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The Effect of Using Electronic Mind Mapping on EFL Students' Achievement in English Grammar

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Abstract

The present study aimed to investigate the effect of using electronic mind mapping on EFL Students' Achievement in English Grammar. The sample of this study included two academic classes that were chosen from the second year students in the English Language Department / College of Basic Education / University of Mustansiriya. The first class included (28) students and represented the experimental group where its members were studied grammar using the Electronic mind maps. The second class included (26) students and represented the control group where its members were studied grammar using the conventional method. The data of the study was collected based on an achievement test that was applied to the two study groups. After conducting statistical analysis, the results indicated a statistically significant difference at level (0.05) between the mean scores of the students of the experimental group and the scores of the students of the control group in the post-test of English grammar in favor of the experimental group. The results also indicated that the size of the effect resulting from the use of electronic mind maps on English grammar in the experimental group was high. Based on the results, a number of appropriate recommendations were suggested, most notably providing training workshops for English language teachers to train them in preparing electronic mind maps and employing them in teaching English grammar.

Keywords: Effect, Electronic mind mapping, Achievement**.**

Section One

Introduction

1.1. Statement of the Problem

Mind maps are one of the strategies for active learning and include important tools in strengthening the memory, retrieving information and generating new, unfamiliar ideas, as they work in the same steps as the human mind does. They help to activate, use and arrange information in a way that helps the mind to read and remember information as well as help in learning and planning. All types of mind maps have certain characteristics as they contain a natural form branching from the central form, using lines, symbols, images and words according to a set of simple, basic and natural rules, which the mind prefers. This method is the actual way that the human mind prefers to think.

However, despite the fact that there have been numerous studies on the use of Electronic mind mapping (henceforth E-mind mapping) in language instruction, it appears that empirical research on the use of mind maps to improve English grammatical achievement is still lacking. Therefore, it seems reasonable to conduct an experimental investigation to see whether electronic mind mapping has a significant effect on students' grammar achievement. The current study examined how E-mind mapping affects the grammatical proficiency of students. The research question presented for the current study is "Do the students taught using E-mind mapping strategy have greater grammatical achievement than those taught using the conventional method?"

1.2. Aim of the Study

The present study aims at investigating the effect of using electronic mind mapping on second year college students' achievement in English Grammar.

1.3. Hypothesis of the Study

It is hypothesized that there is no statistically significant difference at level of significance (0.05) between the mean scores of the experimental group and the control group students on the post-academic achievement test in English grammar.

1.4 . Significance of the Study

The present study is of importance because it examines the use of E-Mind Mapping and how it affects EFL students' achievement in English grammar.

According to many studies in the field of education, the usage of E- Mind Mapping strategy can raise English proficiency and motivation among students.

It also enhances EFL teachers' motivation towards using new strategies by following up the achievement and interaction of their students. It may help transform students' negative attitudes toward learning English into positive ones. By demonstrating the efficiency of E- mind mapping, it may help teach students new, unique technical abilities. Furthermore, it could attract the attention of decision-makers in Ministry of Education to design instructional methods utilizing contemporary techniques in the academic achievement in a variety of disciplines. It might take part in organizing workshops and conducting training sessions to advance the educational process by using new strategies that raise the level of academic achievement.

1.5. Scop of the Study

This study was applied in the English language grammar subject to the second year students in the College of Basic Education, University of Mustansiriyah in the academic year 2020-2021.

1.6. Definition of Basic Terms

1.6.1. Effect

An effect is a change that is caused in a person or thing by another person or thing" (Collins Cobuild Dictionary, 1990: 451).

1.6.1. Electronic Mind Mapping

It is an active learning technique that contributes to memory improvement, the generation of original ideas, the use of certain parts of the brain, and the control of how to read to help in information acquisition. It necessitates the use of computer software that creates idea flow branches from a central one automatically (Munsakorn, 2012:85).

