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The Effect of a Suggested Educational Software Based on Electronic Reading Activities in Teaching Grammatical Concepts on the development of Deductive Thinking Skills of First Year Secondary Students

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ABSTRACT: The problem of this study is represented by one main question: What is the effect of suggested educational software based on electronic reading activities in teaching grammatical concepts on the development of deductive thinking Skills of First Year Secondary Students?
This main question includes the following minor questions:
1. What are the deductive thinking skills there are suitable for teaching grammatical concepts to first year high school students?
2. What is the form of the educational software based on electronic reading activities used in developing the deductive thinking skills in teaching grammatical concepts to first year high school students?
3. What is the effectiveness of the educational software based on electronic reading activities used in developing the deductive thinking skills in teaching grammatical concepts to first year high school students?
The sample was consisted of 50 students' secondary school taken from Azza Zeidan experimental Language School and sports secondary school for Males and 50 Arabic language teachers and supervisors.
The results indicated that:
1. There are statistically significant differences between the observed and expected frequencies of the marks of Arabic language teachers and supervisors and Specialists in methods of teaching Arabic language in the items of the questionnaire of the deductive thinking skills relevant for teaching grammatical concepts to first year high school students by using the educational software based on electronic reading activities as k2 test shows.
2. There are no statistically significant differences between the means of the experimental and control groups in the pre-test of deductive thinking skills of teaching grammatical concepts, students' marks in the pre -test.
3. There are statistically significant differences between the means of students' marks in the experimental and control groups in the post-test of deductive thinking skills of teaching grammatical concepts, students' marks in the post-test.

KEYWORDS: Electronic Reading Activities, Deductive Thinking Skills, Grammatical Concepts.

1 INTRODUCTION

Teaching the Arabic language aims at enabling the learner to possess knowledge tools by gaining the basic literacy skills. It is also concerned with the acquisition of right attitudes and habits that would help in developing the individual's skills throughout his education period. Thus, by the end of the education years, the student becomes highly proficient in expressing himself using the language either receptively or productively.

According to the importance of the Arabic language in the educational process, it has taken a considerable part of the school timetable. Arabic language is not just a school subject, but our national language and a means for studying other subjects. Fathy Younis has pointed out that proficiency in Arabic is highly related to achievement in other school subjects.

Syntax is the backbone of the linguistic system. It is also the main distinguishing feature between languages, especially when considering the form imposed by grammatical structures. If it is said that the acquisition of oral and written fluency is the aim of language learning, syntax is the means for achieving such an aim.(Sadeghi 2006)

Syntax is an important component in the language system as it is fundamental for understanding and expressing oneself orally or in writing. Syntax indicates meaning and helps in the correct use of the language.(Tran 2009)

Since acquiring concepts is an important dimension in all educational fields and since concepts are considered the knowledge framework in various fields, the same applies to learning syntactic concepts. Concepts are important for mastery of grammatical concepts as any grammatical topic starts with putting forward the basic concepts involved to enable students to become linguistically proficient.

Thus, it is important to pay attention to syntactic concepts for developing the mind and the ability to analyze and criticize linguistic utterances. Syntactic concepts are considered an important dimension for understanding syntax. The learner will not be able to speak correct and sound Arabic unless he acquires the syntactic concepts.

Students however confront various difficulties in studying grammar and usually have low level of achievement as a result of the traditional methods used in teaching grammar e.g., lecturing. In this way, students become unable to apply what they learn in new contexts and hold a feeling of resentment towards syntax. It has been known that any language, no matter how difficult it is, could be learned easily and successfully if the suitable method is used.(Morrow, 1986) & (Azabdaftari, 2015)

In many schools, the writing of secondary stage students was characterized by basic grammatical errors and lack of cohesion and coherence as they used to study isolated grammatical rules to answer isolated grammatical use. This problem due to the fact that the way grammar is taught for the secondary stage depends on providing traditional and tedious explanations.(Rhim and Mohammed, 2013)

Many research works were concerned with teaching grammar and syntax using variant teaching methods, proved that students' weakness in syntax is a phenomenon that appears in Egypt in all educational stages. Those studies also revealed that concepts teaching gained little attention and that low achievement in grammar can be modified using untraditional teaching strategies. Using a suitable method could work out many curricula shortcomings, students' weaknesses, textbook difficulties, in addition to any other educational problem. Accordingly, when selecting an approach or a strategy, it must be kept in mind whether it is highly motivating, enhances students' ability to think and connects grammar to its main aims or not. (Kaye, 2003) & (Bavali and Sadighi , 2008) & (Andrews 2007) & (Nazari , 2014) & (Artunduaga Cuéllar, 2013) & (Mahmoud , 2014)

