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The Effectiveness of Using CPS Model on EFL Preparatory Students Drawing Conclusions

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A B S T R A C T

Drawing conclusions means using the information provided to make judgments. When students are asked to draw a conclusion about something they have read, they are asked to use information in text that is either explicitly stated or implied to make a judgment**.** This study aims to find the average level of the EFL 5th. year preparatory school students' achievement in drawing conclusion. It finds that there is any significant difference between the experimental group's achievement and the control group's achievement in the post-test. There is any significant difference between the students' achievement as males and females in the post-test. It hypothesized that there is no statistically significant difference between the mean scores of the experimental group in achievement post-test and the average theoretical mean scores. There is no statistically significant difference in experimental group's achievement in production and recognition levels in the post-test. Sixty two students from the fifth scientific grade have been randomly selected. Both groups are equalized in some important variables according to their age, education and their scores in the pretest. The results show that there is statistically significant difference between the experimental group's achievement and that of the control group for benefit of experimental group.

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فعالية استخدام نموذج حل المشكلات التعاوني على طلبة المرحلة الإعدادية للغة الإنجليزية كلغة أجنبية في استخلاص الاستنتاجات

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الخلاصة:

إن استخلاص الاستنتاجات يعني استخدام المعلومات المقدمة لإصدار الأحكام. عندما يُطلب من الطلاب استخلاص استنتاج حول شيء ما قرأه ، يُطلب منهم استخدام المعلومات الموجودة في النص والتي تم

ذكرها صراحةً أو ضمنً اصدار حكم , تهدف هذه الدراسة للتعرف على متوسط تحصيل طلاب الصف الخامس الإعدادي في مادة اللغة الإنجليزية في استخلاص الاستنتاج , و معرفة ما إذا كان هناك فروقات ذات دلالة إحصائية بين تحصيل المجموعة التجريبية وتحصيل المجموعة الضابطة في الاختبار البعدي , ومعرفة ما إذا كان هناك فروق ذات دلالة إحصائية بين تحصيل الطلاب الذكور والإناث في الاختبار البعدي , ومن المفترض أن لا يوجد فرق ذو دلالة إحصائية بين متوسطي درجات المجموعة التجريبية في التحصيل البعدي والمتوسط النظري,. لا يوجد فرق ذو دلالة إحصائية بين متوسطي درجات تحصيل الطلاب الذكور والإناث في الاختبار البعدي , وللتحقق من فرضيات الدراسة قامت الباحثة بإجراء التجربة. تم اختيار أربعة وستون طالباً من الصف الخامس الاعدادي في مدرسة ثانوية الجامعة المختلطة بطريقة عشوائية. اثنان وثلاثون طالباً كمجموعة ضابطة تم تدريسهم , رسم الاستنتاج عن طريق حل المشكلات التعاوني , و اثنان وثلاثون طالبًا كمجموعة تجريبية تم تدريسهم رسم الاستنتاج بالطريقة التواصلية . وأظهرت النتائج وجود فروق ذات دلالة إحصائية بين تحصيل المجموعة التجريبية والمجموعة الضابطة لصالح المجموعة التجريبية .

الكلمات المفتاحية /حل المشكلات التعاوني /رسم الاستنتاجات/ مجموعة تجريبية/ مجموعة ضابطة/فروقات احصائية

1.1 Statement of the Problem

This study is based on one collaborative problem solving task from an international assessment, It was developed and delivered by the Organization for Economic Co-operation and Development Program for International Student Assessment (OECD PISA, 2015) .

A problem in collaborative problem-solving often arises from difficulties in communication, coordination, and aligning diverse perspectives among team members. This can hinder the group's ability to generate innovative solutions, reach consensus, and effectively implement decisions.

Additionally, other challenges in collaborative problem-solving include managing conflicting priorities, addressing power dynamics within the group, overcoming resistance to change, and ensuring equitable participation from all team members.

Decision-Making Delays Difficulty in reaching consensus or making decisions in a timely manner can slow down the problem-solving process and impede progress.

To address these issues, effective communication strategies, conflict resolution techniques, clear roles and responsibilities, and regular check-ins can be implemented to foster successful collaborative problem-solving.

