

THE EFFECTIVENESS OF USING CONCEPTUAL MAPS STRATEGY TO TREAT THE WEAKNESS OF THE ACQUISITION OF THE SCIENTIFIC CONCEPTS FOR THE STUDENTS IN NORTH HEBRON DIRECTORATE

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ABSTRACT: *This study aims to identify the effectiveness of using conceptual maps strategy to treat the weakness of the acquisition of the scientific concepts for the students of 4th grade in Omar Ibn Abdelaziz Secondary School – Bet Enoon for north Hebron directorate. The participant of the study consists of eight students of fourth grader, teachers and guardians in Omar Ibn Abdelaziz Secondary School for Girls in the first semester of the academic year 2016-2017. The researcher built a test in the unit of human body to evaluate students' performance in these lessons. The validity of the exam was measured by a group of specialists and experts who are in the field of education and teaching. The researcher has formed the improvement program to prepare lessons in the structure of concepts maps activities, and presentations of the digestive system lessons. The study started on 17-9-2016 after the approval of the concerned parties at Al-Quds university, Ministry of Education and the Principal of the school to apply the study and ended on 23-10-2016 and the exam was applied to measure the influence of the improvement program on cumulative. The study concluded that there is an effectiveness for conceptual maps in treating the weakness of the acquisition of scientific concepts for 4th grade students in Omar Ibn Abdelaziz Secondary School - Beit Enoon for North Hebron Directorate. In the light of the results of the study, the researcher recommended to consider the concept maps as a strategy in teaching "Science and Life" as it has a positive impact on acquiring the required scientific concepts and taking into account students' different levels at the primary stage and using the modern teaching methods in a way that takes into account the individual differences among students, and it also recommended to conduct similar studies to other grades in science and other courses.*

KEYWORDS: Effectiveness, Conceptual Maps Strategy, Weakness of the Acquisition of the Scientific Concepts.

INTRODUCTION

The current era is the age of science and technology, characterized by rapid and sudden changes, where more and more scientific knowledge is coming to our attention. There is no doubt that these changes and scientific and technological developments have affected and are still affecting the educational process. The school has to direct the vast amount of knowledge and information and it must Its students have many different skills that are necessary to face scientific and technological development It should reconsider its curricula, methods of teaching, its educational means, methods of

assessment and scientific activities in a comprehensive and integrated framework that will enable it to cope with the new and developed in order to present a modern and understanding society to the age of science and technology capable of solving the problems it faces in a scientific way to lead the progress of the society in which it lives (Mazen, 2007).

The teaching process, as defined by Nabhan (2008), is: a process of mutual interaction between teachers, learners and the diverse environment that the teacher contributes to prepare for learners to impart skills, knowledge, information, facts, experiences, values and trends planned and targeted in a period Time is a lesson or a lesson, a skill that no one can master by his own abilities, that is, they need training and development.

As affirmed by educators that science education is not just the transfer of scientific knowledge to the learner but the process of dealing with the growth and integration of personality of the learner from various aspects, perhaps the science teacher is the key to achieving this, and although the success of the process of science depends on many factors, but specialists in science education They stressed that the science teacher is the cornerstone of the educational process, so well curricula, books, courses and activities on their importance may not achieve its objectives as a teacher good science preparation and the not educational competencies translate into experiences and broaden their concepts and perceptions and develop their thinking and mental abilities (Zaitoun, 2004).

As Mazen (2007) points out, the science teacher is required to prepare a scientifically educated and intellectual generation and the understanding of the problems of the age of the Internet and satellites that have become influential in all areas of political life, economic, social, scientific, cultural and other, all these developments are useful in most cases and sometimes useful as a result of the progress and renaissance of science and technology. Ibrahim and Al-khalzah (2008) it is no doubt that the teacher is the one who processes the content in a way of teaching methods and teaching aids to address the content to help learners to reach the educational goals to be achieved. The method gives it more attention than any element of the curriculum is the clear part in the practical application in school and is not supposed to judge the way in isolation from the rest of the elements of the importance of the roads are located and determine the extent of flexibility to achieve the goals and collect.

Therefore, the teacher should use a variety of methods and teaching methods commensurate with the content and with the abilities of learners and their levels and tendencies and desires and take into account the individual differences among them as well as be clear objectives and vary in educational activities to achieve this. Cognitive psychology and scientific education have developed a number of teaching methods and techniques and presented them to science teachers. By employing and using them, it is possible to choose the best methods and the most successful techniques according to the nature of the educational situations according to the special criteria of these attitudes (Mazen, 2007).

