

## The effect of the cognitive form (V) strategy on the achievement of second-grade female students in science

### أثر استراتيجية الشكل المعرفي (V) في تحصيل طالبات الصف الثاني الأساسي في مادة العلوم

زينب محمد خليل إبراهيم (\*) Zainab Muhammad Khalil

تاريخ القبول: 2024-6-9

تاريخ الإرسال: 2024-5-28



#### Abstract

The aim of this research is the impact of the cognitive form (V) strategy on the achievement of second-year intermediate school students in science. To verify the aim of the research, the following null hypothesis was formulated (there are no statistically significant differences at the level of significance (0.05) between the average grades of the female students of the experimental group who studied using the (V) strategy and the average grades of the female students of the control group who studied in the usual way). The research sample consisted of (67) female students from the second intermediate grade in government schools affiliated with the First Rusafa Education Directorate in Baghdad Governorate, for the first semester of the year (20222023-). The study sample was randomly distributed to the two research groups, with (33) female students for the experimental group and (34) (a female student for the control group. The two groups were rewarded on the variables (previous achievement, previous information, intelligence). The researcher prepared an achievement test consisting of (20) multiple-choice items, and its validity and reliability were confirmed, then applied to the study sample. The results of the study showed that there were statistically significant differences at the level of significance (0.05) in arithmetic settings for the performance of female students in the experimental group and the control group in the achievement test, in favor of the experimental group using the (v) strategy. The study recommended

\* Assistant lecturer at Al-Mustansiriya University - College of Basic Education - Department of Teaching Methods.  
Email: Zainab.Muhammad@uomustansiriya.edu.iq

the necessity of employing the (v) strategy in science curricula and training teachers on How to use it, and based on that, the researcher

presented a set of recommendations and proposals.

**Keywords:** cognitive form (V) strategy, achievement

### ملخص

التجريبية و(34) طالبة للمجموعة الضابطة. تمت مكافأة المجموعتين على متغيرات (التحصيل السابق، المعلومات السابقة، وقام الباحث بإعداد اختبار تحصيلي مكون من (20) فقرة اختيار من متعدد، وتم التأكد من صدقه وثباته، ثم طبق على عينة الدراسة، وأظهرت نتائج الدراسة وجود فروق ذات دلالة إحصائية عند مستوى الذكاء وجود دلالة (0.05) في الإعدادات الحاسوبية لأداء طالبات المجموعة التجريبية والمجموعة الضابطة في الاختبار التحصيلي، لصالح المجموعة التجريبية باستخدام استراتيجية (V). استراتيجية في مناهج العلوم وتدريب المعلمين على كيفية استخدامها، وبناء على ذلك قدم الباحث مجموعة من التوصيات والمقترحات.

**الكلمات المفتاحية:** استراتيجية الشكل

المعرفي (V)، الإنجاز.

يهدف هذا البحث إلى التعرف على أثر استراتيجية الشكل المعرفي (V) في تحصيل طلاب الصف الثاني المتوسط في مادة العلوم. وللتحقق من هدف البحث صيغت الفرضية الصفرية الآتية: (لا توجد فروق ذات دلالة إحصائية عند مستوى دلالة (0.05) بين متوسط درجات طالبات المجموعة التجريبية التي درست باستخدام استراتيجية (V) و متوسط درجات طالبات المجموعة الضابطة اللاتي درسن بالطريقة الاعتيادية). تكونت عينة البحث من (67) طالبة من الصف الثاني المتوسط في المدارس الحكومية التابعة لمديرية تربية الرصافة الأولى في محافظة بغداد للفصل الدراسي الأول للعام (2022-2023). تم توزيع

عينة الدراسة عشوائياً على مجموعتي البحث، بواقع (33) طالبة للمجموعة serve the science subject. Therefore, the researcher decided that she must try new strategies that might help. The female students have a good understanding of the science subject. The researcher has reviewed the strategy of Figure (V) and believes that its steps may help increase the female students' achievement and

understanding of the science subject. To confirm this, the researcher conducted an exploratory questionnaire for a number of female teachers in which she asked the following questions:

1- Is there a decrease in the achievement of science?

The answer was that 80% of them confirmed that there is a noticeable decrease in collection.