1.2 Aims of the study

1. Finding the average level of the EFL 5th year preparatory school students' achievement in drawing conclusion.

2. Finding whether there is any significant difference between the experimental group's achievement and the control group's achievement in drawing conclusion in the post-test.

3. Finding whether there is any significant difference between the students' achievement according gender in the post-test.

1.3 Hypotheses of the Study

1. There is no statistically significant difference between the mean scores of the experimental group in the achievement post-test and the average theoretical mean scores.

2. There is no statistically significant difference between the mean scores of the experimental group’s achievement and the control group's achievement in the post-test.

1.4 Limits of the Study:

1- The use of collaborate problem solving level on drawing conclusion.

2. The prescribed textbook English for Iraq “students’ book and Activity book”.

3- Iraqi EFL fifth year preparatory school student in Tikrit / mixed university high school Preparatory.

1.5 Definition of the Basic Terms

1.5.1 Effectiveness:

Effectiveness "is a measure of the match between stated goals and their achievement. It is always possible to achieve 'easy', low-standard goals (Fraser, 1994: 104).

Effectiveness: "A measure of how well the outputs of a program or service achieve the stated objectives (desired outcomes) of that program or service (Stringfield, 1994:153).

The operational definition: Effective" refers to the degree to which something achieves its intended purpose or produces the desired results. It often involves being successful, efficient, and having a positive impact.

1.5.2 Collaborate Problem Solving :

CPS is the capacity of an individual to effectively engage in a process whereby two or more agents attempt to solve a problem by sharing the understanding and effort required to come to a solution and pooling their knowledge, skills and efforts to reach that solution (O'Neil, et al, 2010).

Collaborative Problem Solving (CPS) is a process of civil argumentation wherein two or more parties negotiate agreeably to have conflicting needs met (Windle and Warren, 2013).

Collaborative problem solving (CPS) is a critical and necessary skill used in education and in the workforce, (CPS) involves an individual's cognitive processing that engages both cognitive and social skills. There are individual problem-solving processes as well as communication processes that interact with the cognitive systems of the other participants in the collaboration (OECD , 2010).

Operational Definition :

Collaborative problem solving involves working together with others to identify, analyze, and resolve complex issues or challenges. It requires effective communication, teamwork, and the pooling of diverse perspectives, knowledge, and skills to generate innovative solutions.

1.5.3 Drawing Conclusions :

The drawing conclusions definition means using the information provided to make judgments. When students are asked to draw a conclusion about something they have read, they are asked to use information in the text that is either explicitly stated or implied to make a judgment (Urban and Wilson ,2023) .

Drawing conclusions refers to information that is implied or inferred. This means that the information is never clearly stated. Writers often tell you more than they say directly. They give you hints or clues that help you "read between the lines(Gavino 2019) .

Operational Definitions :

The ability to make observation allows students to collect and draw conclusion about their experiment from the data by using collaborative problem solving.

2.0 Theoretical Background and Related Previous Studies

2.1 Concept of Collaborative Problem Solving :

Greiff (2018) define collaborative problem solving is a method of learning that involves groups of students tackling challenging tasks or problems that require them to utilize their knowledge, skills, and creativity. This could take the form of projects, simulations, games, experiments, or case studies. The key features of collaborative problem solving are that the problem should be authentic, relevant, and meaningful for the students and curriculum; complex and open-ended with multiple solutions; and provide students with autonomy and choice in how they approach and solve it. Additionally, students should work in small groups of 3-5 in order to communicate, cooperate, and support each other; while the teacher serves as a facilitator, guide, and coach rather than a direct .instructor or evaluator .

Collaborative problem-solving by Funke (2010) , is an inherently complex mechanism that incorporates the components of cognition found in individual problem solving in addition to the components of collaboration. The cognitive components of individual problem solving include understanding and representing the problem content, applying problem-solving strategies, and applying self-regulation and metacognitive processes to monitor progress towards the goal.

