multi-dimensional model, Meara(1996) proposed a frame work with only two dimensions: vocabulary size, and organization, i.e. the ways in which the words are related to one another. These two dimensions, Meara (1996) pointed out, had the advantage that they were relatively "independent "of the items that contributed to them, and they did not require a detailed understanding of the

way individual lexical items function. A more comprehensive framework is the one designed by Chappelle(1998), who put forward a quadridimensional framework of lexical competence having the following: vocabulary size(i.e. the total number of words that a person knows), knowledge of word characteristics(i.e. the knowledge of each word from the vague to precise), lexicon organization(i.e. the manner in which words are stored in the mind of the learner), and processes of lexical access which enable a language user to access his or her vocabulary knowledge while writing or speaking. In a more recent framework developed by Qian (2002) the researcher drew on the earlier models of lexical competence and proposed another quadridimensional framework having vocabulary size, depth of vocabulary knowledge, lexical organization, and automaticity of receptive- productive knowledge, a dimension stressed by Meara(1996) as well since it is believed that the hidden lexical competence of automaticity helps in the development of both receptive and productive vocabulary.

In all the models of lexical competence discussed above, two dimensions which have always featured are vocabulary size and the depth of vocabulary knowledge. In the light of this, it is believed that a brief discussion on these would be fruitful.

Mind Maps Strategy

A mind map which is also known by many names such as visual mapping, flow charting, visual thinking and spider diagramming, is according to Casco (2009) “ a graphic tool which contains a central key word or image and secondary ideas that radiate from the central idea as branches.”. It can be used to generate ideas, take notes, develop concepts and ideas, and improve memory (Buzan, 2000). It is a powerful tool that teachers can use to enhance learning and create a foundation for learning. It is helpful for visual learners as it is an illustrative tool that assists with managing thought, directing learning, and making connections (Stephens & Hermus, 2007). It is a great way to introduce an overall topic, increase student involvement, and get thoughts down quickly.

Mind mapping is a skill that cuts across ability levels and encompasses all subject matters (Goldberg, 2004). Using the e-map technique (online concept/mind mapping online) gives instructors the freedom to express ideas and show interrelationships between concepts and content in a very visual and nonlinear structure that benefits their students (Ruffini, 2008).

Steps of making mind maps:

Mind maps can be drawn by hand or using software. When creating a mind map, there are several elements to consider including the map's central image, colors, branches, images and key words.

Velliaris(2009) set the following steps to create good mind maps:

- 1- Students place the central theme/ main idea or controlling point in the center of the page. They may find it easier to place their page on the side, in landscape orientation, which is easier for drawing purposes.
- 2- Students use lines, arrows, speech bubbles, branches and different colors as ways of showing the connection between the central theme/ main idea and their ideas stemming from that focus. The relations are important, as they may form their paragraphs.
- 3- Students avoid creating an artistic masterpiece. They should draw quickly without major pauses or editing. It is important in the initial stages of mind maps to consider every possibility, even those they may not use.
- 4- Students choose different colors to symbolize different things e.g. they may choose blue for something they must incorporate in their paper, black for other good ideas and red for the things they need to research or check with the teacher. Their method is entirely up to students, but they try to remain consistent so that they can better reflect on their mind maps at a large stage.
- 5- Students leave some space on their page. The reason for this is that they can continue to add to their diagram over a period of time.

Types of mind maps

Concerning the classifications of mind maps, King (2007) classifies two ways to design or build mind maps: the first one is by hand in which learners can use large pieces of paper, pens, pencils, markers and pictures from magazines or books; the second one is via mind mapping software or web applications in which simple or complex packages are used to construct mind maps.

Accordingly, mind mapping software should be adapted according to specifications of time, of use, operating system features, price, necessity and level of information and communication technology skills that the user has. (Gómez, 2014)

According to Buzan (2006) there are many types of mind maps, these are:

1. **Dyadic mind maps:** those maps are made by drawing two radiant branches in the center.
2. **Poly categoric mind maps:** these maps can contain from three to seven branches, because the average mind cannot remember more than seven pieces of information in the short term memory. One of the advantages of this type is that it helps to develop the mental powers of classification and categorization.
3. **Group mind maps:** it is designed by bringing individuals together in mind mapping groups. According to Buzan (1994), “the mind map becomes the external reflection, “the hard copy”, of the emerging group consensus and subsequently becomes a group record or memory. Through this process, the individual brains combine their energy to create a separate “group brain”.
4. **Electronic mind maps:** these are designed through using computers. There are lots of mind mapping soft wares that help draw careful and cheerful mind maps.

