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The Impact Of Instructional Scaffolding Strategy In Collection Chemistry To The Fourth Scientific Stage

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Abstract

The present study aimed at knowing “the effect of the educational support strategy on the achievement of chemistry among fourth grade students”. To achieve this, the researcher chose Dhulnnurain secondary school in Baghdad governorate of Karkh / 3. The research sample reached (56) students from the fourth grade (28). The researcher formulated (130) behavioral objectives within the levels (remembering, assimilation, application and analysis) according to Bloom’s classification of the field of knowledge, the researcher has prepared an achievement test consisting of (20) objective paragraphs of the type of selection The multiplicity of his psychometric properties has been ascertained, following with The results of the study were found to be superior to the experimental group students who studied chemistry according to the teaching stand strategy in the achievement test.

El Impacto De La Estrategia De Andamiaje Educativo En La Química De La Colección En La Cuarta Etapa Científica

Resumen:

El presente estudio tuvo como objetivo conocer “el efecto de la estrategia de apoyo educativo en el logro de la química entre los estudiantes de cuarto grado”. Para lograr esto, el investigador eligió la escuela secundaria Dhulnnurain en la gobernación de Karkh / 3. Bagdad. La muestra de investigación llegó a (56) estudiantes del cuarto grado (28). El investigador formuló (130) objetivos de comportamiento dentro de los niveles (recordar, asimilación, aplicación y análisis) de acuerdo con la clasificación de Bloom del campo de conocimiento, el investigador ha preparado una prueba de rendimiento que consta de (20) párrafos objetivos del tipo de selección. Se ha comprobado la multiplicidad de sus propiedades psicométricas, siguiendo con Los resultados del estudio fueron superiores a los estudiantes del grupo experimental que estudiaron química de acuerdo con la estrategia de soporte de enseñanza en la prueba de rendimiento.

Research problem :

Natural sciences and their basic principles constitute the main stream in the development and progress of nations scientifically, economically and culturally. Therefore, it is necessary to guide future generations starting from the primary school stage, the right and successful destination to cope with this huge amount of information, which is accelerated by the rapid development in the fields of science and the resulting problems There must be appropriate strategies and teaching methods compatible with this scientific development.

It is known that chemistry, which includes a lot of chemical concepts and need to clarify the student to be able to understand and understand, as the student must think in a thoughtful scientific manner using scientific method in all steps to be able to solve the problems facing him, and the most abstract scientific concepts are chemical concepts This leads to a lack of correct understanding of these concepts (Khazraji, 2003: 2), and through the researcher met with many teachers and educational supervisors in seminars and development courses found that the majority of students suffer from low level of achievement in chemistry.

This is confirmed by many studies such as the study (spring, 2014) and (Janabi, 2014), where some studies confirmed that the majority of teachers use the traditional method of teaching chemistry and this is one of the main reasons for the low level of students in the subject mentioned, in addition to the reasons that Leading to a low level of achievement in students is the lack of interest in the development of the mental abilities of the learner Most methods do not take into account the needs of learners and their different mental abilities, which led learners to feel bored and frustrated, which necessitated the use of modern models and methods of teaching aimed at achieving and form correct visions of students and give The difference between deep and superficial learning is due to the importance of the first in achieving meaningful learning and linking new knowledge with prior knowledge. Superficial learning is associated with negative processes because learning Deep learning is characterized by accuracy and mastery, while surface learning is characterized by lack of concentration and mastery (Hafez, 2006: 76).

Hence, the researcher considered the use of the strategy of educational bonds may contribute to achieve the desired goals, steps mixed with active tools to help the learner to move from the current level to the next level and in this light is determined by the problem of this research in answering the following question:

(What is the effect of the teaching support strategy on the achievement of chemistry among fourth grade students?).

research importance :

Education is a preparation for life in all its dimensions. We must speak the language and science of the 21st century if we are to live in this century. Education connects the past with its experiences, the present with its problems and the future with its expectations and challenges (Zeitoun, 2007: 119).

Education is now concerned with the learner, his nature, desires, interests and inclinations, and the stages of his physical, mental, moral and social growth. It can achieve its goals in education only if there is a means to help achieve and translate the educational objectives into the educational and social reality of the learner and the important means through which education can achieve the desired goals of educational curricula (Darwazah, 1999: 55).