Chinn, and Jinks (2000) Collaborative problem-solving skills are collaborative interactions between students to achieve common goals) the survey results in several schools in Gorontalo Province show that the learning process has shown collaboration between students. It can be seen from the interaction between students with one another. The problem arises when we put an observation. The interaction between students is not in terms of discussing

lessons to solve problems, but the collaborative interaction is out of the context of the lesson and students' participation in group work is not very good during the process. For example, some students talked to themselves or played and others even slept during the group discussion process.

2.2 The Nature of Collaborative Problem Solving

According to Polkas (1973) The primary distinction between problem-solving by an individual and collaborative problem-solving is its social nature - the need for communication, exchange of ideas, shared identification of the problem and its elements, and negotiated agreement on connections between problem elements and relationships between actions and their effects. Collaborative problem-solving makes each of these steps observable, as they must be shared with a partner or other members of a group if a solution is to be successfully identified. These steps can be described as follows:

1. A problem state must be jointly recognized, and collaborators must identify and agree on which elements of the problem each can control or monitor.

2. A representation of the problem must be shared.

3. Collaborators need to agree on a plan of action, including management of resources.

4. Plans must be executed, which may require a coordinated effort by collaborators acting together or in sequence.

5. Progress towards a solution must be monitored, different options evaluated, plans reformulated if necessary, and collaborators must decide on how to proceed in the face of positive or negative feedback (Polyas,1973).

2.3 Drawing Conclusion

Means putting together ideas in a passage to understand a point that wasn't directly stated in the passage. You already do this all the time.

Drawing conclusions based on evidence and data is a crucial skill for creative problem solving. It helps you make informed decisions, avoid biases, and communicate your findings effectively. But how can you apply this skill in practice? Here are some of the most effective techniques for drawing conclusions based on evidence and data.

Drawing a conclusion from a passage is when you use the information in the passage to understand something that was not directly stated. Drawing

conclusions about a passage is an essential critical reading skill. Sometimes, you will have to draw conclusions to understand the author's point, but try to avoid jumping to conclusions or drawing conclusions without any evidence to support them.

A drawing conclusion refers to an explanation or interpretation of an observation. It is the next step in the information process and comes after critical thought and logical reasoning..

A drawing conclusion is a judgement or decision about a character, setting, or event. It's reached by applying deep thinking and reviewing information that's provided. Readers draw conclusions as they read to help them understand the story. Even though drawing conclusions and making inferences are similar, they are not the same. Often, readers draw conclusions from what additional information they gather or infer. (Foster 2020).

2.4 The Relationship between Collaborative problem solving and Drawing Conclusion

Collaborative problem solving often involves a group of individuals working together to analyze information, generate ideas, and propose solutions to a given problem. Drawing conclusions is a critical part of this process, as it entails synthesizing the information gathered, evaluating potential solutions, and determining the best course of action based on the collective understanding of the group. In essence, collaborative problem solving and drawing conclusions are interconnected, with drawing conclusions serving as the culmination of the collaborative problem-solving process, where the group reaches consensus or agreement on the best solution or course of action.

Certainly! In collaborative problem-solving, drawing conclusions is not just about individual analysis but rather about leveraging the diverse expertise and perspectives within a team. It involves synthesizing different viewpoints, reconciling conflicting ideas, and reaching a shared understanding of the problem and potential solutions. This collaborative approach often leads to more robust conclusions as it considers a wider range of factors and perspectives, ultimately resulting in more effective problem-solving outcomes. Additionally, drawing conclusions collaboratively fosters teamwork, communication, and critical thinking skills among team members, which are valuable in various personal and professional contexts.

3.0 Experimental Design

Experimental design According to Bell (2009) , is the process of carrying out research in an objective and controlled fashion so that precision is

maximized and specific conclusions can be drawn regarding a hypothesis statement . It is a scientific method of conducting research in which one or more independent variables are altered and applied to one or more dependent variables in order to determine their influence on the latter .

3.1 Population and Sample of the Study

Lehman and Mehrens (1971), also use the term "population" to refer to all of the specified groups of objects , the population typically represents the total set of individuals, objects, or events that you want to understand, while the sample is a smaller, manageable portion of that population that you actually observe or collect data from .