Characteristics of electronic mind maps:

Mind mapping is a highly effective way of getting information in and out of the brain. It is a creative way of note taking. It uses many pictures, many colors, key words to present ideas and information in clear classification. It also uses association which makes it easier for the information to be remembered because students associate it with information that has already been known. According to Buzan (1994), mind maps have four basic characteristics; these are:

- a. The subject of attention is crystalized in a central image.
- b. The main themes of the subject radiate from the central image as branches.
- c. Branches comprise a key image or key word printed on an associated line, topics of lesser importance are also represented as branches attached to a higher level branch.
- d. The branches form a connected nodal structure.

Kacafírková (2013) says that there are four important features and characteristics of mind maps. They are:

1. **Structure:** it is obvious that mind maps support non linearity and it is known for its hierarchical structure.
2. **Motivation:** motivated students are more interested in the topic they learn and therefore they are willing to devote their time to learning activities, so mind mapping is a great way to increase their attention.
3. **Personalization:** mind mapping allows students to organize their thoughts and ideas based on their personal experience and feelings.
4. **Creativity:** mind maps promote creativity since they are connected to art. They revolve around using colors, pictures and symbols which allows students to think creatively.

Koznov and Pliskin(2008) considered the most important characteristics of electronic mind maps as follows:-

1. **Pure online application:** the only reasonable way to communicate is to use online applications, desktop applications are not the way to go anymore because the complexity they bring makes the real learning and the communication complicated up to useless.
2. **Live collaboration:** which is the key feature for collaboration, it allows people to edit a single map simultaneously, in real time, to share maps, and therefore communicate efficiently.
3. **Export and import to/from other formats:** allows convert and moving the data quickly between applications (both online and desktop), providing easy ways to back up, store and integrate data.
4. **Smart printing:** paper copies are still very important in academic world, and intelligent printing seems to be one of key features.

Mind maps strategy can significantly improve note-taking ability and allow students to easily and quickly review pertinent information at a later date. The process can be a simple or as complex as the students want to make it, and they can get started with nothing more than a pen and a sheet of paper. Once they master mind maps, this skill can be an important addition to their low practice tool kit.

Benefits of Teaching with Electronic Mind Maps:

Buzan and Buzan (1993) explain, “Benefits of teaching with mind maps:

1. They automatically inspire interest in the students, thus making them more receptive and co-operative in the classroom.
2. They make lessons and presentations more spontaneous, creative, and enjoyable, both for the teacher and the students.

3. Rather than remaining relatively rigid as the years go by, the teacher's notes are flexible and adaptable. In these times of rapid change and development, the teacher needs to be able to alter and add to teaching notes quickly and easily.
4. Because mind maps present only relevant material in a clear and memorable form, the students tend to get better marks in examinations.
5. Unlike linear text, mind maps show not just the facts but the relationships between those facts, thus giving the students a deeper understanding of the subject.
6. The physical volume of lecture notes is dramatically reduced."

While Richbourg (2015) highlights the benefits of using electronic mind maps as a way of teaching and representing information as follows

- a) Help to engage the learners.
- b) Encourage the learners to ask questions.
- c) Activate prior knowledge.
- d) Scaffold reading and listening comprehension.
- e) Assess oral production.
- f) Scaffold speaking.
- g) Scaffold written production.

The teacher's role in teaching students using electronic mind maps

Electronic mind map is an effective mean to organize, summarize and present information. It helps students to accelerate learning. The teacher should do some tasks to help the students acquire the skill of drawing electronic mind maps, these tasks include (Elmowald, 2009):

Training: The teacher trains students to draw electronic mind maps by a suitable program.

Guidance: The teacher guides students to make use of the tools in the drawing program to draw the mind map and adjust it.

Assessment: The teacher can follow students, taking into account individual differences.