Linguists believe that thinking and expression are two facets of one mental process. Their development and enhancement are interrelated and connected at the same time with man's life experiences and expertise. Expression could not be considered lively except when it provokes feelings, emotion and memories. It is well known that the expressions used by students without being meaningful or reflecting a personal feeling or experience is considered a dead phrase no matter how rhetorically significant it might be. (Mahiroglu 2007) (Pogrow, 2015) & (Zimmerman , 2000) &(Rahmatian and Zarekar, 2016) & (Dang and Nguyen , 2013) & (Mahmoud, 2014)

It is rather essential for students to learn how to grammatical concepts themselves in natural situations or in functional ones that are closely related to their lives and reality as it provides opportunities for communication and activation, which are considered two of the prerequisites of good composition. Grammatical concepts are closely related to the students' lives and reality so the tremendous information technology revolution should be positively utilized in enhancing students' written composition abilities. The internet nowadays is similar to a window that a man uses to be in connection with the modern world. It is a wonderful medium that exhibits the reality of the world and facilitates means for dealing with it. Some of the helpful facilities provided by the internet are the blogs and electronic publishing devices. (Podolsky and Soiferman 2014) & (Liu, 2016)&

Consequently, to be in accordance with the world of today and its scientific and technological means, and in light of the rapidly increasing numbers of internet users after providing most of the Egyptian schools with the required technological infra-structure (large numbers of computers that are connected to the internet), and in response to the findings of related studies that emphasized the development of some thinking skills when teaching grammatical concepts in light of the technological devices, the idea of the recent study emerged. It is concerned with designing suggested educational software based on electronic reading activities to develop some deductive thinking in teaching grammatical concepts to first year secondary students.

2 PROBLEM OF THE STUDY

There are some deficiencies in traditional teaching methods of grammar, leading to a clear weakness in students' acquisition of the concepts included and the occurrence of various mistakes in the students' use of grammar both orally and in writing. The researchers tried to use a modern method for teaching grammar to solve the problems caused by the usually used methods.

So the study tries to answer the following main question:

What is the effect of suggested educational software based on electronic reading activities in teaching grammatical concepts on the development of deductive thinking Skills of First Year Secondary Students?

From the previous main question, a number of sub-questions could be derived:

1. What are the deductive thinking skills there are suitable for teaching grammatical concepts to first year high school students?
2. What is the form of the educational software based on electronic reading activities used in developing the deductive thinking skills in teaching grammatical concepts to first year high school students?
3. What is the effectiveness of the educational software based on electronic reading activities used in developing the deductive thinking skills in teaching grammatical concepts to first year high school students?

3 AIMS OF THE STUDY

This study aims at the following:

1. Identifying the deductive thinking skills which are relevant for teaching grammatical concepts to first year high school students.
2. Preparing educational software based on electronic reading activities for developing deductive thinking skills which are necessary for teaching grammatical concepts to first year high school students.
3. Realizing the effect of using the educational software based on electronic reading activities in developing deductive thinking skills on teaching s grammatical concepts to first year high school students.

SIGNIFICANCE OF THE STUDY

The present study may be useful for the following:

1. High school supervisors and teachers of Arabic language and other experts will be able to identify the deductive thinking skills which are relevant for teaching grammatical concepts to first year high school students.
2. The sample students will know how to use the educational software based on electronic reading activities in learning the rules of the Arabic syntax.
3. Researchers in the field of curricula and methodology of Arabic language will know how to use the educational software not only in the Arabic syntax but also in the other branches of Arabic language.
4. The grammar curricula designers for the Secondary Stage as they could use "The e - learning model" in helping teachers while teaching grammar and its concepts.

LIMITS OF THE STUDY

The study is limited to the following:

1. A sample of first year high school students in Azza Zeidan experimental language School and Sports Secondary School which are affiliated to Fayoum Directorate of Education.
2. A sample of high school supervisors and teachers of Arabic language.
3. The syntactic topics of unit 1 in the Arabic language textbook school, for first year high school student in the unit whose title is “Arabic values "
4. The first term of the school year 2016-2017.

4 HYPOTHESES OF THE STUDY

The hypotheses of the study are:

1- There are no statistically significant differences between the observed and expected frequencies of the marks of Arabic language teachers and supervisors in the items of the questionnaire of the deductive thinking skills relevant for teaching grammatical concepts to first year high school students by using the educational software based on electronic reading activities as k2 test shows.