2- Have you heard the Figure (V) strategy?

Where the answer was that 100% of them did not hear.

Therefore, the problem of searching is to answer the following question: -

In the achievement of the middle school students in science?

What is the effect of the use of the Figure Strategy (V) research importance: -?

The importance of the research stems from that some strategies and teaching methods affect the achievement of female students, and that teaching by using non-traditional strategies helps in the increase in female students' motivation and stimulates their desire to learn in a way that achieves them better understanding and divorce, as the importance of research is highlighted in what comes:

1- It may constitute a new addition to foreign and Arabic studies in the field of strategy (V).

2- The importance of the research stems from the importance of its topic, as it tries to effectively investigating the form (V) in the science of science and providing the opportunity for students to discover and use the scientific method in <V> thinking.

3- According to the researcher, this research is considered one of the few studies that dealt with the achievement in the schools of Baghdad Governorate.

4- Search results may help developers and curriculum designers and those in charge of preparing teachers in the science of science.

5- A modern style in the field of the use of the teaching strategies in the laboratory may ensure the traditional methods.

6- In addition to that this study will provide a description of the training procedures using the Figure Strategy (V), which provides each of the teacher and the student to identify this strategy clearly and simplified, and thus facilitates the process of the perception.

Search goal: -

The current research seeks to identify the effect of the Figure (V) in the achievement of the students of the second grade in science.

Research hypothesis:

There are no statistically significant differences at the level of significance (0.05) between the average degrees of the experimental group students that were studied using the Figure Strategy (V) and the average grades of students of the control group that studied in the regular way.

search limits: -

The search was limited to what comes: -

1- Second year intermediate students at Al-Anwar Girls' Middle School affiliated with the First Rusafa Education Directorate for the academic year 2022/2023/.

2-The first unit (elements and compounds): - It includes the first semester (elements and chemical bonding), and the second semester (chemical compounds).

The second unit (Chemical reactions and solutions): - It includes the third semester (Chemical formulas and reactions).

3- The first semester of the year (2022-2023) AD.

### **Determination of terms: -**

#### **1- Figure (V) Cognitive: -**

Know it (Kelada: 2004) as it is an educational strategy based on clarifying the mutual relationship between the conceptual side of a branch of knowledge and the procedural side, as it gives a

kind of intellectual supports that helps to understand the cognitive building and interact between the elements of that building. (Kelada: 2004)

The researcher defines her procedurally: as a form that plans with the aim of linking the conceptual side and the procedural side, and includes three steps that started with concepts, things and events, then providing the idea of the main questions and addressing their data and finally providing principles and theories.

#### **2- Collection: -**

(Al -Jalali: 2011) defined it as a testament through which the student's academic level can be determined and determined through the level of the actual student's performance in the field of academic and reveals it through the student's answer to a set of achievement tests, whether it is theoretical, practical or oral. (Al -Jalali: 2011)

The researcher defines him as a procedural: that the amount of the students of the second intermediate grade achieves from their possession of knowledge and information in the science subject, measured by the degrees obtained by female students in the preparatory test.

Chapter Two: Theoretical background and previous studies

**Theoretical background:**

**First: Cognitive Contestation: -**

The cognitive structural theory represents one of the theories of learning that the educators have turned to in order to crystallize a number of methods and teaching models and their design to benefit from them and clarify them inside the classrooms. The world is the first one to put the first building blocks for it, so he set an integrated theory on cognitive growth. (Abu Rayash: 2007, 287). The structural theory starts from the data of the cognitive theory based on the fact that the learner builds his knowledge of himself by adapting the learner mentally and his direct interaction with the subject and educational tools, which leads to the occurrence of learning based on meaning and understanding, and the structural scenery believes that learning is a personal explanation for what the individual goes through from Experiences and the activities and problems he is exposed to, and in a way that may lead to the acquisition of new concepts or a change in his old concepts and modernization of the cognitive structure. (Obaid: 2009).

Where this theory aims to help learners store the basics of knowledge in memory to be a sound scientific pillar for them, and to understand knowledge so that they can use them to understand

the surrounding phenomena as it is used to solve the problems facing them in life situations and make the learner the focus of the educational process. (Abu Rayash: 2007, 287).