Listening and Encouragement: The teacher should listen to different ideas without criticizing. He should give a chance to apply these ideas. He should encourage low-achieving students to draw electronic mind maps

Problem of the Study

The problem of the study was that 2nd year preparatory stage students were not doing well in writing skills. The students faced many difficulties while writing because of lack of lexical and grammatical competences. Therefore, this study suggested electronic mind maps to instruct lexical and grammatical competences to develop students' writing skills.

Questions of the Study

In the light of what has been mentioned above, the present study attempts to answer the following major question:-

To what extent do electronic mind maps contribute to developing writing skills through the instruction of lexical and grammatical competences.

This question can be divided into the following questions:-

- 1- What are the skills of writing necessary for second year preparatory stage students?
- 2- How does electronic mind map strategy contribute to developing writing skills through the instruction of lexical and grammatical competences?

Hypotheses of the Study

1. There is no statistically significant difference at 0.05 level between the mean scores attained by the experimental group students and those of the control group students in the posttest of writing.
2. There is no statistically significant difference at 0.05 level between the writing pre- and posttest of the experimental group due to using e- mind map strategy in favor of the post test.

Purpose of the study:

The present study aimed at investigating the effectiveness of e- mind map strategy in the instruction of grammatical and lexical competences to develop preparatory stage students' writing skills (using vocabulary correctly “collocations”, writing sentences that are grammatically correct, writing a well stated topic sentence, forming meaningful sentences that are relevant to the main idea, writing well- organized paragraphs and emails, writing words with no spelling mistakes and using punctuation marks and capitalization correctly).

Significance of the study:

This is a quasi experimental study that aimed at investigating the effectiveness of e- mind map strategy in the instruction of grammatical and lexical competences to develop preparatory stage students' writing skills. So, the present study was significant in many ways:-

1. Improving the writing skills necessary for EFL second year preparatory stage students.
2. It attracts EFL teachers to give prominence to varying teaching methods of writing such as using electronic mind maps.
3. It helps teachers to motivate students to write in an interesting way.

4. It draws the attention to the usefulness of electronic mind mapping strategy to enhance other skills of language.
5. It helps students strengthen their linguistic skills by helping them build effective learning strategies.
6. It enhances learning by doing so students become creators of their own learning.
7. It encourages students to organize their thoughts.

Delimitations of the Study:

This study was delimited to:

- 1- Second year preparatory students at Monshaat Boleen Preparatory/ Secondary Institute for Girls in Al Behira Zone.
- 2- Mindomo program to explore its effectiveness in developing participants' writing through the instruction of grammatical and lexical competences.
- 3- Writing (descriptive writing and writing e-mails).

Method:

Participants

The participants of the study were second year preparatory stage students at Monshaat Boleen Preparatory/ Secondary Institute for Girls in Kafr Eldawar city, Al Behira Zone. The sample consisted of two classes of second prep. One class of (30) students comprises the experimental group and received electronic mind maps strategy. The other class of (30) students served as a control group received only the traditional teaching.

Research Design

The current study adopted the quasi- experimental design. A pre- post writing test was administered to both control and experimental groups to measure their writing skills. The experimental group was trained using e- mind map strategy in the instruction of

lexical and grammatical competences to develop their writing skills, whereas the other one represented the control group which was taught using the regular traditional methods.

Instruments:

The present study employed the following:

- Writing Skills Questionnaire

A writing skills questionnaire was prepared by the researcher to determine the most important writing skills needed at the second year preparatory stage.

- A pre- post writing test

The pre- post writing test was designed by the researcher to measure the level of second year preparatory stage students' writing with an analytic rubric to score the students' performance in writing.

Aim of the pre- post writing test

A writing pre- test was used to assess the students' level of performance in writing before starting the experiment, and hence the progress achieved by the experimental group could be attributed to the program they have been exposed to. As for the post test, it was used to investigate the effectiveness of the e-mind map strategy in the instruction of grammatical and lexical competences to develop writing skills.

Instructions of the pre- post writing test

Test instructions were clear and simple so that students could understand them easily. The instructions ask students to write down two paragraphs and an email. The time assigned for the test was 60 minutes. The total mark assigned for the test was 30.