Section Two

Theoretical Background

2.1. Teaching Grammar

The essential consideration in the history of language education and learning has been on the effective ways to teach grammar. The question of how to teach grammar to students in the most effective way, particularly in the context of EFL, has been a focus of discussion among many practitioners ever since language instruction first became popular (Brawn, 2007:43). The ability to compose proper sentences and communicate successfully depends on how well the students understand grammatical structure of English.

Moreover, the ability of learners to develop their language will also be severely limited without sufficient grammatical understanding.

According to Harley (2001:39), grammar is a formal tool that employs a limited set of rules that enable us to construct sentences in a language. In accordance with this, Greenbaum and Nelson (2002:65) assert that grammar is the core of language and that it comprises the collection of rules that allow us to combine words into more complex structures. The students will be able to create grammatically correct English sentences creatively if they have a good understanding of grammar. Additionally, having a thorough grasp of English grammar would make it easier for the students to understand written or spoken English. It is undeniable that vocabulary and grammar work together to form the four language skills and establish communication tasks (Widodo, 2006:128). Many academics now agree that grammar instruction in foreign language classes should not be neglected, as was previously stated. The importance of grammar instruction in language teaching and learning is also being recognized more by those who work in the field of language instruction. According to Murcia (2001:71), who supports this viewpoint, students should pay close attention to sentence form as it corresponds to their communicative needs because poor sentence structure can lead to misunderstandings between the speaker and the listener. On the basis of those assertions, it can be determined that comprehension and avoiding misunderstandings between English speakers and listeners largely depend on the mastery of English structure. Additionally, it implies that learning a language is accelerated by having a thorough understanding of grammar.

2.2. Mind Mapping

Tony Buzan, a well-known British psychologist, invented mind mapping in 1970 as a result of his studies on the functioning of the brain. It is a tool or idea that demonstrates how the brain processes multiple ideas and information that are connected to one another. It is a graphic representation of the relationships between concepts, words, or other elements centered on a single idea or term. It uses curving lines, symbols, text, color, and images to create an outwardly symmetrical structure. A primary idea is drawn in the paper's center to serve as its starting point. Other ideas associated with the central idea are grouped around it, with lines leading from the central idea to the subtopics to demonstrate their connections (Davies, 2011:282). There are two different forms of mind maps: traditional mind maps that are manually

created on paper or on a whiteboard, and electronic mind maps that use computer software to apply the same steps and create flow branches of ideas that stem from the central idea. E-Mind Maps are faster and more attractive than traditional ones because they use specialized, quick, and professional software that incorporates eye-catching images, colors, and illustrations. Consequently, several researches recommended adopting E-Mind Maps in early education since they assist students in organizing their thoughts and facts (Abdulbaset, 2016:22).

2.3. Features of Mind Mapping

According to Al-Jarf (2011:7), there are many features of mind mapping. Some of them are as follows:

1- It works to increase the ability to teach because of its ability to make ideas more organized and easier to retrieve.

2- It works to link previous information with the current one because of its visual perception and retrieval of ideas.

3-It works to develop memory, increase concentration, and draw students' attention by using colors.

4- It helps students to think creatively and make decisions easier.

5- It gives a comprehensive and clear view of the subject to be understood, thus helping to speed up understanding and learning.

2.4. Mind Mapping in Language Teaching

A variety of language teaching methods have utilized mind mapping. Yen (2010) used mind maps in his teaching and learning process as a visual media that allowed the student to come up with ideas, organize, and memorize new material as well as assisted the students stimulate their critical thinking. He added that mind mapping could assist the students in reducing their anxiety related to language learning. Riswanto and Putra (2012) conducted another research on the impact of mind mapping on students' writing performance at SMAN 3 Bengkulu in Indonesia. According to the findings, using mind maps significantly increased students' writing proficiency. Furthermore, Al-Jarf (2011) explained in his research how using mind mapping software in EFL classes could assist students in improving their pronunciation skills. Munsakorn (2012) carried out an additional study to examine the impact of mind mapping on the acquisition of new vocabulary and to ascertain how students felt about using mind mapping. The findings of this study showed that mind mapping significantly impacted

vocabulary learning and inspired students to learn English as a second language.