The current era is characterized by tremendous scientific progress, which is accelerated every day, leaving a positive impact on the achievement of human well-being and this does not mean that there are no negative effects

of this progress because the cause of these negative effects is not science and its applications but the misuse of science and its applications and this has made the teaching of science great importance Especially in the school stages as an integral part of human culture. (Samurai, 2012: 48)

To reach the integrated scientific knowledge that depends on activating the capabilities and capabilities of the learner should use methods and methods or models that help to develop and activate the capabilities of the learner and this requires the development of intentional educational goals to activate it, and therefore, education is a selective social educational process meaningful in which all elements interested in the educational process Administrators, supervisors, teachers and students sincerely towards the learner and respond to his wishes and characteristics and methods of learning, using activities and procedures that fit his abilities and capabilities and lead to education, a collective system in which teaching and teaching. (Role model, 2009: 55)

Therefore, it is necessary to use different methods, techniques and methods in line with the expanding needs of learners and the diversity of goals that the educational process aspires to achieve and that the knowledge of the teacher makes him a successful teacher able to achieve educational goals and that the clarity of these goals in the mind of the teacher and his knowledge of learners enable him to the material taught by One of the most important factors that helps the teacher to choose the appropriate teaching method for the situation (Samurai, 2012: 125)

Based on the above, there is a need to keep abreast of what is new and new in teaching strategies, methods, methods and models as it is no longer acceptable to adhere to the strategies of lecturing and listening just to accrue to our teachers; New in teaching. (Attia, 2008: 24)

Cognitive psychologists and scientific education have developed a number of teaching methods and techniques, and are presented to science teachers. Through their use and use, it has been shown that they can choose the best methods and the most successful techniques according to the nature of educational attitudes according to special criteria for these attitudes (Atallah, 2010: 197 - 198).

In order to improve the effectiveness of the educational process, the teacher can develop many different tools and models adopted in improving educational attainment (Bakhsh, 2008: 108).

Due to the importance of teaching methods, it focuses on how to invest the content of the material in such a way as to achieve the objectives of a study, if found method and lack of material, the teacher could not reach

his goal, and if the material is abundant and the method is weak did not achieve the desired goal, then the good way The loss of the material and the abundance of the material are useless if they come across a bad method in the sense that the method cannot be separated from the material (Khalaf Allah, 2002: 21), hence the urgent need to adopt the best teaching methods and methods that lead to the achievement of educational objectives in the shortest time And the least effort possible (resourcefulness, 2003: 29), and that The fact that the learner at the center of the educational process, who shall various activities that enable knowledge discovery and development tendencies has (Atallah 2001: 199).

After accumulating knowledge and become the way it is now it is obligatory for man to arrange and classify and describe the natural phenomena and knowledge of their causes, which led to the emergence of new theories in learning and education, the most prominent of these theories of constructivist theory, thanks to the world (Piaget) who laid its blocks Basic, which emphasizes that learning occurs as a result of the interaction between the learner and his environment. Science is a cognitive construct and a way to acquire, develop and refine knowledge (Muhammad Faiz, 1999: 19).

Thus, learning according to the strategy of the educational bonds is a constructive, cumulative, self-directed, cooperative and student-centered process in order to keep his knowledge and be meaningful when needed to resolve a similar situation and develops students' thinking and abilities (Ambo Saidi and Soliman, 2011: 364).

Vygotsky emphasizes (a gap between the knowledge of the student and the knowledge of the teacher and the closest growth area is the closest experience of the student and this gap is filled by the scaffolding programs used by the teacher temporarily to help the student to link the two knowledge). (Ahmad and Abdul Latif, 2009: 30)

Thus, building knowledge according to Vygotsky's theory takes place through social discussion between the teacher and the students and each other to guide the thinking of students.

(Alexopoulou E & driver, 20: 1996)

It is evident from this and as many educators have confirmed that there is a clear difference between the learner to understand himself and the level of understanding that he reaches with the help of others more capable of it, and this comes the importance of teaching in groups, and through dialogue and discussion be learner active and social and is building information and skills he have. (Nabhan, 2010: 32)

From this point of view, students are divided into groups of five or six students. When applying instructional plans for educational support, Vygotsky's goal in learning is how to access knowledge. It is not important to know by itself that children or learners acquire knowledge through interaction with the social milieu. They live in it (Abu-Ghazaleh, 2006: 232).

In this way, we conclude that the learning process using educational supports is multidirectional and does not go in one direction where the learner, teacher and peers participate in the learning process (Razuki et al., 2015: 141).

The importance of research is summarized as follows:

1 - The importance of chemistry science and its effective and important role in the revolution of science and inventions and advanced technology and its role in the change and scientific development witnessed in the world as it received the attention of educators and modern teaching methods.