Content of the pre- post writing test

The pre-posttest consists of three questions to assess students' writing skills. In the first question, students were asked to write a paragraph of five sentences on "A great

job you like”. In the second question, students were asked to write a paragraph of five sentences on “What you and your family do on holidays”. In the third question, students were asked to write an email about “Your bedroom”. Your name is Ali and your email address is ali@gmail.com. Your friend’s name is Tamer and your friend’s email address is tamer@gmail.com .

Procedures of the Study

1. Reviewing the related literature and the previous studies concerning grammatical and lexical competences in writing.
2. Constructing a writing skills Questionnaire.
3. Constructing a test that measures grammatical and lexical competences in writing of second year Al-Azhar preparatory school students.
4. Submitting the test to a jury for content validity.
5. Piloting the test to a sample of the population for reliability and readability measures.
6. Randomly assigning two study groups among the study population.
7. Pre-testing the study groups using the test.
8. Preparing Lesson plans for the chosen units are prepared, in accordance with the teacher guide of English for the 2nd Preparatory stage.
9. Administering Mindomo program to the experimental group students.
10. Post-testing the students' grammatical and lexical competences in writing.
11. Analyzing the data statistically.
12. Interpreting the results and discussing them.
13. Presenting conclusions, recommendations and suggestions for further research.

Definition of Terms

Electronic Mind Maps

Hendawy (2013, p.10) defined electronic mind map as “A visual mean that is designed and produced by one of computer programs to organize knowledge and information. It converts knowledge to a visual stimulus that presents the main idea and its subsections coherently. It uses line drawing with its different elements. It allows finding the connections between ideas easily”

Shehata& Zahed (2012, p.164) defined electronic mind map as “It is one of active learning strategies. It is an effective tool to reinforce memory, retrieve information, generate unusual creative ideas and organize information. It helps the brain to remember, read and organize information. It is designed by computer programs”

Operationally, it is a computer program used by 2nd preparatory students in the experimental group to help them analyze and organize ideas in order to improve grammatical and lexical competences in writing. These mind maps were designed using a special program (Mindomo).

This program's effect was measured by the grade achieved by the student in grammatical and lexical competences in a writing test prepared by the researcher for the purpose of this study.

Grammatical competence

Grammatical competence is the ability to recognize and produce the distinctive grammatical structures of a language and to use them effectively in communication (Barman, 2014, p.5).

Grammatical competence is theoretical and practical knowledge of a limited number of grammatical rules, which allow generating an unlimited number of correct sentences (Chomsky, 1965)

According to the CEF (Council of Europe, 2001), **this competence** is defined as knowledge of, and ability to use, the grammatical resources of a language

Operationally, the ability of 2nd preparatory students to use the grammatical structures effectively in writing.

Lexical competence

- **Lexical competence** is the ability to recognize and use words in a language in the way that speakers of language use them. Lexical competence includes understanding the different relations among families of words and the common collocations of words (Barman, 2014, p.5).
- **Lexical competence** is the ability to comprehend, acquire, retrieve and recall vocabulary items with relative success (Kaur, et al., 2008, p.90)
- **Lexical competence** is the common lexis required to allow individuals to communicate effectively in the target language in common situation (Tanaka, 2012, p.2)
- **Operationally**, the ability of 2nd preparatory students to use the words of English effectively in writing.

Writing

- **Writing** is an extremely complex cognitive activity in which the writer is required to demonstrate control of variables simultaneously. At the sentence level, these include control of contents, format, sentence structure, vocabulary, spelling and letter formation. Beyond the sentence, the writer must be able to structure and integrate information into cohesive and coherent paragraph and text (Nunan, 2003, p.88).
- **Writing** is the use of visual medium to manifest the graphological and grammatical system of the language (Widdowson, 2001, p.62).

- It is a critical communication tool for students to convey thoughts and opinions, describe ideas and events and analyze information (IES Practice Guide, 2016).
- **Operationally**, the ability of 2nd preparatory students to write (descriptive writing and e-mails) effectively due to grammatical and lexical competences as measured in the test prepared by the researcher.

Results

Testing the first hypothesis:

There is no statistically significant difference at 0.05 level between the mean scores attained by the experimental group students and those of the control group students in the post-test of writing.