2.5. Electronic Mind Mapping in Teaching Grammar

Numerous scholars suggested engaging methods for instructing students in English grammar after realizing the difficulties associated with learning grammar. Practitioners frequently vary their instructional techniques in order to enhance students' learning, including the use of media and specific strategies. In the EFL setting, students are taught grammar rules practically utilizing the grammar translation method, in which learners are given the grammar rules and examples and then instructed to memorize them before being asked to apply the rules to additional examples (Widodo, 2006:129). The students mostly write down new grammatical rules in their notebooks. They typically have a linear writing style. Buzan and Buzan (1993:46), however, assert that the problem is that the mind does not naturally generate thoughts in a linear way. The human brain functions erratically, switching between topics. Therefore, using a multi-dimensional outline, which enables the learners to write down their ideas in the form of free diagrams is preferable and represented by Mind mapping strategy.

2.6. Related Previous Studies

2.6.1. Aydin&Balim (2009).

This study was conducted in Turkey and aimed at enabling students to learn concepts in the sixth grade science subject. It was conducted in a intermediate school in Izmir, Turkey. The study sample consisted of (50) students who studied according to three groups, two of them are experimentals and one control. The first group was studied with the mind maps and the second group was studied with concept maps, as the map is drawn by hand before the lesson, and the third group was studied with the traditional method. The method used in this study included preparing maps from the students of the two experimental groups before the lesson, and then making a comparison between the maps of the two groups and recording notes from the students about them. The results of the study concluded that the mind maps and concept maps helped reveal the students' previous knowledge regarding the subjects of study, and the preparation of mind maps and concept maps in science and technology would enhance and facilitate students' learning through enabling them to link many topics and concepts with each other.

2.6.2. Anna Buran &Andrey Filyukov (2015).

This study aimed to use mind mapping as an effective tool in encouraging students in language learning. The study clarified the techniques of implementing and using mind mapping in the educational process. The results of the study showed that mind maps help students to solve problems, present creative ideas, remember new vocabulary, take notes, enhance their reading skills, organize tasks, and prepare presentations. In addition, it is a useful creative tool for students and teachers as it helps them increase the connection between each other.

2.6.3. Vesil Aykac (2015).

This study aimed to identify the impact of using mind mapping in teaching visual arts. The sample of the study consisted of 20 male and female students from the Faculty of Education, Marmara University, Turkey. The sample were divided into two groups, the first group was a control group that included (10) students who studied in the traditional method, and the second group was experimental which was studied using the mind maps and included 10 students. The results of the study showed that there were statistically significant differences attributed to the effectiveness of using mind maps in teaching as one of the active learning strategies.

From the review of previous studies, the following indicators can be deduced:

1- The field of education took precedence in using the strategy of mind maps in many scientific studies, and the researcher limited himself with mentioning some examples of these studies due to their abundance, which are in line with his intention to employ modern strategies in teaching.

2- The previous studies that monitored the use of learning strategies in the field of teaching English did not address the employment of the traditional and electronic mind maps in teaching English grammar.