2- There are no statistically significant differences between the means of the experimental and control groups in the pre-test of deductive thinking skills of teaching grammatical concepts, students' marks in the pre -test.

3- There are no statistically significant differences between the means of students' marks in the experimental and control groups in the post-test of deductive thinking skills of teaching grammatical concepts, students' marks in the post-test.

5 METHODS OF THE STUDY

The current study used the following methods:

1- The descriptive method in speculating the previous studies and the theoretical background.

2- The experimental method as the study used two groups; an experimental group that studied the grammatical concepts using "The educational software based on electronic reading activities" and the control one that studied the grammatical concepts in the usually used way.

6 STEPS OF THE STUDY

The study used the following procedure:

Firstly: To answer the first question, namely, what are the deductive thinking skills that are suitable for teaching grammatical concepts to first year high school students?

1. The researchers read and analyzed some of the previous papers and studies written on the topic of the present study extract their findings and how to use them in the present study.

Reviewing the related literature related to the following areas of interest:

- Methods, techniques and strategies used in teaching grammar.
- Methods used in teaching grammatical concepts.
- Strategies and teaching models based on the E - learning model focusing on the Electronic Educational Software.

2. Defining the nature of grammar as a school subject and the nature of "The educational software based on electronic reading activities" and its bases.

3. He prepares a questionnaire on the deductive thinking skills that are relevant for teaching grammatical concepts to first year high school students.

4. Giving the questionnaire in its initial form to a group of referees who are specialized in curricula and Arabic language methodology to check its reliability, objectivity and suitability for application.

5. Applying the questionnaire on a sample of Arabic language teachers and supervisors to identify the deductive thinking skills that have the highest values in a K test.

6. Writing the questionnaire's results in special tables and analyzing them statistically.

Secondly: to answer the Second question, namely, what is the form of the educational software based on electronic reading activities used in developing the deductive thinking skills in teaching grammatical concepts to first year high school students?

The researchers designed the educational software based on electronic reading activities to be used in teaching grammatical concepts for developing some deductive thinking skills of first year high school students. They designed it in the light of:

1. The findings of the previous step.
2. Identifying the essentials and standards of the educational software based on electronic reading activities.
3. Setting the general aim of the educational software.
4. Setting the behavioral objectives of the educational software for the sake of teaching grammatical concepts to first year high school students.
5. Selecting a relevant design for the educational software.
6. Preparing the contents of the educational software.
7. Preparing the scenario of the educational software.
8. Preparing the educational aids that are relevant for the required grammatical concepts.
9. Preparing the relevant means of evaluation.
10. Setting a time plan for teaching grammatical concepts by using the educational software based on electronic reading activities.
11. Producing the educational software based on electronic reading activities.
12. Checking the accuracy (editing) the educational software based on electronic reading activities and referring it to a committee of referees.
13. Making a pilot study of the suggested educational software based on electronic reading activities and putting it in its final, applicable form.
14. Preparing the teacher's guide including the suggested unit's teaching procedure according to the principles of "The educational software based on electronic reading activities.

Thirdly: to answer the third question, namely, what is the effectiveness of the educational software based on electronic reading activities used in developing the deductive thinking skills in teaching grammatical concepts to first year high school students?

1. The researchers randomly selected a sample of first year high school students and divided them into an experimental group and a control group.
2. They controlled the study's variables.
3. They prepared a test of deductive thinking skills of teaching grammatical concepts to first year high school students, and referred it to a group of referees specialized in curricula and Arabic language methodology; then he modified it in the light of their recommendations in order to ensure its suitability for application.
4. The researchers applied the test to the sample students to set the test time and the factors of easiness, difficulty and identification for each of the test items and to check the validity of the test.
5. They applied the test as a pre-test to the two sample group of first year high school students both experimental and control.
6. He trained the experimental group to do some syntactic activities by using the educational software based on electronic reading activities in order to develop their deductive thinking skills.
7. He applied the test as a post-test to the two sample groups of first year high school students, both experimental and control.
8. He recorded the results of the pre and post-tests of deductive thinking skills in special tables and explained and analyzed them statistically.
9. He presented recommendations and suggested topics for further research in the light of the previous results.

7 SAMPLE OF THE STUDY

Type of sample: first year high school students in Azza Zeidan experimental Language School and sports secondary school for Males.

Group: two groups one experimental and another control.

Class 1-1 & 1-2

Number 25 students.