T- Test for two independent groups was used to calculate the difference between the mean scores of the experimental and control groups on the writing skills posttest. The results are shown in table (1)

Table (1)

Significance of the "t" Value of the Differences between the Mean Scores of the Students of the Experimental Group and the Control Group in the Post-test Writing. (N=60)

| Group | N | Means | S.D. | DF | t. value | Sig. | η^2 | D. value | Effect Size |
|--------------|----|-------|------|----|----------|------|----------|----------|-------------|
| Experimental | 30 | 28.09 | 2.90 | 58 | 16.45 | 0.01 | 0.82 | 1.98 | Large |
| Control | 30 | 12.17 | 4.44 | | | | | | |

The previous table shows that the "t" value of the differences between the mean scores of the students of the experimental group and the control group in the post-test writing is (16.45) which is significant at the 0.01 level indicating that the significance of differences between the experimental group and the control group in the post-test of writing in favor of the experimental group.

To determine the effect size of the implementation of electronic mind maps program (independent variable) on writing skills (dependent variable), eta squared was calculated. According to (Murad, 2011, p.248) assessing the effect of the independent variable on the dependent one (η^2) values can be as follows:

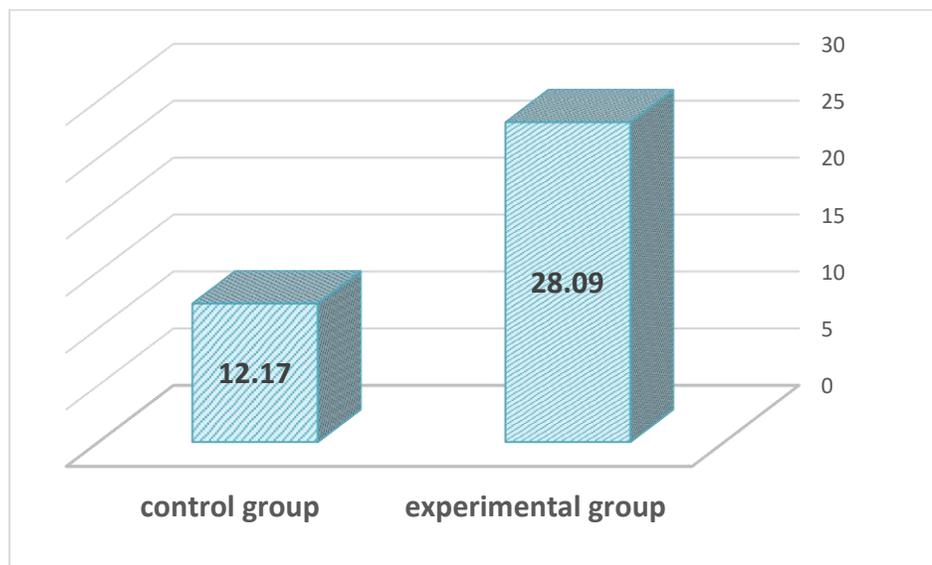
- 0.01: Small effect size
- 0.06: Medium effect size
- 0.14 or higher: Large effect size

Table (1) illustrates that the value of eta squared is (0.82). This means that the ratio of the total variance of the independent variable on the dependent variable is (0.82) indicating a large effect size.

“D value” was calculated. Its value is (1.98) which is larger than (0.8) indicating a large effect size of the dependent variable on the independent variable. Table (V) indicates that the first hypothesis of the study (There is no statistically significant difference between the mean scores attained by the experimental group students and those of the control group students in the post-test of writing) was rejected. The alternative hypothesis (There is statistically significant difference between the mean scores attained by the experimental group students and those of the control group students in the post-test of writing) was accepted. The following figure illustrates the mean scores attained by the experimental group students and those of the control group students in the post-test of writing.

Figure (1)

The Bar Chart of the Mean Scores Attained by the Experimental Group Students and Control Group Students in the Posttest of Writing.



Testing the second hypothesis:

“There is no statistically significant difference at 0.05 level between the writing pre- and posttest of the experimental group due to using e- mind map strategy in favor of the post test.”