Section Three

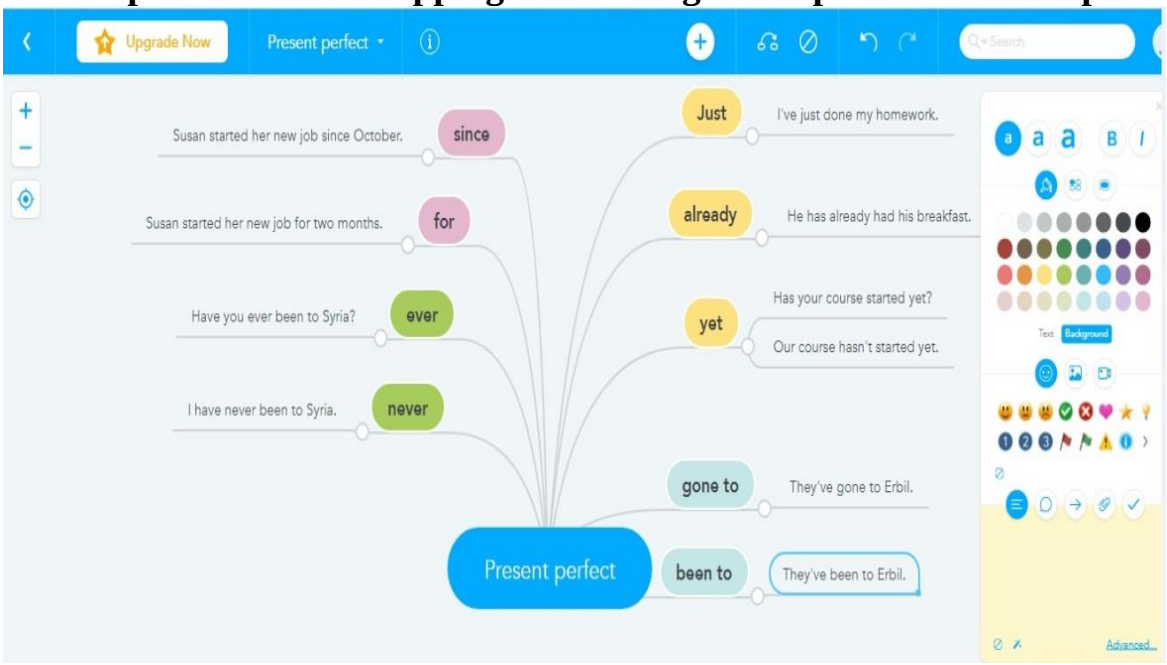
Methodology and Procedures

3.1. Research Methodology

The researcher has used the experimental method to examine E- mind mapping in teaching English grammar. The experimental method has been applied based on two groups, an experimental group who studied grammar using E-mind mapping (as shown in figure 1), and a control group who studied grammar by the traditional method. The performance has been compared between the two groups.

Figure (1)

Sample of E-Mind Mapping in Teaching the Experimental Group



3.2. Experimental Design

The experimental design is defined as the blueprint of the processes that enable the researcher to test the hypotheses of the study by arriving at reliable findings regarding the connection between the independent and dependent variables (Best and Khan, 2006:177). The experimental design of this study is called "the pre-posttest, Equivalent-Group design" as it shown in (Table 1).

Table (1).
The Experimental Design

Group	Independent variable	Dependent variable	Tool
experimental	**Electronic mind mapping**	**English grammar achievement**	**Post-test**
Control	_____		

The grammar spots were studied is the present tense and its aspects, past tense and its aspects, as well as futurity. The experimental group has studied grammar through E-mind mapping strategy, whereas the control group has studied grammar through the traditional method.

3.2. **Participants**

The population of this study consisted of all second year students whose number is 350 students at English Department, College of Basic Education, University of Mustansiriyah for the academic year 2020-2021. A total of 54 students of the population were included in the study sample and divided into experimental and control group.

3.3. Research Instrument

The instrument of this study was an achievement test. It was conducted after the treatments were administered to collect the initial data and determine whether there was a significant difference between the experimental and control groups. The achievement test consisted of 30 items with multiple choice (6 items), true and false (6 items), fill in the blanks (4 items), sentence modification (4 items), making questions (4 items), and correcting mistakes (6 items).

3.4. Validating the Achievement Test

3.4.1 Face Validity

In order to verify the compatibility of the test with the objectives set for it; it was presented in its initial form to jury members who are specialized in the fields of technology, education, curriculum development and methodology, with the aim of taking their opinion on the following:

a. Clarity of the test instructions .
b. The suitability of the test to the purpose and aim of the study.
c. Clarity of the items wording linguistically.

By making the modifications recommended by the experienced arbitrators, the final form of the achievement test, which included 30 items, was obtained. Thus, the test has become valid and applicable to the experiment.