Total: 50 students' secondary school.

Number: 50 teachers and supervisors.

Table no. (1) Shows Sample of the study

Type of sample	school	Group	Class	Total
First year high school students	Azza Zeidan experimental Language School	Experimental	1-1	25
	Sports secondary school for Males	control	1-2	25
Arabic language teachers and supervisors				50

8 THE STUDY RESULTS

Firstly: The results of the questionnaire of deductive thinking skills:

To prove the first hypothesis which states that there are no statistically significant differences between the observed and expected frequencies of the marks of Arabic language teachers and supervisors in the questionnaire items as the K2 test shows, the questionnaire was given to a number of the staff of Arabic Methodology and Curricula Department and was modified according to their remarks. Some of the questionnaire's compositions were re-phrased to ensure their reliability, comprehensiveness and relevance to the deductive thinking skills of teaching grammatical concepts to first year high school students. After checking the questionnaire's reliability, it was applied to 50 Arabic language teachers and supervisors to test its reliability. The researchers used kuder -Richardson formula for test reliability. The following are the results of the questionnaire and the truthfulness of the first hypothesis:

Table (no.2) The observed and expected frequencies and the K2 values for the opinions of Arabic language teachers and supervisors regarding the deductive thinking skills of teaching grammatical concepts to first year high school students

Skill no.	Appropriateness						Total	Relative Weight	Expected repetition	K2	(Statistical significance)	Arrange
	High	%	Medium	%	Low	%						
1	40	80.00	5	10.00	5	10	50	0.90	16.67	49	**	11
2	16	32.00	20	40.00	14	28	50	0.68	16.67	1.12	-	33
3	38	76.00	10	20.00	2	4	50	0.91	16.67	42.88	**	15
4	20	40.00	20	40.00	10	20	50	0.73	16.67	4	-	31
5	24	48.00	24	48.00	2	4	50	0.81	16.67	19.36	**	22
6	5	10.00	5	10.00	40	80	50	0.43	16.67	49	**	12
7	23	46.00	24	48.00	3	6	50	0.80	16.67	16.84	**	25
8	12	24.00	12	24.00	26	52	50	0.57	16.67	7.84	-	30
9	40	80.00	5	5.00	5	10	50	0.90	16.67	49	**	13
10	30	60.00	15	30.00	5	10	50	0.83	16.67	19	**	24
11	33	66.00	14	28.00	3	6	50	0.87	16.67	27.64	**	20
12	15	30.00	15	30.00	20	40	50	0.63	16.67	1	-	34
13	31	62.00	12	24.00	7	14	50	0.83	16.67	19.24	**	23
14	35	70.00	13	26.00	2	4	50	0.89	16.67	33.88	**	19
15	22	44.00	22	44.00	6	12	50	0.77	16.67	10.24	**	29
16	36	72.00	12	24.00	2	4	50	0.89	16.67	36.64	**	18
17	37	74.00	10	20.00	3	6	50	0.89	16.67	38.68	**	17
18	41	82.00	7	14.00	2	4	50	0.93	16.67	54.04	**	7
19	40	80.00	7	14.00	3	6	50	0.91	16.67	49.48	**	10
20	23	46.00	23	46.00	4	8	50	0.79	16.67	14.44	**	28
21	39	78.00	6	12.00	5	10	50	0.89	16.67	44.92	**	14
22	38	76.00	7	14.00	5	10	50	0.89	16.67	41.08	**	16
23	22	44.00	13	26.00	15	30	50	0.71	16.67	2.68	-	32
24	43	86.00	4	8.00	3	6	50	0.93	16.67	62.44	**	6
25	44	88.00	2	4.00	4	8	50	0.93	16.67	67.36	**	4
26	44	88.00	3	6.00	3	6	50	0.94	16.67	67.24	**	5

27	31	62.00	14	28.00	5	10	50	0.84	16.67	20.92	**	21
28	10	20.00	30	60.00	10	20	50	0.67	16.67	16	**	26
29	48	96.00	1	2.00	1	2	50	0.98	16.67	88.36	**	1
30	47	94.00	2	4.00	1	2	50	0.97	16.67	82.84	**	2
31	46	92.00	3	6.00	1	2	50	0.97	16.67	77.56	**	3
32	30	60.00	10	20.00	10	20	50	0.80	16.67	16	**	27
33	40	80.00	1	2.00	9	18	50	0.87	16.67	50.92	**	8
34	40	80.00	8	16.00	2	4	50	0.92	16.67	50.08	**	9
35	17	34.00	17	34.00	16	32	50	0.67	16.67	0.04	-	35