It is important to distinguish between population and sample of the study. Any set of individuals or concepts that associated some common ,observable form and characteristics from which a sample can be taken is called the population. Population can be defined as any group of individuals that is selected to represent a population is referred to as a sample(Richards & Schmitt, 2010).

Creswell (2012), describes population as a group of individuals who have the same characteristics . states that population is the totality of the research subject, while sample is a portion of the population that is researched in a research.

The population of the current study involves EFL Iraqi preparatory student of fifth scientific (biological branch) preparatory Schools in Tikrit Town in Salah Al-den Government Which was distributed among six schools. The total number of six grade pupils' population is (316) as shown in table (1) .

(Table 1)

NO.	Preparatory school	Number of pupils
1	AL_ Maysalon Preparatory School for Girls	76
2	AL_ Saffa Preparatory School for Girls	69
3	Mixed University High School	64
4	AL_ Aseel Preparatory School for Girls	41
5	Fatima Preparatory School for Girls	36
6	AL_ Mahzem Preparatory School for Girls	30
	Total	316

3.2 Construction of the Posttest

The students in both groups are post tested at the end of the experiment. The overall exam is conducted by the researcher in mixed university high

school Preparatory. in a comfortable environment, using the identical testing process.

The posttest has been created based on the instructional material's content and behavioral objectives. There are five questions on the posttest:

1. The first question is about choosing the correct answer It consists of five items and with each item two choice .
2. The second question is about how the student understands the story and answers the question . It consist of five items , the student should answer all items .
3. The third question is about how student choose the answer that make the sense . It consist of five items and with each item three choice
4. The fourth question is about testing students. By setting questions with pictures, students must understand the picture and answer the correct question . It consist of six items

3.3 Face Validity

Face validity refers to researchers' subjective judgments of the measuring instrument's presentation and relevance, such as whether the items appear to be relevant, rational, unambiguous, and clear (Oluwatayo , 2012:391)

Richards et al (2002) state that faces validity is the extent to which a test seems to measure the skills or knowledge it seeks to measure. Therefore , Heaton (1988) states that face validity is the degree to which a measure appears to be related to a certain construct in the views of individuals who are interested in education, such as test-takers, teachers, and supervisors .

3.4 Content Validity

Content Validity refers to content validity as the process of determining how thoroughly test tasks are being evaluated. In other words, content validity is a thorough examination of the test content to determine whether it accurately reflects the subject matter and the behaviors that are intended to be measured. Buysse et al (1989) mentions that content validity is determined if the presented content is a representative sample of the content domain and to measure the entire range of relevant behaviors, feelings and thoughts that define to construct being measured. (Weir 1993).

According to Hughes (1989) Content Validity is concerned with the case in which the test will measure what it is supposed to measure.

Test items are analyzed by using Bloom's Taxonomy of cognitive domain to identify behavioral objectives. The lower level of cognition is the beginning

of the cognitive domain, and the highest degree of cognition and creation at the end .

3.5 Reliability of the Posttest

Heaton (1988:155) defines reliability as "the degree to which a test consistently measures whatever it measures". "If the same exam is administered to the same students or matched students on two separate times, the results should be identical. "Reliability isn't only about the material of the test; it's also about how the test is scored" (Gay et al, 2010:144).

The concept of reliability refers to the consistency with which the same individuals frequently produce the same results. If the subject's scores remain consistent throughout time, then the test can be reliable; if the scores frequently fluctuation, then the test is unreliable (Lado, 1961).

3.6 Pilot Study

A pilot study is a tiny planning application that is used to test different components of the procedures that will be used in a larger, more thorough, or confirmation investigation (Arain et, al 2010:65).

Pilot studies are commonly used by researchers to assess the suitability of their suggested procedures and methods (Polit and Beck, 2017:46).

A pilot study, according to Good (1973:143), is a preliminary study done with a sample from the experiment sample to tell the researcher of any obstacles that may occur throughout the test.

A pilot study is conducted in this study as a first step toward conducting the form of the experimental work in order to:

1. Determine the clarity of the test instructions,

2. Calculate the time required to answer the test items, and

3. Conduct item analysis of the test .

As a result, (16) students of the fifth preparatory school students is randomly chosen from the groups (EG and CG) for the current study, and they are asked to respond to the posttest items. The papers of the test subjects are gathered and corrected by the researcher.