Zaitoun (2004) is of the view that it is difficult to propose an optimal method to achieve all the goals and objectives desired, one way can be effective and successful in a particular educational-learning situation in another educational-learning situation, and a suitable teacher may not fit another teacher, There is a wide range of methods and methods that the science teacher can choose or use to achieve the educational goals of teaching science in its three fields. Therefore, the science teacher must possess the competencies and the ability to choose the method of the appropriate for the educational-learning situations of these competencies determine the educational stage and the level and quality of students and the desired goal and nature of the course material. He proposed evolutionary ideas that would transform the learning process into meaningful learning and emphasize learning and retention of long-term retention by linking new learning experiences with previous experiences available to students. To achieve meaningful learning, it should be emphasized that teaching methods focus on linking the available information previous studies with students with new information (Mazen, 2007).

There are many strategies offered by science education literature that will achieve the objectives of teaching science and emphasize the scientific methods and helps the learner to discover information and build concepts and linked to the learner's life and interests and tendencies.

One of these strategies is conceptual mapping strategy. It is a modern and familiar strategy. It is used in many teaching materials and positions. Conceptual maps give meaning to concepts and deepen students' understanding of them in a unit of study, provide a link between the elements of the educational material and help the teacher to observe the progress of the students and their abilities in building new scientific knowledge, It is also important to provide students with the scientific concepts necessary for the process of learning. Hence, this study is to study the effect of the use of conceptual maps in the teaching of general sciences on students' acquisition of scientific concepts.

Statement of the Problem

The concept map is one of the modern methods that can be used to facilitate meaningful learning and is used as an organizer to give learner scientific concepts in a coherent way based on the knowledge of the learner and its connection to new learning. This method increases students' learning and as a result of the weakness or difficulty in acquiring scientific concepts in science And life as well as through the study of the studies that reported the strategy of learning conceptual maps as a strategy for the teaching of general science and its recommendations found that it recommended further studies in this area has been the study to detect the effectiveness The use of conceptual maps in the acquisition of fourth grade students of scientific concepts in science and life.

Questions of the Study

This study aims to answer the following question: Is there an effective strategy for conceptual maps in the treatment of the acquisition of scientific concepts in the science and life of students of the lower elementary stage in the education of northern Hebron?

Objectives of the Study

This study aimed to identify the effectiveness of conceptual maps in the acquisition of scientific concepts in the 4th grade students in science and life.

Significance of the Study

The importance of the study lies on the impact of the use of conceptual maps on the acquisition of scientific concepts in the general science subject of the fourth grade students. It is expected that it will provide information about the strategy of concept maps. Teaching and its impact on the acquisition of concepts, may help the science teacher as they provide a guide to the teacher includes lessons digestion and digestive system according to the steps of conceptual maps and useful to the importance of acquiring scientific concepts, especially in the basic stage because of the most important in the growth of learners' abilities.

Limitations of the study

This study was limited chronologically in the first semester of the academic year 2016-2017, Omar Ibn Abdel Aziz Secondary School for Girls in the Beit Einoun area of the North Hebron Municipality, 4th grade students at the Omar Bin Abdul Aziz Secondary School for Girls.

THEORETICAL FRAMEWORK AND PREVIOUS STUDIES

Theoretical Framework

Concept Mapping

It is one of the teaching strategies based on the activity of the learner, and it helps to increase the effectiveness and participation of learners in the educational situation and keep them away from boredom and monotony, and help them arrangement, organization and gradation and linking the elements of the subject and the interdependence of concepts It helps them to achieve proper understanding and correct learning so that they can distinguish between concepts when they learn a lot about them, which is called the successive discrimination, and also that the student understands the relations between the meta-concepts and the subtypes. This is expressed by complementary conciliation (Ali & et al., 2013).

Scientific Concepts

The scientific concept represents the second level of the pyramid of scientific knowledge. The formation of scientific concepts and their development among the learners is one of the objectives of teaching science in all the different stages of education. It is considered one of the basics of science and scientific knowledge which is useful in structuring the science and transferring the impact of learning. An appropriate teaching approach that includes the safety of the formation, and maintenance and retention of scientific concepts. There are many definitions of scientific concepts in educational literature, including:

Zietoun (2004) defined it as what the individual has of meaning and understanding related to a word (term) or phrase Or a specific process and the scientific concept is illustrated by the knowledge of its characteristics. Scientific concepts are defined as a

set of objects, symbols or special events that have been grouped together on the basis of common characteristics or characteristics that can be referred to by a particular symbol or name (Ali, 2007). Mazen (2007) pointed out that scientific concepts are defined as the mental image that consists of the individual from the sensory perceptions, that is, the mental construction resulting from the classification of facts by the learner makes the facts meaningful. Abdel-Hadi (2000) defined it as a mental perception to define a particular thing and to determine the properties and qualities of this thing.