2 - This is the only study in Iraq in chemistry to the knowledge of the researcher using the strategy of educational support.

3 - The results of the research may be useful to the supervisors and teachers of chemistry in the preparatory stage to develop their professional skills and teaching chemistry.

Research Objective:

The search aims to verify:

The effect of the teaching support strategy on the achievement of chemistry among fourth grade students.

To achieve this, the researcher developed the following hypothesis:

Research hypothesis:

There is no statistically significant difference at the level (0.05) between the average grades of students studying the strategy of educational support, and the average grades of students who study in the usual way in the academic achievement of chemistry.

search limits :

Search is limited to:

1- Students of the fourth grade of science in (Dhu Al-Nourain Secondary School for Boys), which is affiliated to the Directorate General of Education in Baghdad Governorate.

2- Chapter IV (Organic Chemistry), VI (Geochemistry) because the current study system Kursat, from the book of chemistry scheduled for the fourth grade scientific, edition (sixth), Year (2015).

3- The second semester of the academic year 2016-2017

Terminology:

Impact:

He defined it (Shehata and Zeinab, 2003) as “the result of a desirable or desirable change that occurs in the learner as a result of the learning process.” (Shehata and Zeinab, 2003: 22)

Educational supports:

Vegotsky, 1978, defined it as “supporting tools mixed with steps in which the teacher or the most capable and efficient partner passes the types of guidance and support to the learner to move from the actual level of development that arises from solving the problem independently to the level of potential development through the problem of school guidance and peer collaboration.). (Vegotsky, 1978: 36)

Collection:

He defined it (Abu Jadu, 2003) as “the outcome of what the student learns after a certain period of time and can be measured by the degree obtained by achievement test to see how successful the strategy is set by the teacher and plans to achieve his goals and up.”

(Abu Jadwa, 2003: 469)

Theoretical framework:

In this part, we will discuss three axes, namely, educational support and achievement and previous studies related to the variables of this research First: Instructional Scaffolding

The educational stand is one of the educational applications of the constructivist theory. The constructivist theory focuses on the acquisition of prior knowledge.

The names of this strategy (educational stands) were called scaffolds, supports or supports, and the reason for the names of this strategy is because of translation. (The concept of props may be confused with the associated concept of support, but they are different in that the scaffold includes isolation and re-support to the previous state according to the learner’s need and better to translate into props or anchors and that the word scaffolding does not differentiate between those who put it and those who use it. In education it is held by the teacher (Razuki et al., 2015: 106).

Zaytoun, 2007, emphasizes that the activation of prior knowledge is primarily important as new learning is adopted and directly related to what the learner knows (Zaytoun, 2007: 24).

Vygotsky explained that learning occurs in the form of social interactions between learners and participation in cultural and social experiences (Raymond 2000: 176).

The social constructivist theory of (Vygotsky) and educational stand:

Most researchers argue that Vygotsky's theory and the area of approximate growth are the focus of the concept of educational supports (Krause, 2003: 286).

(The area of approximate growth is the distance between what a person can do with or without help and an approximate word indicates that the assistance provided is within walking distance of the learner and is based on his or her abilities.) (Vernikion, 2008: 165)

Thus, Vygotsky stressed that the area of approximate growth is important for the learner as it allows educators to change the future of the learner's approximation.

It is clear that social interaction plays an important role in acquiring knowledge of the individual.

With another person, such as a teacher, another adult or a more experienced spouse, the focus should be on the ZPD, which Vygotsky seeks to achieve.

(Dawahidi, 2006: 26)

By looking at the literature, the researcher found that the strategy of teaching supports represents an educational model to embody that theory and apply it.

Vygotsky explained that the learner in any period of learning has three areas of growth are:

- 1 - the actual growth area: the ability of the learner to learn on his own.
 - 2 - possible growth area: is the area that the learner is trying to reach with the help of a teacher who is more experienced and knowledgeable of it.
 - 3 - area of independent growth: is the area sought by the learner alone.
- (Rosmussen, 2001: 580)

The area of approximate growth is working on

- 1- Guiding the learner on how to perform.
- 2- Analyze the nature of the existing performance.
- 3 - help the learner to reach the performance he has to a higher level by educational tools (Scott, 1998: 7)

There are factors that affect the approximate level, including different times during the process of acquiring the skill. In this case, the area of approximate growth will also vary as well as different growth areas vary in size. Some learners need great help to achieve small gains and there are learners jump big leaps with less help than others.