3.7 Item Analysis

Item analysis is a technique of evaluating test items based on specified features. It helps determine the degree of difficulty and discrimination's power.

Items analysis essential since, it is based on the results obtained from the pilot study. The test items are required to be analyzed in order to determine two important features: difficulty level, and discrimination power, as follows:

3.7.1 Difficulty Level (DL) of the Posttest

One of the aim of pilot study is to specify the difficulty level (DL) of the test items The difficulty level is specified as the ratio of the pupils who are replied correctly to each item (Rosas, 2000). Item difficulty refers to the extent to which an item appears to be complicated or facilitated for a given number of tests. The most suitable test items will have item difficulty varying between 0.15 and 0.85 (Brown, 2010).

The most appropriate test item will have a difficulty level of (0.15) to (0.85), (Brown, 2010: 7). It was found the DL of the current test items ranges from (0.31) to (0.81). which shows that the items of the test is acceptable .

3.7.2 Discrimination Power (DP) of the Posttest

Discrimination power means " calculating the degree to which a particular item's results correspond with the results of the entire test' (Alderson, 1995,p.80). This means that an object is deemed to have weak power of discrimination if it is correctly scored by high-skilled students as well as low-skilled students. Item discrimination refers to the degree to which an object makes a difference between good and poor test. An object has the good power of discrimination if it collects the right answers from the good students and the wrong answers from the weak students. It is worth noting that the high power of discrimination will be close to 1.0, and no power of discrimination will be nil at all (Brown, 2010,p.71).

Gronlund (1976) defines discrimination power as the degree to discriminate the test items between the pupils with high and low achievement level. This means that an object is deemed to have weak power of discrimination if it is correctly scored by high-skilled pupils as well as low-skilled ones .It was found that DP of the current test items range from (0.25) to (0.81).

(Table2)

	Items	Discrimination	Difficulty
Q1	1	0.50	0.75
	2	0.62	0.68
	3	0.41	0.79
	4	0.37	0.81
	5	0.51	0.42
	1	0.75	0.62

Q2	2	0.50	0.75
	3	0.75	0.62
	4	0.75	0.62
	5	0.25	0.62
Q3	1	0.51	0.42
	2	0.59	0.51
	3	0.81	0.40
	4	0.75	0.35
	5	0.51	0.42
Q4	1	0.58	0.45
	2	0.75	0.50
	3	0.58	0.45
	4	0.62	0.40
	5	0.57	0.45
	6	0.62	0.31
Q5	1	0.50	0.75
	2	0.50	0.75
	3	0.75	0.62
	4	0.75	0.62
	5	0.50	0.75

4.1 Results Related to the Data Analysis for the First Hypothesis

To analyze the data related to the first hypothesis namely: There is no statistically significant difference between the mean scores of the experimental group in the achievement post-test and the average theoretical Mean scores, the T-test formula of one independent sample has been used. Consequently, the first aim of the study undoubtedly: To find the average level of the EFL 5th year preparatory school students' achievement in drawing conclusion , will be achieved .

For achieving the first aim, an achievement test is applied for (32) students. Then, the calculated t-value and the tabulated t-value is achieved by using the T-Test formula for one independent sample to estimate student's performance .

In the light of the following results in Table (12), the mean scores of students' performance is (84.062) higher than the Theoretical mean (50) with a standard deviation of (8.809) degrees. Comparing with the tabulated t-value which is (7.601), the calculated t-value (1.70) is lower than the tabulated t-value with, a degree of freedom (31) at a level of significance (0.05). That means, there is a significant difference between students' Performance and the theoretical mean in drawing conclusion. So, there is a statistically higher performance of the students in drawing conclusion.

(Table 3)

N.	Mean	SD.	Theoretical Mean Score	T-Value		DF	Level of Sig.
32	84.062	8.809	50	**Calculated**	**Tabulated**	31	0.05
				7.601	1.70		

4.2 Data Analysis for the Second Hypothesis

To analyze the data related to the second hypothesis specifically: There is no statistically significant difference between the mean scores of the experimental group's achievement and the control group's achievement in the post- test, the independent sample test has been used. Therefore, the second aim of the study namely: Finding out whether there is any significant difference between the experimental group's achievement and the control group's achievement in the post-test, will be achieved.