(**) Statistically significant at the 0.01 level, 0.05. (-) The lack of a statistically significant.
The degree of freedom when the ratio 0.05 is equal to (5.991), and when the ratio 0.01 is equal to (9.210)

As table no. (2) Shows, Arabic language teachers and supervisors realize the importance and relevance of the following deductive thinking skills:

According to the previous analysis of the observed and expected frequencies and k2 values of the views of Arabic language teachers and supervisors regarding the deductive thinking skills relevant for teaching grammatical concepts to first year high school students, it becomes clear that n=35 and d.h=2, and that DF at the ratio of 0, 05 is 5,991 to be statistically significant, and at the ratio of 0, 01 is 9,210 to be statistically significant. This means that Arabic language teachers and supervisors realize the importance of deductive thinking skills relevant for teaching grammatical concepts to first year high school students which has the following numbers (1,3,5,7,9,10,11,13,14,16,17,18,17,18,19,21,24,25,26,27,29,30,31,32,33,34) at the ratios of 0,01 and 0,05. These are the skills which have the highest values in K2 test with a frequency more than 80% because these skills are the most relevant for teaching grammatical concepts to first year high school students (sample of the study).

Table no. (3) Shows the deductive thinking skills which have frequency more than 80% in the five essential levels:

Table no. (3) The deductive thinking skills relevant for teaching grammatical concepts to first year high school students which have the highest values in K2 test regarding the views of Arabic language teachers.

No	The Deductive thinking skills which have a frequency rate of 80% or more	Relative Weight
Firstly	**Inductive Skills:**	
	Forming questions about syntactic concept like the previously prepared questions.	**0.90**
	Get Changes in terms which belong to a particular grammatical concept.	**0.91**
	Adjust words grammar concept contained in linguistic structures	**0.81**
	Identifying characteristics of grammar concept gradually from the part to the whole and vice versa.	**0.80**
Secondly	**Conclusion Skills:**	
	Finding common characteristics between the grammatical concepts and related.	**0.90**
	Hire the best linguistic structures utilize true in writing linguistic structures sequentially and prioritization.	**0.83**
	Conclusion principles sequence and prioritization used.	**0.87**
	Giving a relevant definition to the syntactic concept.	**0.83**
	Determine relationships between linguistic structures together	**0.89**
	Identify similarities between the concepts of grammar and related in the syntax.	**0.89**
Thirdly	**Reasoning skills:**	
	Male evidence to determine the characteristics of the term grammar and its properties.	**0.89**
	Male plural underlying grammatical relationships between concepts.	**0.93**
	Male linguistic structures similar concept in grammar plays a certain meaning.	**0.91**
	Flag inference representative of the Linguistic through the use of the entrance of the relay and prioritization.	**0.89**
	Inference made the relationship between a word or phrase, and its function in the syntax.	**0.89**
Fourthly	**Syntactic organization skills:**	
	Categorizing syntactic concepts according to using them language constructions.	**0.93**

	Transforming one syntactic structure to another.	**0.93**
	Syntactic relations' analysis of the concept in language construction.	**0.94**
	Finding missing points in the syntactic concept which negatively affect its function.	**0.84**
Fifthly	**Evaluating and judgment skills:**	
	Modify the syntax as required particular concept Grammar.	**0.98**
	Criteria for development and decision criteria for sentencing linguistic.	**0.97**
	Correct grammatical errors contained in the linguistic structures.	**0.97**
	Choosing the correct expression of the proposed expressions to use words particular concept Grammar.	**0.80**
	Government to observe the relay and setting priorities in the installation or not.	**0.87**
	Provide proof of the validity or accuracy of grammatical sentences in linguistic structure.	**0.92**

As for skills no. (2, 4, 6, 8, 12, 15, 20, 23, 28, 35) they have a frequency less than 80% in K2 test. Thus the researchers excluded them.