(Leonfbedrova, 1995: 35)

Educational Bond Steps:

The teaching steps in the instructional strategy as defined by Rosenshine & Merister, 1992 are:

1- Step 1: Presenting the teaching strategy.

2. The second step: guided collective practice.

Step 3: Create a variety of content for the learners application.

Step 4: Give feedback.

5 - step five: increase the responsibility of the learner.

6 - Step six: give independent practice for each learner.

The researcher relied on the steps (Rosenshine & Merister, 1992) in the teaching of chemistry for the fourth grade of scientific experimental group when applying his research experiment because it is suitable for the stage of study.

The importance of educational stands in teaching science:

The importance of educational support lies in that it helps learners to move from relying on the teacher to make the learner dependent on himself, ie, it has made the learner a focus of the educational process, and this is what advocated by educators with a modern educational trend, and there is a framework for teaching science using educational support provided by (Davisdlinn, 2000) is important in the teaching of science as explained below:

1. Make science accessible and accessible to learners.

2. Give social support to learners while teaching science.

3. Encourage the learner to produce intentional interpretations and push the learner to accomplish meaningful tasks.

4. Educational stands are a sophisticated building of scientific knowledge.

Types of educational stands and tools:

First, conceptual supports are used to guide and guide learners and to clarify the actions to be taken towards a task or problem to be solved, including a number of tools:

1. Enhancements

2. Clear allusions.

3. Content trees.

4. Illustrations.

Features of this type of brackets

1. Help in understanding comprehension.
2. Assists in correct connections of concepts.
3. Help simplify complex concepts.
4. Assist in focusing on important topics and concepts.
5. Help correct understanding of concepts.
6. Assists learners and guides them to available resources and tools to facilitate the elaboration of complex concepts.

Second: Supra-Cognitive Supports

Used to support learner behavior and help learners to reflect on goals to be achieved.

Features of this type:

1. Determine the correct ways of thinking.
- 2 - provide simple reinforcements to guide the learner's thinking towards the right strategy.

Organize the content of an integrated education program by providing a complete support system.

This type of bracket can be divided as follows:

1 - Planning pillars: This type helps learners to plan how to get to the solution (flow maps).

The steps to be taken to solve the problem are determined.

2 - pillars of organization: This type helps learners to know their progress and knowledge of their current level and knowledge of the mistakes they have made, and their progress and performance of the goals that must be reached.

3 - Evaluation pillars: Through these pillars learners can criticize and evaluate their performance and products, through tools to help them to do so, such as:

1. Performance Note.
2. Performance records. (Razuki et al., 2015: 169)

Teacher and educational support strategy:

In order for the teacher to achieve the steps of the educational support, he must work on: -

1. Facilitate learning and work as an assistant and not disabled.
2. Establish a relationship with learners and motivate them to discuss and participate.

- 3 - do guidance and guidance performance when the learner.
- 4- Providing an educational environment that motivates learners to play an active role in learning.
5. Developing their cognitive and emotional abilities.

How the teacher implements educational supports

You see (Soldier and Ahmed, 2004: 698-699) that the teacher can implement the strategy of teaching anatomy by using the sensible hints of meditation and thinking hints such as when words? Where ? How ? Why ?

Self-organizing hints for thinking out loud are called metacognitive anchors, the use of flashcards, the use of verbal hints, supporting activities, laboratory tools, models, and educational media.

Second: Collection:

The need or motivation to achieve achievement, which is based on the effort of the learner and compete to reach high levels of performance, this individual achievement must be determined by the ability of learners in the control of information, analysis, organization and good processing for the purpose of achieving educational goals, and that school achievement is The final outcome in terms of individual differences between learners in the process of the learner's footing or sizes or in terms of success or fear of failure, and that the end result of success depends on the motivation of the learner, and good investment potential, personal and educational capabilities that lead him To achieve achievement, therefore, the divergence of motivation of success, among learners is influenced by several factors that have a correlation or impact on the educational attainment of individuals, including intelligence, motivation and mental abilities, as well as motivation to avoid failure in the sense that the motives of success and motivation to avoid failure must be linked to achievement achievement and excellence (, 2001: 336-337).