**Second: The Form (V) Strategy: -**

The Form (V) strategy is an application of Ozbel's ideas in meaningful learning. It ensures that the scientific and cognitive aspects are linked together, with regard to dealing with incidents and phenomena, and thus the practical aspect gains meaning when it is linked to the structure. The learner's prior knowledge. Gwynn introduced the V-shaped cognitive form in 1977 with the aim of helping learners understand the process of creating knowledge, specifically to help learners understand the purpose of laboratory work and link its results to their previous knowledge. He says that students spend a long time working to monitor data about their observations of the things and events that they conduct. Then they transform them into graphs, tables, and other forms to arrive at conclusions or knowledge that are new to them, but this is often done without knowing how they arrived at it. That is, in short, they follow the teacher's instructions or the student's guide and carry out activities without awareness and without theoretical

evidence (not as scientists do). They implement the scientific aspect without any linking to the theoretical side, and therefore Gwen believes that the laboratory work is meaningless, so Gwen has created the cognitive form (V) to help the learner link between the scientific and theoretical sides. (Al-Khalili: 1996)

**Figure structure (V):**

The form (V) is made as shown in Figure 1 on two left and right aspects, where the first (left) side represents the conceptual (theoretical) aspect, and is sometimes known as the intellectual

aspect, and it consists of the concepts included in the subject of the lesson, principles, laws and theory that belongs The topic, and the second (the right side), which represents the procedural side (practical). This aspect includes cognitive requirements, value requirements, recordings and their transfers. These two aspects link the events and things that fall into the focus of form (V). An interaction between the right and left sides of the shape, that is, between its conceptual and procedural sides. (Alemeat, and Abu Her Majesty: 2001). Figure 1 shows the structure of Figure (V).

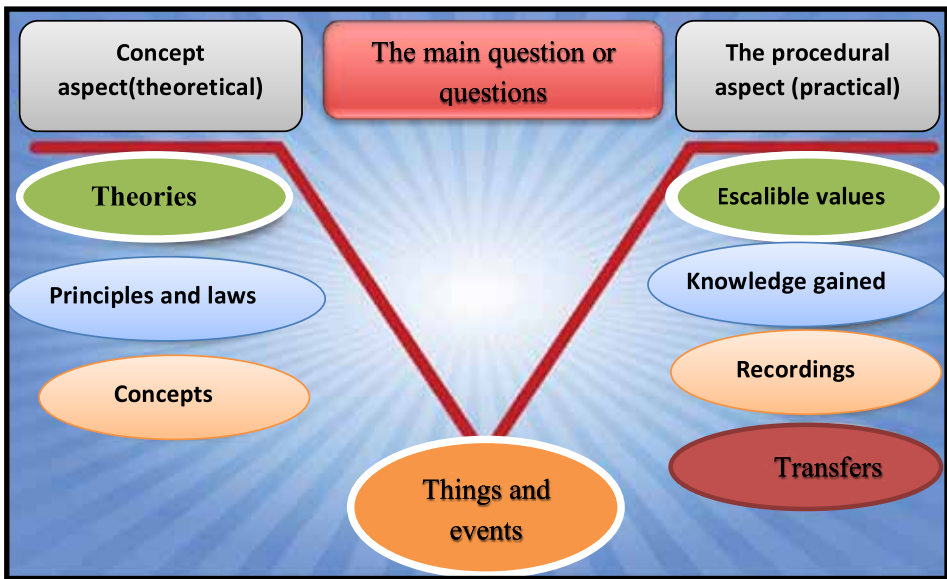


Figure 1. Structure of the shape (V)

Steps for presenting Figure (V) to learners:

Figure (V) is presented to students

according to the following steps as specified by Al-Khatahtbeh (2008):

1. Starting with the concepts, things,

and events: The concepts must be presented to the students before presenting the figure so that the students become familiar with the elements of the figure (concepts and events). The teacher first presents the concepts, events, and things that are included in the topic of the lesson. A simple and familiar group of events must be chosen to clarify the concepts. The learner, through his observations and observations, and His interaction with Events enable data collection to be more flexible, as the nature of the questions that the student sets for himself affects the nature of the data that he will collect, as the difference in the question leads to a difference in the student's focus on the different aspects of the things and events that he sees or deals with.