T- Test for two independent groups was used to calculate the difference between the mean scores of the experimental group in the pre- test and post-test of writing. The results are shown in table (2)

Table (2)

Significance of the "t" Value of the Differences between the Mean Scores of the Students of the Experimental Group in the Pre- test and Posttest of Writing. (N=30)

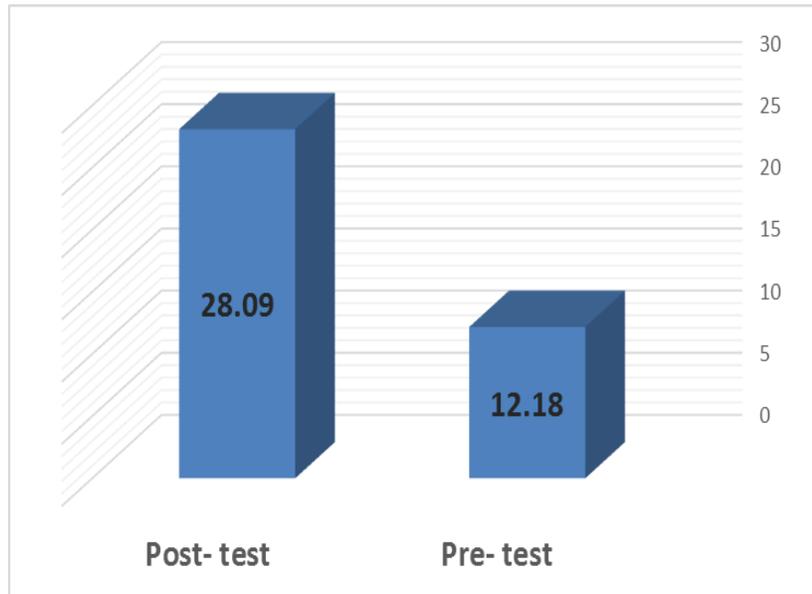
| Test | N | Means | S.D. | DF | t. value | Sig. |
|-----------|----|-------|------|----|----------|------|
| Pre- test | 30 | 12.18 | 3.28 | 29 | -19.9 | 0.01 |
| Post test | | 28.09 | 2.9 | | | |

The previous table shows that the "t" value of the differences between the mean scores of the students of the experimental group in the pre- test and posttest of writing is (-19.9)

which is significant at the 0.01 level indicating that the significance of differences between the experimental group in the pre- test and post-test of writing in favor of the posttest thus the second hypothesis (There is no statistically significant difference at 0.05 level between the writing pre- and posttest of the experimental group due to using e- mind map strategy in favor of the posttest) was rejected . The alternative hypothesis (There is statistically significant difference at 0.05 level between the writing pre- and posttest of the experimental group due to using e- mind map strategy in favor of the posttest) was accepted. The following figure illustrates the mean scores attained by the experimental group students in the pre- test and post-test of writing.

Figure (2)

The Bar Chart of the Mean Scores Attained by the Experimental Group Students in the Pre- test and Posttest of Writing.



Conclusion

With reference to the previously mentioned results, it was concluded that the present study provided evidence regarding the positive impact of using electronic mind

maps on students' EFL writing skills (using vocabulary correctly “collocations”, writing sentences that are grammatically correct, writing a well stated topic sentence, forming meaningful sentences that are relevant to the main idea, writing well-organized paragraphs and emails, writing words with no spelling mistakes and using punctuation marks and capitalization correctly).

Recommendations

Based on the results and conclusions of this study, the following recommendations are suggested:

1. The Ministry of Education should provide in- service teachers with training workshops and sessions on active learning strategies to develop the writing skills of preparatory stage students.
2. The writing skills could be better improved through student- centered strategies (electronic mind maps) rather than teacher centered strategies.
3. Involving students in the learning process through easy to use strategies such as electronic mind maps make the students ready to learn most of the time.
4. EFL teachers should put into consideration the use of up- to- date active learning strategies in their teaching to motivate their learners.
5. Writing skills must receive more attention from teachers in order to be developed.

Suggestions for Further Research

The following suggestions are recommended to be considered for further research:

- 1- Investigating the effectiveness of electronic mind maps in EFL classes to develop other language skills such as speaking or reading.

- 2- The effectiveness of using electronic mind maps on other types of writing such as critical writing, argumentative writing, and creative writing for preparatory and secondary stages.
- 3- Conducting studies exploring the students' attitudes towards using electronic mind maps in teaching.
- 4- The study results were obtained from immediate post- test, further research is necessary in order to check whether delayed post- test gives the same result or not.

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