3.4.2. Content Validity

The validity of the content indicates the degree to which the scale measures what is intended to be measured in a specific content through logical analysis of the measured content, or verifying its representation of the content to be measured (Al-Ansari, 2000: 96). The content validity was verified by preparing a table of specifications that dealt with the grammatical topics, their objectives and their relative weight, and based on them, the test items were distributed.

3.5. Pilot Administration

The test has been applied to an exploratory sample that has been chosen randomly out of the main sample, and the difficulty and discrimination coefficients were calculated for all items of the test. Two items were excluded because of their negative discrimination, and three items were excluded because of their difficulty, as only 19% of the students were able to answer them. As for the rest of the items, the difficulty coefficients ranged between (0.35) and (0.78), whereas the discrimination coefficients ranged between (0.34 and (0.80) which are acceptable values. The test in its final form contained 30 items. It was found that the time taken to answer the test ranged between 40-48, with an average of 45 minutes, which is a suitable time for this age group of students.

3.5. Establishing the Reliability

To verify the reliability of the test, the (Test-retest) method has been used to identify its stability coefficient as the test has been applied twice on a pilot sample consisting of (15) students. The time between the two applications of the test was two weeks. The results of the test have been analyzed and Pearson correlation coefficient has been calculated between the scores of the first and second applications of the test and the scores of the second application. The correlation coefficient was (0.88), which is a relatively high value and is considered appropriate for accepting the test as a tool for measuring English grammar achievement of the main study sample.

3.6. Research Procedures

The aim of the current research is related to investigating the effect of using Electronic mind mapping on Second year College students'

Achievement in English grammar and then the following procedures were followed for the research experiment:

1- Two groups of students have been chosen randomly.

2- A pre-test has been applied to the research sample of students (the experimental and control groups).

3- The research experiment has been applied by teaching the experimental group using E-mind mapping, while the control group was taught by traditional method. The researcher followed the same teaching steps and material subjects for the two groups, except for the teaching method.

4- A posttest has been applied to the research sample of students immediately after conducting the experiment.

5- Collecting and analyzing data obtained, then completing the results.

6- Teaching the control group by the conventional way.

7-Administering the posttest to the two student groups involved.

Section Four

Results, Conclusion, Recommendations, and Suggestions for Further Research

4.1. Results

To verify the hypothesis of the study which states that there is no statistically significant difference at level (0.05) between the mean scores of the students in the experimental and the control group on the post-academic achievement test in English grammar, the difference between the mean scores of pre-post tests of the control group have been compared and then T-test for two related samples have been used as shown in table (2).

Table (2).

The Significant Differences between the Mean Scores of Control Group in the pre-post test.

Application	Sample	Mean Scores	Standard Deviation	df	T-value	Level of Significance
					3.6	
Pre-test	28	11.00	34.50	27		0.05
Post-test		14.50				

Table (2) reveals that there is slightly significant difference between the mean scores of the pr-post test of the control group. The mean scores of the

pre-post test for the experimental group have been extracted and compared as shown in table (3).

Table (3).
The Significant Differences between the Mean Scores of the Experimental Group in the pre-post test.

Application	Sample	Mean Scores	Standard Deviation	df	T-value	Level of Significance
Pre-test	26	10.00	59.90	25	4.8	0.05
Post-test		20.10				

Table (3) manifests that the difference between the mean scores of the experimental group in the pre-post test is significant in favor of the post-test.

The results of the differences between the mean scores of the posttest for the experimental and control group have been processed statistically, and the T-test for two independent samples have been applied as shown in table 4.

Table (4).
Statistical results of the post-test in the achievement test between the experimental and control group.

Group	Sample	Mean Scores	The difference between mean scores	df	T-value	Level of Significance
Experimental	28	12	6.7	52	4.5	0.05
Control	26	18.7				

Table (4) shows that the comparison between the mean scores of the experimental and control group in post-test has been achieved and the *T* value has also been extracted. According to the results that are illustrated in Table (4), the null hypothesis is rejected and the alternative hypothesis which indicates that there is statistically significant difference at level of significance (0.05) between the mean scores of the experimental group students and the control group on the posttest in English grammar, is accepted.