2. Providing the idea of registration (presidential questions): The student uses the concepts that he knew before, when he builds his knowledge structure in order to notice events and things, and make some records for his notes, and after the student uses the concepts and that and that is. To notice events and things, he will then record the notes, and this type of observation is directed by one or more of the axial questions, and

records are asked about a question or a group of presidential questions. These questions lead the student to focus on events or the things that are noticed, and students suggest the concepts required to understand the event that they notice, as well as additional concepts. These records must be organized as building schedules for them, and it should not be satisfied with registering notes only.

3. Introduce the idea of transforming records (data processing): The teacher asks students about their suggestions about the data or records that they collected and observe In the various forms of suggestions, and then the teacher chooses the best organizer that can be used to answer the presidential question and this is considered a great opportunity for students to develop innovation for them, because of the tables and drawings they are in different, and this is also exempted in showing students' creativity in forming and building new knowledge. Presenting the cognitive requirements: The cognitive requirements represent the answers to the main question. The teacher explains what he believes is the answer to the main question, based on the data that has been processed (transformations).

The teacher must realize that the students have reached new knowledge, and this requires the use of principles and concepts present in the students' cognitive structure. This new knowledge motivates students to modify the principles they already have, and also provides the opportunity for students to discover new relationships between them. There is an interaction between what the students know and the new knowledge they have acquired. Then the teacher explains how the students can benefit from the concepts and principles they know in transforming the recordings. The teacher then writes down the cognitive requirements - whether they agree with them or not - and why?

It is worth noting that not all students emerge with the same knowledge, as it depends on the type of records (data) and the methods of processing them for each student.

4. Presenting principles and theories: Principles are important interrelations between two or more concepts. Principles fall under cognitive requirements. Theories explain the relationships between concepts and also organize concepts and principles in order to describe events and cognitive requirements related

to events. Theories are broader and more comprehensive than principles. Theories may include principles. Principles answer the question: Why do events and things look like this? Theorems, even though they are somewhat confusing in nature, should not be ignored, and students should be helped to deduce the theorems. The teacher then explains that the principles guide the observations collected by the students about events and objects and the transformations they have made. The teacher writes the principle on the board. In and then explains the theory that shows the relationship between concepts and principles &quot; V&quot; his side of the previous form.

#### Figure positives:

- 1- Helping the teacher to arrange and organize his ideas by determining his side elements (V).
- 2- It helps him to plan his lessons, as he determines and arranges the points that he wants to start with his lesson through Figure (V).
- 3- This strategy is useful in the evaluation process, either, to evaluate students' achievement or evaluation of study courses with the purpose of its development.
- 4- It helps students to build knowledge, as it takes into account the sequence of concepts, its representation,



and its alignment with each other, which achieves more flexible understanding and understanding.

- 1- It is used as an effective methodological tool, as it directs the attention of curriculum planners and designers to choosing basic concepts.
- 2- The V-shape strategy is important in laboratory exercises, as it is used in preparing laboratory reports.

#### **Disadvantages of the (V-shape):**

- 1- You need a time to prepare it.
- 2- The teacher needs a long time to correct Figure (V).

#### **Previous studies:**

- 1- Study (Ambo Saidi: 2006): It aimed to effectively use the form of forming in the science of science to obtain students from general education and their trends towards it, where the study of the study consisted of (138) students from the ninth grade students from the general education in the Al-Batinah region in the north of the educational north Randomize Patriotism to two groups: a criminal (65) students who studied the educational subject using Figure (V) and the other control (73) students who studied the teaching subject in the prevailing way, and the researcher used an achievement test consisting

of (26) questions in his final form, and a measuring direction towards the use of the shape ( V) In the study of science consisting of (23) a paragraph, and the study reached the existence of statistically significant differences between the average arithmetic for the performance of the students of the two experiences and the control at the level of significance (0.05) in the total academic achievement and in its three knowledge level The experienced group, as the results of the study indicated that students are answering students towards the use of Figure (V) in the study of a subject.