According to the following results in table (13), the mean scores of the Experimental group is (84.062) and standard deviation is (8.8095). While the mean scores of the Control group is (73.000) and the standard deviation is (10.646). The calculated t-value (4.528) is higher than the tabulated t-value (10.646) with a degree of freedom (62) at a level of significance (0.05).

Observing the values of T-calculated above, it is found that the calculated T-value (4.528) is much greater than the tabulated T-value of the field (2.00), and from this it can be concluded that there is statistically significant differences between the mean scores of the control group, who are taught according to the conventional method and the mean scores of the experimental group, who are

taught by using CPS , for the benefit of experimental group. So, the second hypothesis is rejected .

(Table 4)

Group	N.	Mean	S.D.	T-Value		DF	Level of Sig.
				Calculated	Tabulated		
Experimental	32	84.062	8.8095	4.528	2.00	62	0.05
Control	32	73.000	10.646				

4.3 Data Analysis for the Third Hypothesis

To analyze the data related to the third hypothesis specifically: There is no statistically significant difference between the mean scores of the experimental students' achievement as males and females in the post-test, the independent sample test has been used. Therefore, the third aim of the study namely: To find Whether there is any significant difference between the students' achievement as (64) males and females in the post-test, will be achieved.

According to the following results in table (4.3), the mean scores of the males is (84.444) and standard deviation is (8.839). While the mean scores of the female is (83.571) and the standard deviation is (9.078). The calculated t-value (0.274) is lower than the tabulated t-value (2.00) with a degree of freedom (30) at a level of significance (0.05).

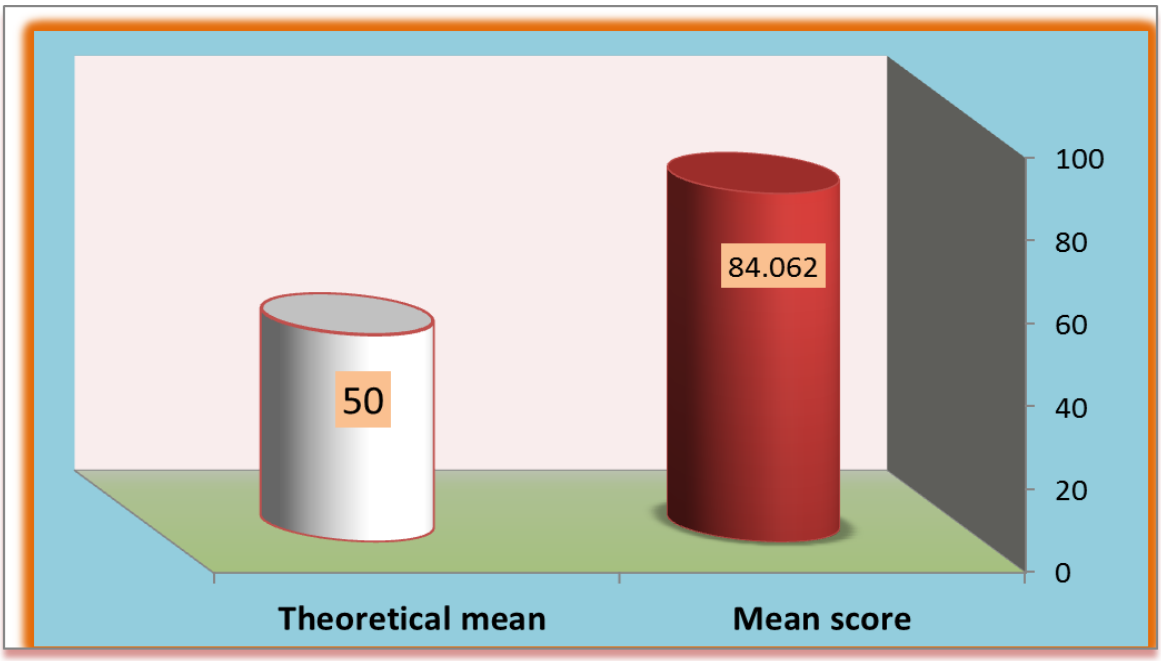
Observing the values of T-calculated above, it is found that the calculated T-value (0.274) is lower than the tabulated T-value of the field (2.00), and from this it can be concluded that there is no statistically significant differences between the mean scores of the male and female in the experimental group. So, the third hypothesis is accepted.