Procedural definition: The researchers believe that the scientific concepts is a mental perception consists of the learner about a particular thing or fact by knowing the characteristics of that thing or the truth to make it meaningful.

Previous studies

Jaha (2012) aimed to find out the effect of using the concept map to teach the home economics course in the achievement and attitudes of the sixth grade pupils. The sample consisted of 70 girls from the sixth grade primary school in the primary school (135). The experimental curriculum was used and two of the three classes were chosen. The number of students in the control and experimental group was 35. The study results in the following results:

There were statistically significant differences at the level of significance between the mean of the experimental and control groups in the post-achievement test in favor of the experimental group. There are statistically significant differences at the level of significance between the mean of the experimental group and the control group in the post-application of the trend scale towards the material in favor of the experimental group. The study concluded that the concept map has a positive impact on the teaching of home economics, especially on the achievement and the direction towards the material. Therefore, the researcher recommends the importance of using this method in teaching the home economy and working to take it into account in the early stages of education. Sharif (2011) aimed to know the impact of the use of concept maps in achievement and adjustment of attention deficit in special education students. The researcher used experimental design with experimental and control groups. The sample of the research was limited to the fourth grade pupils in special education in the center of Nineveh governorate for the year 2010-2011. The sample consisted of (18) students divided into two groups, (8) students in the experimental group and (10) students in the control group, and the researcher prepared a test in the collection of (20) paragraph.

The results showed statistically significant differences between the mean of the experimental group for the benefit of the experimental group as well as the use of conceptual maps and the average control group, which studied the usual method of achievement. There was an adjustment in attention deficit for the benefit of the experimental group.

Studies similar to the case study in science.

Mustafa (2009) aimed to identify the reality of the creativity of mathematics in the Palestinian curriculum and the effectiveness of the use of conceptual maps and the development of creativity for seventh grade students. The researcher used the experimental method. The group consisted of a study of seventh grade students studying in public schools Qabatiya Education for the academic year 2008-2009, the number of students in the sample was 253 and the researcher used an achievement test as a

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measurement tool. The study found that there are statistically significant differences in the reality of mathematics creativity in the Palestinian curriculum and the effectiveness of the use of conceptual maps in developing this creativity for the seventh grade students in the Directorate of Qabatiya education between tribal and remote measurements and keeping the experimental group at all levels and the total grade.

Al-Khawalda (2004) aimed to answer the following questions: What is the impact of teaching in the way of the map in the achievement of students in the first university class teacher grade in the concepts of life sciences and health? What is the effect of teaching in the way of conceptual map in the scientific thinking of students of the first undergraduate degree is assigned a class teacher? The study population consisted of all the first-year students. A class teacher at Al-Bayt University in Jordan enrolled in the academic year 2003-2004. The number of students was 254 students studying in three divisions. The study sample included two divisions of the three divisions. (75) Students and the other officer and the number of students (69) students, and the researcher used the method of mapping concepts with the experimental group and the control group used the researcher method of traditional lecture

The study found that the average performance of the experimental group is higher than the average performance of the students in the control group on the post-achievement test in the concepts of life sciences and health for the experimental group. The average performance of the experimental group is higher than the average performance of the control group on the scale of the post-scientific thinking skills in favor of the experimental group. Odom and Kelly (2001) aimed to explore the effectiveness of concept maps, the learning cycle, and the method of mapping the concepts and presentation in increasing understanding of the concepts of propagation and osmosis. The study sample consisted of 108 secondary school students (grades 10 and 11) Kansas State. The results showed that the students who studied the method of combining the concept maps and the learning cycle were superior to the students who studied the presentation method in the conceptual understanding of the distribution and the ammuzia, while there were no significant differences between the students who studied according to the learning cycle and the rest of the student groups.

Cakir & et al. (2001) aimed to investigate the effect of the texts of the conceptual change and the concept map method in the understanding of the students of the tenth grade of basic concepts of acids and bases compared to the traditional method. The sample consisted of 110 students distributed in six divisions, (Conceptual change group, conceptual mapping group) and control group. All students were given the test of acids and tribal and post-tribal rules. The results of the study indicate that there are statistically significant differences in the students' understanding of the concepts of acids and bases due to the method of teaching and for the students who studied the method of conceptual change texts and the concept map method, and pointed to the absence of statistically significant differences due to gender.

METHODS AND PROCEDURES

Methods

The researchers used the hybrid approach, which depends on the quantitative method and the qualitative method of collecting data for the purpose of this study, where a pre-test was conducted and then fourth grade students were taught in the way of the concept map, then a post-exam was conducted and the results were obtained and compared.