- 2- A study of the building, Al-Azzam and Ghazali (2013: Alazam \* Ghazali, Bawaneh): aimed at identifying effectively the use of concepts maps and the way of forms (V) as one of the teaching strategies and its impact on the creation of my concepts in the science topic of the eighth grade students in Jordan, and the study of the study formed From (63) students from the eighth graders were randomly chosen, and the members of the sample were randomly distributed to two first two groups, the first two criminals were used by using the concepts and the second. About electrical energy in the eighth graders, and the results of the study showed

that the two traded strategies were active in creating concepts of concepts among students, and the results also showed that there were no differences attributed to the Training Station in the creation of the process of concealment in the concept knowledge of students.

- 3- Study (Al-Masry: 2014): The effect of the strategic Figure (V) in the understanding of the biological concepts and the acquisition of science processes according to the level of achievement in science among the basic stage students in the city of Oman in Jordan, and the study of the study consisted of (48) students who were distributed over the first two divisions Cross and second control, and the study reached the existence of statistically significant differences in understanding the biological concepts and the acquisition of science processes in favor of the criminal group who studied according to the «V» strategy in understanding the biological concepts and gaining science operations on their counterparts (the control group) who studied in the interest -based way, as found, as found, as found, as found, as found, as found Significant differences in the understanding

of the biological concepts and the acquisition of science processes due to the difference in the level of achievement for the benefit of students with high achievement between the statistically indicative effect of the interaction between the strategy and the level of achievement in science.

Some connotations and indicators from previous studies:

- 1- Location of the study: Previous studies differed in the place of their conduct as they were conducted in Arab countries, while the current research was conducted in Iraq.
- 2- Objective of the study: Previous studies differed in their objectives in the dependent variable as well as the independent variable. They all dealt with the V-shape strategy. Whereas the study (Ambou Saidi: 2006) dealt with attitudes towards general education as a dependent variable, while the study (Al-Bouana, Al-Azzam, and Ghazali: 2013) dealt with creating a conceptual change, and the study (Al-Masry: 2014) dealt with the acquisition of science processes in the dependent variable. As for our current research, it was limited to Achievement as a dependent variable.
- 3- Sample size and type: Previous

studies varied in sample size. In the study (Ambou Saeedi: 2006) the sample size was (138) male students, and the study by Bawaneh, Al-Azzam, and Ghazali (2013: Alazam & Ghazali, Bawaneh) was the size of The sample was (63) students (male and female), and the study (Al-Masry: 2014) had a sample size of (48) female students. As for our current research, the sample size was (67) female students.

4- The academic stage: The academic stage varied in previous studies. In the study of (Ambo Saeedi: 2006), the ninth grade was chosen for general education, while the study of Bawaneh, Al-Azzam, and Ghazali (2013: Alazam & Ghazali, Bawaneh) chose eighth-grade students, and the study of (Al-Masry: 2014) on the basic stage, while our current research chose the second intermediate grade.

**The extent of benefit from previous studies: -**

After the researcher was informed of the previous studies, the following points were useful:

- 1 - Preparing the test for the current research.
- 2 - Identifying the objectives of the studies that dealt with the strategy of the shape (V).
- 3 - Making use of statistical methods. Previous.
- 4- Benefiting from the findings of these studies in discussing the current research.

Chapter Three: Research methodology and procedures: The researcher adopted the experimental curriculum to achieve the goal of its research.

First: Experimental Design: The researcher chose the partial controlling design with a remote test of two independent groups

Table No. (1) Experimental design for research variables

Group	Valence	Independent variable	Dimention test (dependent variable)
Experimental	prior achievement intelligence	V-shape strategy	Collection
control	prior information	The usual method	

Second: The research community and its sample: It is represented by all the female students of the second intermediate grade in the government day schools for girls affiliated with the General Directorate of Education of Baghdad / Al-Rusafa I, for the academic year (2022-2023).

Research sample: Al-Anwar Intermediate School for Girls was intentionally chosen from among the schools of the research community for the following reasons. 1- Its proximity to the researcher's residence. 2- The cooperation of the school administration with the researcher. 3- The school contains five classes in order to give freedom of random assignment to the experimental and control groups. The researcher chose by simple random assignment the two classes (C - E), numbering (71) students. Where (E) was chosen to represent the experimental group

with (35) female students, and (C) the control group with (36) female students, then two female students who failed in the experimental group were excluded, and two female students who failed in the control group, and thus the final number of the research sample became (67). (33) female students for the experimental group, and (34) female students for the control group.