Education stakeholders pay great attention to achievement because of its importance in the life of the individual and the consequences of the results of the decisive educational decisions, the achievement tests designed to measure the amount of information that is kept or remembered in any field of knowledge, as well as indicate the ability to understand, or apply, Therefore, educational institutions are interested in achievement, because it is an indicator of their progress towards educational goals. Achievement reflects the educational outcomes that institutions seek, in addition to their keenness to achieve a high level of achievement. This is because the level of achievement indicates the efficiency of the institutions and their ability

to achieve their objectives, where the collection to a degree determines the social and economic value of the individual, it is a sign of the values of social values and the ambition of the aspiration to achieve the individual (Al Dhaher et al., 1999: 50).

The importance of achievement for the learner:

The researcher believes that the achievement tests are important for the learner, namely:

1. Achieve a good cognitive outcome of the learner.
2. Achievement is the result of what happens in the educational institution of diverse and multiple learning processes.

The importance of achievement for the teacher:

1. Gives the teacher clear indications about the future of learners
2. Develop the learner's mind with useful knowledge and information.
3. Through the collection is revealed the strengths and weaknesses of the learner. (Dulaimi and Adnan, 2005: 32).
4. The academic achievement in the subjects is the only criterion by which the learner's progress is measured. The teacher helps to achieve the curriculum for educational purposes.

(Jalali, 2011: 21-22)

One of the educational institution's priorities is to improve students' achievement and acquire knowledge, because measuring achievement is an important source of learning outcomes.

Allam (2000) points out that achievement tests measure what students have learned in terms of knowledge and concepts. (Allam, 2000: 305).

Third: Previous Studies:

According to the knowledge of the researcher, there is no study of the strategy of teaching anchors in chemistry for all educational stages.

Khazraji's study (2015)

This study was conducted in Iraq and aimed to know the impact of using the strategy of educational support in the achievement of second grade students in the subject of physics and logical intelligence, the researcher adopted experimental design partial control of two groups (experimental and control), the sample of the study consisted of (52) students (26) The researcher applied a multi-choice test of (50) items. The stability was extracted by Coder Richardson-20 equation (0.83), as well as a logical intelligence test. After its adoption was verified the sincerity and stability, after

processing the statement Statistically, the results exceeded the experimental group studied in accordance with the strategy of educational support in the achievement test and in the logical intelligence test on the control group studied according to the usual method. (Al Khazraji, 2015: C - D)

Research Procedures:

First: Experimental Design:

The experimental design with partial adjustment (experimental and control group) has been selected and can be drawn as follows:

The group	Equivalence	Independent variable	The dependent variable	Post test
Experimental	-Chronological age	Educational Certificate Strategy	Collection	Achievement test
Control	-Achievement in Chemistry (First Course) -Previous information	Normal way		

Second: The research community and its sample:

The researcher chose the study community from the fourth grade students in the secondary school of Dhul-Noreen for boys belonging to the Directorate General of Education of Karkh the third (56) students.

Third: Equity of the two research groups:

Parity was conducted between the two research groups in (chronological age, intelligence (Raven), achievement in chemistry for the first course and the previous information), and the following chart shows the total equivalencies and agencies:

t	Variables	The group	Numb er of studen ts	SM A	Varian ce	Degre e of freedo m	T value		Significan ce level
							Calculat ed	Tabul ar	
1	Age in months	Experimen tal	28	192. 5	5.73	54	0.45	2.021	Is dallah
		Control	28	193. 1	5.55				
2	IQ Test (Raven)	Experimen tal	28	24.9 2	3.33		0.554		
		Control	28	24.4 3	3.42				
3	Chemistr y first course	Experimen tal	28	70.5 3	10.77		0.16		
		Control	28	69.8 9	10.71				
4	Previous informati on	Experimen tal	28	15.5 3	1.87		0.607		
		Control	28	15.2 1	2.07				

Fourth: Research Requirements:

The scientific material to be dealt with during the second semester of the academic year (2016-2017) was determined. It included two chapters of the book of chemistry for the fourth grade of science, and the formulation of the behavioral purposes of the course of study (130) behavioral purposes, were distributed at the first four levels of knowledge of the diploma It is (remembering, assimilation, application and analysis), in addition to the preparation of (14) plan for the experimental group, and similar to the control group.

Fifth: Research Tool:

The researcher has prepared an achievement test consisting of (20) objective paragraphs. The paragraphs of the achievement test have been determined from the multiple choice type, and the apparent validity was extracted based on the Cooper equation, which showed 80% of the opinions of the arbitrators in education and the methods of teaching science, and a preliminary application of the experiment. The exploratory test for the achievement of chemistry in order to determine the ambiguity points and

determine the time required for the test was (50) minutes, while the second exploratory experiment, which was conducted to conduct statistical analysis of the test paragraphs extracted the difficulty coefficient of (0,32 - 0.65) and is good and acceptable, the strength of discrimination It was (0,37 - 0, The results were of negative value, and therefore the alternatives are effective, and the stability of the test was extracted by the method (Koder-Richardson 20) where it reached (0.89) and thus is a factor of Good stability.