Participants of the Study

The participants in the study are fourth grade students at the Omar Bin Abdul Aziz Secondary School for Girls in the Beit Einoun area north of Hebron and their teachers were chosen in a deliberate manner.

Instruments of the Study Three tools were built: interview sheets, observation and achievement test

Validity of the Instruments

To verify their validity, the tools were presented to a number of judges, PhD and Masters and BA in Education and General Science working in the field of teaching at universities and schools with experience in the academic field, to express their opinion on the appropriate tool and the affiliation of paragraphs and questions of the areas of study and choose the appropriate paragraphs and delete paragraphs, and the addition and modification of other paragraphs to achieve the purposes of the research in terms of wording and their clarity.

Procedures for applying the study

The study began on 17/9/2016 and took more than one month to end on 23-10-2016. The students were observed during the implementation of the strategy, as well as the science teacher who observed the interaction of the students and the change and interviewed with them about the extent of the change that occurred in the students to implement this strategy as well as the personal impression of it and then interview with the students where they were on the benefit of strategy map concepts and helped them acquire scientific concepts and organize them and influence them during the study and study and the exam. After that, some teachers who were interviewed.

The interview was about the impact of the strategy on female students during their classes in other subjects and about their views on the way maps of concepts. Then some parents were interviewed about the impact of the strategy on their daughters in science. Then the results were analyzed and recommendations given.

RESULTS

The students were given a test before and after the therapeutic program with greatest score (25) to examine their acquisition of scientific concepts in the traditional way of teaching and identify the students who will participate in the study; the result for students are shown in table (1):

Table (1):

| Student | Pre-test score | Post-test score |
|---------|----------------|-----------------|
| First | 9 | 15 |

| | | |
|--------------------|------|------|
| Second | 11 | 17 |
| Third | 13 | 20 |
| Fourth | 10 | 19 |
| Fifth | 7 | 15 |
| Sixth | 9 | 17 |
| Seventh | 5 | 13 |
| eighth | 11 | 16 |
| Arithmetic Average | 9.37 | 16.5 |

Table (1) shows that the arithmetic average of the pre-test 10.5 and the post-test 16.9. The above table shows that the first student's score increased from (9) to (15) that is, it increased (6) marks, the second student whose mark in the tribal test (11) has also increased (6) marks also to become (17), the third student who got the mark (13) in the tribal rose (7) marks to become (20) Which indicated that it is the first time you get such a mark, The fourth student who got (10) in the tribal has increased (9) marks in the past to become (19), the fifth student, which rose (8) marks in the dimension has been to me (7) and became (15), the sixth student whose mark was (9) and became (17) in the dimension to rise (8) marks, the seventh student has risen from (5) in the tribal to (13) in the distance by (8) marks And the eighth student whose mark was (11) and became (16) with a difference of (5) marks.

DISCUSSION

The first interview of the students about their experience of science and the difficulties they face where the results were as follows: First student: "It is difficult for understanding science ", The second student: "I am feel very difficult to learn and I am worry when study on the exam, because there is a lot of information and a link to it.", Third student: "Because of the spirit of the house, studying all the materials and the science of the last thing, because I do not much love to study it.", The fourth student: "I am not share in the class because of teacher ignores.", The fifth student: "I am not care in the activities of science because I have not a positive attitudes toward", The sixth student: " I am feel not fair in the class.", The seventh student: " I am afraid of the science exam because it is difficult.", The eighth student "I don't like the new way that we have been told about."

The results of the interview of the students after the application of the conceptual mapping program were as follows:

The first student: "I am understand the lesson more and if I forgot I returned back to the map that we did in the class and I remember quickly.", The second student: "When I was studying on the exam, I was hard to find but now I could easily study it from the book.", The third student: "I am quickly study and complete my studies on science as I was careful and concentrated in the lesson and revealed the book in which everything is arranged.", The fourth student said: "I love the share of science, I love you. I was sharing and I saw the cards on the map and I wrote on the board.", The fifth student: "I requisite from my brother, to bring Cartoon and work on the map", The sixth student: "When I started to participate, I was exposed to the board and I was appalled and I felt my current sense of being.", The seventh student: "I am not worried from the exam when you studied it from the maps that we have made and it easy", Eighth student: "I

have a positive attitudes toward science , the map is easy because the information is arranged and with the understanding of it."