Third: Equivalence of the two research groups: The two research groups were rewarded in the variables (previous achievement - intelligence - previous information), and they were all equivalent as in the tables below.

**Table (2) The average arithmetic, standard deviation, calculated and mandatory value for the previous achievement of the two research groups**

variable	Group	the number	Arithmetic mean	Standard deviation	T value	
					Tabular	Calculated
Previous collection	Experimental	33	64.45	5.465	2	0.698
	control	34	63.75	4.611		

**Table (3) The arithmetic mean, the standard deviation, and the calculated and tabulated T-value for intelligence for the two research groups**

variable	Group	the number	Arithmetic mean	Standard deviation	T value		Significance
					Tabular	Calculated	
Intelligence	Experimental	33	38.44	6.891	2	0.691	non-significant
	control	34	37.31	6.193			

**Table (4) The arithmetic mean, the standard deviation, and the calculated and tabulated T-value to test the previous information for the two research groups**

variable	Group	the number	Arithmetic mean	Standard deviation	T value		Significance
					Tabular	Calculated	
Previous information	Experimental	33	15.71	3.613	2	0.773	non-significant
	control	34	15.06	3.619			

Fourth: - Control the exotic variables: - Including the conditions of experience and accompanying accidents, and no symptoms that hinder the progress of the experiment occurred and no student was always interrupted during the experiment, and there was also a secret in agreement with the school administration and the duration of the experiment was equal to both experimental and control groups and also the distribution of

lessons was Away between the two groups.

Fifth: - Research Supplies: - After identifying the scientific material that was previously mentioned, (217) behavioral goals were formulated in light of the classification of Bloom in the cognitive field, as behavioral goals were distributed (remembrance, assimilation, application, analysis, composition, calendar) and as shown in a schedule (5).

**Table (5) Distribution of behavioral objectives and their levels according to academic content**

The number		Levels study content	Cognitive field						
			Analysis	Composition	evaluation	Application	understand	Remember	Total
the first unit	Chapter one	Items and chemical interdependence	3	5	8	14	16	36	82
The second unit	Chapter two	Chemical compound	5	2	9	5	23	15	59
	Chapter three	Chemical formulas and reactions	3	5	8	12	24	24	76
Total			11	12	25	31	63	75	217

In light of this, (20) teaching plans were prepared, with (10) plans for the experimental group and the same for the control group. To measure achievement, an achievement test was prepared consisting of (30) items according to the test map prepared in Table (6)

Table (6) The test map of the achievement test paragraphs

Chapter	The number of Pages	Relative importance chapters	Goal level						Total 100 %
			Analysis 6 %	Composition 6 %	evaluation 11 %	Application 14 %	understand 29 %	Remember 34 %	
First	14	37%	-	1	1	2	3	4	11
Second	11	29%	1	-	1	1	3	3	9
Third	13	34%	1	1	1	1	3	3	10
Total	38	100%	2	2	3	4	9	10	30

The test was subjected to the apparent honesty by presenting it to a group of experts and specialists, and the percentage of agreement reached (80%) according to the Cooper equation of the agreement, and thus the test is honest in terms of accuracy and clarity of instructions and its objectivity, then the sincerity of the content was achieved according to the specifications schedule above. In order to carry out the psychometric properties of the test, the researcher applied the test to two external exploratory samples, and all the characteristics were in accordance with the specifications. Then the researcher conducted the reliability of the test, by retesting the exploratory sample, and the second correction was made two weeks after the first was corrected, and using the Cooper equation, the percentage of agreement

was (0.90), which is a high reliability coefficient.

Application of the test: The post-achievement test was applied to the two research groups on (22023/13/). The students were informed of the date a week before, and the researcher conducted statistical treatments using the updated Spss program, to determine and interpret the results.

Chapter Four: Research results and recommendations Presentation of the results: - For the purpose of verifying the null hypothesis which states that (there are no statistically significant differences at the level of significance (0.05) between the average grades of the female students of the experimental group who studied using the Figure (V) strategy and the average grades of the female students The control group studied in the usual way. The results were according to Table (7) below.