The table no (4) shows the deductive thinking skills which have less than 80% in K2 test

Table no. (4) The Deductive Thinking skills which have a frequency less them 80% in K2 test according to the views of Arabic language teachers and supervisors

No	The Deductive Thinking skills which have less than 80% in k2 test	Relative Weight
Firstly	**Inductive Skills:**	
2	Identify functional meanings of words understood grammar within the syntax.	**0.68**
4	Note the gradual linguistic structures from the simple to the complex.	**0.73**
6	Taking into account the sequence in writing linguistic structures.	**0.43**
8	Note whether the sentence or phrase, is the word grammar concept or word of his belongings	**0.57**
Secondly	**Conclusion Skills:**	
12	Examples of configuration grammar concept modeled on the pre-prepared examples.	**0.63**
15	Identifying inconsistencies between words concept uses grammar in linguistic structures.	**0.77**
Thirdly	**Reasoning skills:**	
20	drawn linguistic structures include culturally, apply or please apply in real life to prove the concept of certain grammatical	**0.79**
23	Determine the order of the ideas of expression in accordance with the principles of the sequence and set priorities	**0.71**
Fourthly	**Syntactic organization skills:**	
28	Note the order of linguistic structures as sequence and identify priorities.	**0.67**
Fifthly	**Evaluating and judgment skills:**	
35	Identifying the reason of including the syntactic concept in the mentioned example.	**0.67**

The previous tables of K2 values for the views of Arabic language teachers and supervisors regarding the deductive thinking skills for teaching grammatical concepts to first year high school students show that there are statistically significant differences between the observed and expected frequencies of the marks of Arabic language teachers and supervisors. Thus the researchers tested the truthfulness of the first hypothesis which states that there are no statistically significant differences between the observed and expected frequencies of the marks of Arabic language teachers and supervisors in the items of the questionnaire of the deductive thinking skills relevant for teaching grammatical concepts to first year high school students by using the suggested educational software based on electronic reading activities as k2 test shows.

The alternative hypothesis is adopted. It states that there are statistically significant differences between the observed and expected frequencies of the marks of Arabic language teachers and supervisors in the items of the questionnaire of the

deductive thinking skills relevant for teaching grammatical concepts to first year high school students by using the suggested educational software based on electronic reading activities as k2 test shows.

Secondly: Results of the test of the deductive thinking skills for teaching grammatical concepts to first year high school students.

1- Stability test of the deductive skills of grammatical concepts:

The researchers conducted a pilot study for the test. The experiment was tested on a survey sample and the test was applied.

The researchers used to calculate the coefficient of stability of the current test on the method of analysis of variance, which means the analysis of the variance of the students' grades on the test paragraphs. Therefore, the stability coefficient of the test was calculated using the equation Koderrchardson 21 (K21) (KR21).

The following table shows the stability coefficient of the test (the final grade of the test is 30)

Table no. (5) Stability of the test the deductive skills of grammatical concepts

Final score of test (n)	Average grade (m)	Standard deviation (SD)	Variation of grades (SD)2	Stability coefficient (R 1.1)
30	20.20	7.45	52.13	0.91

By applying the previous equation to the test results, it was found that the stability coefficient of the test is (0.91) which indicates that the test is high stability, which is reassuring when using the test with the members of the research sample. In addition, the stability coefficient obtained in the analysis of variance gives the minimum coefficient of test stability.

The minimum current coefficient of test stability is 0.91, which means that the test is highly stable, reliable and used with a high degree of confidence.

2- Facilitation, difficulty, and discrimination coefficients for the test of deductive skills of grammatical concepts:

The corrected ease coefficient was calculated from the effect of guessing, difficulty, and discrimination coefficient for each test vocabulary (according to the coefficient of corrected ease of estimation effect) through the results of the application of the test on the survey sample.

The coefficient of ease and difficulty, and the coefficient of discrimination to calculate the coefficient of ease and difficulty of the test as a whole, were taken as: coefficient of ease (0.45), coefficient of difficulty (0.55), and coefficient of discrimination (0.23).

Table no. (6) Facilitation, difficulty, and discrimination coefficients for the test of the deductive skills of grammatical concepts

Question number	Number of students who answered correctly	Number of students who answered an error	Total	Coefficient of corrected ease of guessing effect	Difficulty coefficient	Discrimination coefficient
1	11	9	20	0.49	0.51	0.25
2	10	10	20	0.43	0.58	0.24
3	10	10	20	0.43	0.58	0.24
4	12	8	20	0.55	0.45	0.25
5	10	10	20	0.43	0.58	0.24
6	9	11	20	0.36	0.64	0.23
7	13	7	20	0.61	0.39	0.24
8	14	6	20	0.68	0.33	0.22
9	11	9	20	0.49	0.51	0.25
10	10	10	20	0.43	0.58	0.24
11	15	5	20	0.74	0.26	0.19
12	8	12	20	0.30	0.70	0.21