(Table 5)

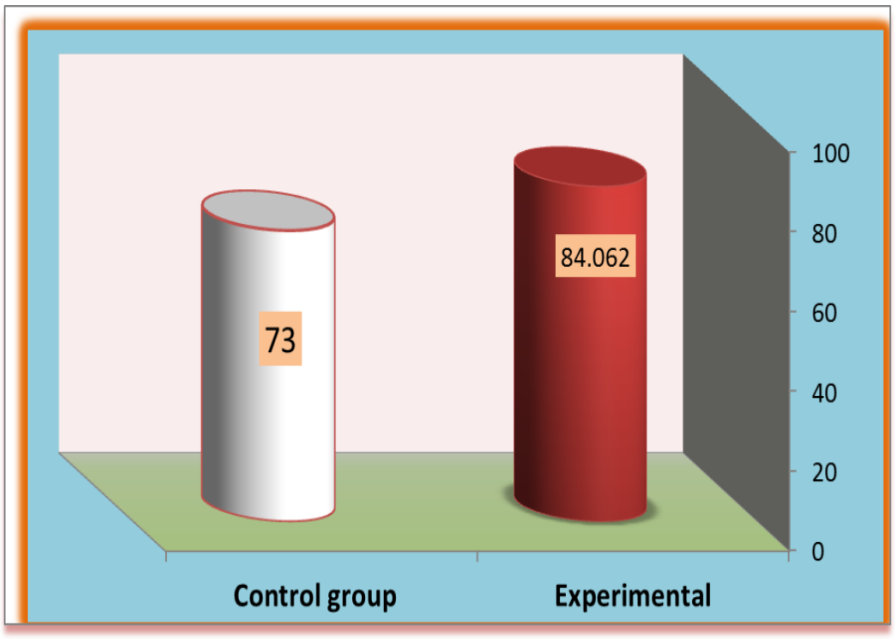
Experimental Group	N.	Mean	S.D.	T-Value		DF	Level of Sig.
				Calculated	Tabulated		
Males	18	84.444	8.839	0.274	2.00	30	0.05
Female	14	83.571	9.078				

4.4 Discussion of Obtained Results

The results of the first hypothesis, which is stated as " There is no statistically significant difference between the mean scores of the experimental group in the achievement post-test and the average theoretical Mean scores", show that the mean scores of experimental group students in the posttest are 84.062 while the theoretical mean score is 50, so there are clear differences .



The results of the second hypothesis, which is stated as "There is no significant difference between the mean scores of the experimental group's achievement and the control group's achievement in the post-test", show that the mean scores of students in the experimental group are 84.062 while the mean scores of the control group are 73, so there are clear differences between the two groups.



5.1 Conclusions

1. There is a significant difference between students' Performance and the theoretical mean in drawing conclusion. So, there is a statistically higher performance of the students in drawing conclusion. Thus the first hypothesis is rejected and the first aim is achieved.

2. There is statistically significant differences between the mean scores of the control group, who are taught according to the conventional method and the mean scores of the experimental group, who are taught by using CPS , for the benefit of experimental group. So, the second hypothesis is rejected.

3. It can be concluded that there is no statistically significant differences between the mean scores of the male and female in the experimental group. So, the third hypothesis is accepted.

5.2 Recommendations

The following recommendations are suggested in light of the favorable findings of this study:

1. Pupils' involvement in the teaching process should be encouraged by modifying classroom collaboration activities to include both student-to- student and student-to-teacher interactions

2. EFL teacher must actively engage students, encourage participation, provide clear explanations, provide support when needed, and create a positive learning environment and promote their pupils development of drawing conclusions .

3. EFL curriculum should cover core subjects , to promote critical thinking and creativity while meeting educational standards **.**

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