Discussion of the views of the students in the first interview:

When the first student said: "I do not understand much science with a difficult sense," she expressed difficulty in understanding science and its sense of difficulty, The second student, who said: "I feel difficult for studying the exam and linking it," expressed the difficulty of study on the test and the difficulty of discrimination in it may be the result of the large number of concepts and similar in the word or function or otherwise. The third student who said: "I am not like studying science," where she expressed a lack of love for the material and this indicates that there is no good direction towards the material, which may result from the routine used or not care about the teacher or lack of interest in the article. The fourth student said that she did not participate in the class which is caused by marginalization by the teacher or not interested parents to teach and prepare for it. The fifth student who said: "I am not take care about science activities and preparation?" The lack of orientation towards the material and its activities, perhaps not to involve them or to motivate them to study and preparation, expressed their lack of interest in the activities required for science as well as their lack of interest in preparation. In the activities of science or the lack of interest of parents in teaching and preparation of lessons, which makes the direction of science is weak.

The sixth student who said, "I am she does not participate in the lesson or to encourage her to study, the student's sense of diligence is the result of involvement and motivation or praise for participation.

The seven-year-old, who expressed her fear of the test and felt her difficulty by saying "afraid of the exam because it is difficult" may be the result of not having a good memory of it or not understanding it well.

As for the eighth student who expressed her unwillingness in the new method, after hearing her at first before applying, perhaps because she understands it well only after the application and we will see her opinion later after the appendage and how she changed it

IMPLICATION TO RESEARCH

Through the reactions of the students and how to express them in simple words about the extent of understanding that has happened to them, indicating the satisfaction with this therapeutic program, which was followed in teaching and it shows that:

When the first student said, "I understand the lesson more," and "If I forget, I went back to the map to make it and I remember." She emphasized that this program increased her understanding of the program by setting goals for the lesson and linking information to each other in an organized and sequential manner, making her understanding better. The result of the traditional method This is in line with the results of the study of Cakir, et al (2002).

The second student, who expressed her satisfaction with the program and the concept map, said, "I was very hard to study on the exam, but it was easy for me to study the book." Exam tickets became better and easier because of their understanding of the material that was better than before and the arrangement of information and concepts.

As for the third student who said, "I have studied and finished my studies on science quickly as I was aware of and focused on the lesson." I expressed the speed and ease of

study because of the attention and concentration during the lesson, which in turn achieves understanding and acquisition of information and concepts. In addition to gaining the concepts of focus and attention, With Sharif's (2011) study in achieving attention.

The fourth student, who said "Habit Science share, has expressed that she likes the article as a result of her participation in the share and encourage study, this indicates that the new teaching method created a good direction towards the material and this is consistent with the study of Jaha (2012).

As for the fifth student who said: "I have become my brother, answer me a carton and work on a map." She expressed her interest in the material and preparation for it as a result of encouragement.

The sixth student, who expressed her sense of diligence as a result of her understanding of the material and her happiness as a result of her involvement in the process of education, saying: "I was simplified when I became involved and I felt a sense of life."

And the seventh student, who said: "What eased the exam, as I studied it from the maps to make it easy and easy, it expressed the disappearance of fear that was felt when the test and confidence that she studied it well and reducing fear and anxiety.

And the eighth and final student expressed her love for the new method of teaching, that is, it has a good direction towards the way and thus towards the material, and this is consistent with the study of Jaha (2012), and talked about it is working on the order of information which increases understanding of what has been agreed with the study Cakir and his colleagues (2001). "The way the map is made is easy and sweet because the information is arranged and with a sense of humor."

CONCLUSION

These results were all achieved with the students, which emphasize the effectiveness and positive impact of the treatment program conceptual maps, which worked to increase understanding and acquisition of concepts of students better than the traditional way, which was agreed with the Odom and Kelly Study (2001).

It also involved students and their activities, which gave them a positive feeling and a direction towards matter as in the outcome of the Jaha study (2012).

The effectiveness of concept maps has been instrumental in addressing the lack of concentration during the classroom as well as addressing the frequency and anxiety of participation and interaction in the classroom as the concept map method focuses on engaging the learner in the learning process. This was agreed with Sharif's study (2011) 1990).

FUTURE RESEARCH

This method facilitated the process of examination for the students. They are the organizer of the information and summarize the lesson in the study as well as increased their motivation towards the article, The effectiveness of this method has enabled students to retain and consolidate information. The presentation and engagement of students during the lesson and the linking of learning to practical life makes learning meaningful and thus better understanding the traditional way of presenting concepts by raising questions, practical activities, discussion and using appropriate teaching aids for

students. and this increased their activity and participation in the classroom, and the educational atmosphere in the application of students became active

Depend on the above and for these reasons it is important to implement the conceptual maps in education process and use it on other different fields of science.

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