**Table (7) T-test results for two independent samples for the experimental and control groups in the achievement test**

variable	Group	the number	Arithmetic mean	Standard deviation	T value		Significance 0.05
					Tabular	Calculated	
Post achievement test	Experimental	33	31.85	4.411	2	10.726	Indication
	control	34	22.41	2.621			

The effect size was calculated as (2.12) in favor of the experimental group, which is considered very large using Cohen’s equation, as shown in Table (8) below.

**Table (8) Results of the size of the effect of the shape (V) strategy in the achievement test for science subject**

The variable	Group	The number	Calculated Total T value	Effect size value	indication
post achievement test	Experimental	33	10.726	2.12	High
	control	34			

Interpretation of the results: After the results of the experiment were the excellence of students of the experimental group over the students of the control group in the post -achievement test of science, and this is attributed, according to the researcher’s opinion of the following reasons:

- 1- The strategy of Figure (V) has created the reaction and motivation of the students who enjoy all the new methods of teaching and lead to better results.
- 2- The strategy for female students available to rebuild the material, address their ideas and organize it in a special way, which leads to understanding for the better.
- 3- Teaching, using a strategy (V),

helps students to keep information in their memory longer, because they may have reached the formation of the cognitive building themselves, and this weakens the factor of forgetfulness.

- 4- It made the students feel that they have an important role in the learning process by participating with each other in building the meaning, and this leads to the development of the skills of communication between them positively.

Conclusions: According to the results that resulted from the research, the researcher was able to conclude the following:

- 1- The results of the research showed a significant positive impact in using the V-shaped strategy, which

contributed to raising the level of achievement.

- 2- Through applying the strategy, the researcher noticed that it encourages the spirit of... Positive cooperation and competition between female students, which instills enthusiasm and vitality in their souls.

**Recommendations:** The following recommendations were reached:

- 1- Using the V-shaped strategy in different academic stages for teaching science.
- 2- Training courses were held for science teachers on how to use this method. Strategy.
- 3- Encouraging science teachers to

diversify the use of strategies and teaching models that allow students to learn in cooperative groups and not to adhere to one method of teaching.

**Suggestions:** The researcher proposes the following:

- 1- Conduct a study similar to the current research and with other dependent variables that were not addressed in the research..
- 2- Conduct a comparative study between the V-shape strategy with other strategies.
- 3- Conduct a similar study using the V-shape strategy for different levels of study and in other academic subjects.

### References: -

- 1- Abu Jalala, Sobhi, and Oleimat, Muhammad, (2001) AD: Contemporary General Teaching Methods, Al-Falah Library, Al Ain.
- 2- Abu Rayash, Hussein Muhammad, (2007) AD: Cognitive Learning, 1st edition, Dar Al-Masirah, Amman.
- 3- Ambu Saeedi, Abdullah, and Al-Balushi, Muhammad, (2006): Measuring the effectiveness of using the shape map (v) in teaching science on the achievement of ninth grade students in general education and their attitudes towards it, Journal of the College of Education, 21 (23), 1-30.
- 4- Al-Jalali, Laman, (2011) AD: Academic Achievement, 1st edition, Dar Al-Masirah for Printing, Publishing and Distribution, Amman.
- 6- Al-Khatahtbeh, Amani, (2008) AD: The Effect of Teaching in the Laboratory Using the Shape Strategy (v) Cognitive study on the acquisition of scientific concepts and science processes among eighth-grade female students in Ajloun Governorate, unpublished master's thesis, Yarmouk University, Irbid, Jordan.
- 6- Al-Khalili, Khalil, Younis, Muhammad, and Haider, Abdul Latif, (1996) M: Teaching science in the general education stages, Dar Al Qalam, Dubai.
- 7- Obaid, William, (2009) AD: Learning and Education Strategies in the context of a conceptual culture and application models, Dar Al Masirah for Publishing and Distribution, Amman.
- 8- Qalada, Fouad, (2004) AD: The basics in the Training of Sciences, I 1 University of the University, Tanta.
- 9- Al-Masry, Alaa, (2014) A.D.
- 10- Bawaneh, A., Alazam, A. & Ghazali, M. (2013). The effectiveness of concept maps and the V-shape teaching method in science conceptual change among eighth-grade students in Jordan. Unpublished MA Thesis, school of Educational studies, University sains Malaysia.