After the verification of the research hypothesis, it became clear that there is a statistically significant difference between the mean scores of the

experimental and the control group in the post application of the achievement test in favor of the experimental group that was taught by the E-mind mapping. This difference can be attributed to the following:

1- The use of E-mind maps and supporting them with images and visual representations help learners organize knowledge in their minds.

2- The use of E- mind maps in teaching, may assist students to analyze the main and secondary ideas through the principle of linking sub-ideas and examples with their main origins in a sequential and easy way.

3- Adoption of E-mind maps and the inclusion of images and shapes, and the use of colors easily and flexibly in building mind maps in a creative computer environment.

4- The representation of ideas written in abstract words in an illustration based on the realization of the two hemispheres of the brain with words and numbers for the left hemisphere, and pictures and colors for the right hemisphere.

4.2. Conclusion

The study aimed to identify the effect of using E- mind mapping strategy in teaching English grammar on students' achievement. The study confirmed that E-mind map strategy increased students' achievement when compared to the traditional delivery approach based on the post-test scores. Thus, it is concluded that E-mind maps are effective for teaching and learning English grammar.

4.3. Recommendations

Based on the results of the study, the researcher recommends the following:

1- Increasing awareness of the use of e-Mind Maps in academic institutions, and specifically among English instructors.

2- Holding teacher training sessions on the use of e-Mind Maps in English teaching.

3- Establishing a unit to help students improve their abilities and interest in using E-mind maps in higher education.

4.4. Suggestions for Further Research

1- Conducting more studies to find out the effect of computerized mind maps on learning other topics in English language.

2- Conducting more studies to find out which of the mind maps patterns is more effective in achieving learning outcomes in English language.

3- Conducting more studies to identify the obstacles that limit teachers' use of E-mind mapping strategy and find out the appropriate solutions.

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Appendix 1

Ministry of Higher Education And Scientific Research
Al-Mustansiriyah University

A letter to Jury Members

Dear Sir/ Madam,

The researcher intends to carry out an experimental study entitled (**The Effect of Using Electronic Mind Mapping on EFL Students' Achievement in English Grammar).**

The aim of this study is to investigate the use of Electronic mind mapping in teaching English grammar and explore its effect on students' achievement.

Electronic mind mapping is a tool or idea that demonstrates how the brain processes multiple ideas and information that are connected to one another. It is a graphic representation of the relationships between concepts, words, or other elements centered on a single idea or term. It uses curving lines, symbols, text, color, and images to create an outwardly symmetrical structure

In order to achieve the face validity of the test, it will be appreciated if you thankfully state the suitability of the tools for achieving the aim of the study stated above. Any recommendation and modification which you make will be highly appreciated.

Thank you in advance for your assistance and cooperation.

Instr.Hayder Abdulzahra

Q.1. : Look at each underlined verbs and say what kind of meaning it expresses. Is it a thought, a feeling, a fact or a repeated action?

1- Does he understand which way to go?
a. Facts b. thoughts c. feelings d. repeated actions
2-Trees lose their leaves in the fall.
a. Facts b. thoughts c. feelings d. repeated actions
3-This doesn't taste very good, does it?
a. Facts b. thoughts c. feelings d. repeated actions
4-My brother prefers tea to coffee.
a. Facts b. thoughts c. feelings d. repeated actions
5- Few people live to be 100 years old.
a. Facts b. thoughts c. feelings d. repeated actions
6-Sarah often works late at the office.
a. Facts b. thoughts c. feelings repeated actions

Q.2. State if the sentence is true or false.

1-It's been open since last month.
2- The missing man hasn't been seen for three weeks.
3-I've lived there for several years.
4- The bus is leaves at eight twenty.
5- Last weekend I see some friends and we have a meal.
6-At the weekend I'm usually go swimming.

Q.3. Fill in the blanks with (just, already, or yet).