13	10	10	20	0.43	0.58	0.24
14	7	13	20	0.24	0.76	0.18
15	10	10	20	0.43	0.58	0.24
16	12	8	20	0.55	0.45	0.25
17	9	11	20	0.36	0.64	0.23
18	11	9	20	0.49	0.51	0.25
19	13	7	20	0.61	0.39	0.24
20	10	10	20	0.43	0.58	0.24
21	10	10	20	0.43	0.58	0.24
22	11	9	20	0.49	0.51	0.25
23	11	9	20	0.49	0.51	0.25
24	9	11	20	0.36	0.64	0.23
25	11	9	20	0.49	0.51	0.25
26	9	11	20	0.36	0.64	0.23
27	8	12	20	0.30	0.70	0.21
28	10	10	20	0.43	0.58	0.24
29	10	10	20	0.43	0.58	0.24
30	8	12	20	0.30	0.70	0.21

3- The second hypothesis which states that there are no statistically significant differences between the means of the experimental and control groups in the pre-test of deductive thinking skills of teaching grammatical concepts is proved and adopted.

The students' marks in the pre-test were recorded and the mean and standard deviation were given. The (T) values of the experimental and control groups in the pre-test of deductive thinking skills of teaching grammatical concepts were also given as the following table shows.

Table no. (7) Means, standard deviations and (T) values and their significance between the experimental and control groups in the pre- test of deductive thinking skills of teaching grammatical concepts

Skills	Type of application	The control group Total = (25)		The experimental group Total = (25)		calculated (T) value (*)	level of significance	DF
		Mean	s. deviation	Mean	s. deviation			
1-Inductive Skills.	Pre-test	1.72	1.10	1.32	0.85	1.44	statistically insignificant	0.42
2- Conclusion Skills.		1.12	0.83	1.36	1.08	0.88		0.25
3- Reasoning skills		1.52	1.00	1.64	0.95	0.43		0.12
4-Syntactic organization skills.		1.60	1.04	1.28	0.94	1.14		0.33
5- Evaluating and judgment skills		1.28	0.98	1.68	0.99	1.44		0.42

(*) - Tabulated T value at the level of 0, 01 is equal to (2.70) and at a level of 0.05 is equal to (2, 02) DF = 48.

The previous table shows that there are no statistically significant differences between the means of students' marks in both experimental and control groups in all the deductive thinking skills included in this study. This is because the value of calculated (T) is less than that of tabulated (T) at the level of 0, 01 which is (2, 70) and at the level of 0, 05 which is (2, 02) This indicates the idea that there is no development in the deductive thinking skills of teaching grammatical concepts to students of the experimental group whose skills are targeted to be developed by using the suggested educational software based on electronic reading activities. Thus this hypothesis is accepted.

4- To prove the third hypothesis which states that there are no statistically significant differences between the means of students' marks in the experimental and control groups in the post-test of deductive thinking skills of teaching grammatical concepts , students' marks in the post-test, the mean and standard deviation were recorded and the values of (T) is calculated for the experimental and control groups in the post test as the following table shows:

Table no. (8) The Means, standard deviations and T values and their significance for the experimental and control groups in the post- test of deductive thinking skills of teaching grammatical concepts

Skills	Type of application	The control group Total = (25)		The experimental group Total = (25)		calculated (T) value (*)	level of significance	DF
		Mean	s. deviation	Mean	s. deviation			
1-Inductive Skills.	Post -test	1.80	1.00	3.92	0.91	7.84	Significant at 0.01 level	2.26
2- Conclusion Skills.		1.36	0.91	3.96	0.89	10.24		2.96
3- Reasoning skills		1.60	0.87	4.32	0.99	10.35		2.99
4-Syntactic organization skills.		1.44	0.82	3.76	0.72	10.60		3.06
5- Evaluating and judgment skills.		1.84	1.31	4.92	0.86	9.81		2.83

Table no. (8) shows that there are statistically significant differences between the means of students' marks of the experimental and control groups in the post-test of deductive thinking skills of teaching grammatical concepts and that these differences are in favor of students of the experimental group. These skills are: (Inductive Skills, Conclusion Skills, Reasoning skills, Syntactic organization skills, and Evaluating and judgment skills). It is also shown that these differences are not out of chance because the value of calculated T is more than that of tabulated (T) at the level of 0, 01 which is 2, 70 and at the level of 0,05 which is 2, 02. This indicates the development of deductive thinking skills of teaching grammatical concepts to students of the experimental group whose skills are targeted to be developed by using the suggested educational software based on electronic reading activities such development is due to using the suggested educational software based on electronic reading activities in teaching the unit. Thus, this hypothesis is not accepted. The alternative hypothesis which states that there are statistically significant differences between the means of students' marks of the experimental and control groups in the post-test of deductive thinking skills of teaching grammatical concepts is accepted. The differences are in favor of students of the experimental group.