Sixth: Statistical means:

The T - test of two independent samples, the equation of the difficulty coefficient of the objective paragraphs, the equation of the power of distinction, the equation of the effectiveness of alternatives, the Cooper equation, the standard deviation, the variance, and the Coder Richardson - 20 equation were adopted as statistical methods to process the research results.

research results

For the purpose of verifying the null hypothesis which states that:

“There is no statistically significant difference at the level of (0.05) between the average grades of students studying the strategy of educational support, and the average grades of students who study in the usual way in the academic achievement of chemistry.”

The researcher compared the control group and the experimental group in the achievement test. Although the average score of the experimental group students was higher than the average of the students of the control group on the achievement test, the researcher considered to know the significance of the difference between the average of the two groups to test the validity of the hypothesis above, and by adopting the equation (t-test) at the level of significance (0). And the degree of freedom (54) where the next value Yeh calculated (3.6) which is greater than the value Tabulated (2,021), and the table that follows shows.

Arithmetic mean, standard deviation, computed and tabulated T value between achievement test scores and statistical significance of the experimental and control groups

The group	Number of students	SMA	Variance	Degree of freedom	T value		Statistical significance at the level of significance 0.05
					Calculated	Tabular	
Experimental	28	13.21	3.664	54	3.60	2.021	Function
Control	28	9.82	3.507				

This indicates that the difference between the two mean differences is statistically significant in favor of the experimental group that studied the strategy of educational bonds and thus rejects the null hypothesis.

Interpret the results

The results obtained show that the use of the instructional strategy has a positive effect on increasing the achievement in chemistry among fourth grade students. This is due to the following reasons:

1. The strategy of teaching aids has helped to present the subjects in a new way that contributed in linking the subject with each other. This led to a better understanding of this and this is not achieved by the usual teaching method followed with the control group in this research.
- 2 - Alnnadat strategy worked to organize the educational content of the topics studied, making the meanings and relationships between concepts and terms more sensible and easy to recognize and link new knowledge with what students have from previous information, and this made their learning meaningful, and this is confirmed by the results of the tests prepared in this research .
- 3 - Teaching by adopting the strategy of educational support made students a central focus in the learning process, and this strategy gave students a great opportunity to think and interpret.
- 4 - It was possible to observe the interaction that prevailed in educational attitudes, which contributed to the strategy of educational support in helping students to participate positively, which enhanced self-confidence and the ability to conclude.

Conclusions

In the light of the results of this research the researcher can conclude

the following:

1. Enjoy the strategy of educational support steps to support students and provide them with the best and appropriate assistance and reach the learner to competence and independence in the performance of the task.
2. The researcher noted the satisfaction of the experimental group students during the process of applying the experiment and the students expressed their desire and admiration in the way, and left an impact in them.
3. The educational support works to increase the development of the mental abilities of students through the practical and theoretical side. Using a variety of different educational tools such as doing activities, illustrations, inferring relationships and ending with interpretation.
4. The teaching of chemistry subjects in accordance with the strategy of teaching stand in terms of sequential steps contributed to raising the achievement of fourth grade students in chemistry.

Recommendations

In light of the results of this research, the researcher recommends the following:

- 1 - Training chemistry teachers on methods of teaching to use the strategy of educational support through courses and educational seminars.
- 2 - Inclusion of the strategy of educational support in the curricula of colleges of education within the vocabulary of teaching methods.
- 3 - Adopting the strategy of teaching support as a method of teaching knowledge can be useful in the teaching of chemistry to students of the preparatory stage.
4. Directing those concerned with curriculum affairs and the authors of textbooks to benefit from the strategy of educational support when writing books, presenting scientific content and developing a teacher's guide.

Proposals

To complete the current research, the researcher proposes the following:

- 1- Conducting a study to determine the impact of the educational support strategy with other variables, such as scientific thinking, retention of chemical concepts, and tendencies towards chemistry.
- 2 - Conducting a study on the strategy of educational support in modifying the misconception of chemical concepts for second grade students and their lateral thinking.
- 3 - Conducting a study on the impact of the educational support strategy in the collection of teaching methods for students of the third stage in the

faculties of education and the development of creative thinking.

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