1-Yes, I know David. We have --------been introduced. It was at a party last week.
2- Don't come in here with those muddy shoes!! I have ---------- cleaned this floor!!!
3- I'd like to borrow this book. Has Anna read it ----------?
4- I'm sorry. You have ----------missed Katie. She left the office about three minutes ago!

Q.4. Rewrite the following sentences in correct forms.

1- I (study) when Danny called me.
2- While I was jogging, it (start) raining.
3- I broke my leg as I (skii).
4- The television was on, but nobody (watch) it.

Q.5. Make questions for the following sentences as required.

1- Sue has read the book twice. (ask with "How many times").
2- The boss was dictating a letter. (ask with "Who")
3- At a quarter past six, Phil was translating the document. (ask with "When").
4- The pupils were talking about the United States.(ask with "What").

Q.6.Each of the following sentences has a mistake in it. Write the correct answer.

1-We came not to the club last night.
2-Did your cousins swam in the lake?
3-What colour you like best?
4-I was lucky that we had been decided to buy our tickets in advance.
5-The meeting will be start at half past seven.
6- At the weekend I'm usually go swimming.

Good Luck

Appendix 2
Names of Jury Members

No.	*Academic Rank*	*Name*	*College*	*Certificate and specialization*
1	Assistant Professor	Muna Muhammed	University of BabylonlCollege of Basic Education.	Ph.D in ELT
2	Assistant Professor	Saad Sarhan Salal	University of Al-Mustansiriayh/ College of Basic Education.	MA. in ELT

3	Assistant Professor	Afrah Munshid	University of Al-Mustansiriayh/ College of Basic Education.	MA. in ELT
4	Assistant Professor	Haifa Kadhim	University of Maysan/College of Basic Education.	MA. in ELT
5	Instructor	Rafid Rauf	Ministry of Education	MA. in ELT

اثر استخدام الخرائط الذهنية الالكترونية على تحصيل الطلبة دراسي اللغة الانكليزية لغة اجنبية في قواعد اللغة الانكليزية

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مستخلص البحث:
تهدف الدراسة الحالية إلى معرفة اثر استخدام الخرائط الذهنية الإلكترونية على التحصيل في قواعد اللغة الإنجليزية للطلبة دراسي اللغة الانكليزية لغة اجنبية. اشتملت عينة الدراسة على مجموعتين تم اختيارهما بالطريقة المتاحة من طلاب المرحلة الثانية في قسم اللغة الإنجليزية / كلية التربية الأساسية / الجامعة المستنصرية. ضم الصف الأول (28) طالباً ومثلوا المجموعة التجريبية حيث درس أفرادها باستخدام الخرائط الذهنية الإلكترونية. ضم الصف الثاني (26) طالباً ومثلوا المجموعة الضابطة حيث درس افرادها بالطريقة التقليدية. تم جمع بيانات الدراسة بناءً على اختبار تحصيلي لقواعد اللغة الإنجليزية الذي تم تطبيقه على مجموعتي الدراسة. بعد إجراء التحليل الإحصائي ، أشارت النتائج إلى وجود فروق ذات دلالة إحصائية عند مستوى دلالة (0.05) بين متوسطات درجات طلاب المجموعة التجريبية ودرجات طلاب المجموعة الضابطة في الاختبار البعدي لقواعد اللغة الإنجليزية لصالح طلبة المجموعة التجريبية.. كما أشارت النتائج إلى ارتفاع حجم الاثر الناتج عن استخدام الخرائط الذهنية الإلكترونية في قواعد اللغة الإنجليزية في المجموعة التجريبية. وبناءً على النتائج تم اقتراح عدد من التوصيات الملائمة ، أبرزها توفير ورش عمل تدريبية لمدرسي اللغة الإنجليزية لتدريبهم على إعداد الخرائط الذهنية الإلكترونية وتوظيفها في تدريس قواعد اللغة الإنجليزية.

الكلمات المفتاحية: اثر، الخرائط الذهنية الالكترونية، التحصيل.