Table no. (9) The calculation of (T) value and its significance for the experimental and control groups in the post-test of deductive thinking skills of teaching grammatical concepts

statistics / group	Mean	S.D	Calculated(T)	DF	Tabulated(T)		Statistical significance	(D)
Experimental N = 25	20.88	1.99	21.42	48	0.01	0.05	0.01	6.18
Control N = 25	8.04	2.24			2.70	2.02	Significant	deep effect

The previous table shows that the value of calculated T as a whole for the experimental and control groups in the post-test of deductive thinking skills is (21.42). This means that the experimental group is superior to the control group in the deductive thinking skills included in the study. To show the effect of suggested educational software based on electronic reading activities on developing the deductive thinking skills of teaching grammatical concepts to students of the experimental group, the researcher applies the following formula:

$$D = \frac{2T}{\sqrt{FD}}$$

(T) Means, the value of calculated T for the two groups in the post-test, FD is the degree of freedom (n1+n2)-2). The effect is weak if (D) is less than or equals 0, 2 and moderate if it is 0.5 and strong if it is more than or equals 0.8. Applying the previous formula shows that the effect is 6.18. This means that the suggested educational software based on electronic reading activities has a deep effect on developing the deductive thinking skills of teaching grammatical concepts to first year high school students.

The previous table shows that the effect is (6.18).This means that the suggested educational software based on electronic reading activities is very effective in developing the deductive Thinking skills of teaching grammatical concepts to first year high school students.

9 FINDINGS AND RECOMMENDATIONS OF THE STUDY

In view of the study's results, the researchers recommend the following:

1. Advising pre and in-service teachers about using different learning strategies and models according to the conditions of each educational situation.
2. Encouraging the Arabic language teachers to use the model in teaching other Arabic language domains.
3. Using the educational software based on electronic reading activities in the other branches of Arabic.
4. Training the student–teachers to use the e-learning model in planning and teaching lessons to help students build their own knowledge throughout the microteaching sessions and methodology courses. Encouraging student teachers to apply such methods during their practical training to gain positive results from their students and enhance the learning process.
5. Using the modern methods of teaching syntax, those methods which help develop the different thinking skills-and avoiding traditional rather than thinking skills.
6. Using modern teaching methods that enhance students' motivation and activation, putting into consideration the individual differences between them and leaving behind all the old methods only concerned with recitation and recalling ignoring students' activity and sharing.
7. Preparing a training program for in-service teachers, training them on how to use e-learning in teaching the branches of Arabic skills and the different thinking skills of teachers.
8. Using the various services available on the web in teaching the different branches of Arabic language.
9. Using the methods of developing deductive thinking skills in teaching the branches of Arabic language to all educational stages
10. Preparing training programs integrating the teaching of the branches of Arabic language for both the development of students, deductive thinking skills and their creative thinking.
11. Reconsidering the current methods of evaluation by including questions measuring students' deductive thinking skills and the different thinking skills in Arabic language exams.
12. Realizing the importance and usefulness of computer labs by using them in teaching the different knowledge.
13. Establishing a special unit in the ministry for producing educational software, and software programs which educational software, and courses at reasonable prices especially in the branches of Arabic language.
14. Planning the grammar book hierarchically from the general to the specific concepts that would make learning easier and meaningful.

10 SUGGESTED FURTHER RESEARCH

In view of the study's results, the researchers suggest making the following research studies:

1. The effect of using "The E - Learning Model" on correcting common grammatical errors in the writings of the prep and firstary school students.
2. The efficiency of using the educational software in developing some reading and thinking skills of first year high school students.

3. The effect of using "The E - Learning Model" in teaching literary passages on firstary stage students' achievement and developing their literary appreciation skills.
4. The effect of using "The E - Learning Model" in teaching reading on developing reading comprehension skills of basic education students.
5. Making a comparison between using the e-note and the e-book in teaching the different branches of the students' thinking skills.
6. Studying the computer's ability to develop the composition and writing skills of prep stage students.
7. Studying the obstacles hindering the use of technological aids in teaching the branches of Arabic language.
8. The effect of free reading on developing some deductive thinking and creative thinking skills of second year high school students.
9. Studying the best methods of teaching Arabic language in general and Arabic syntax in particular.

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