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**The Effectiveness of A Suggested Strategy Based On Cognitive Maps
in Modifying The Alternative Conceptions of Some Scientific
Concepts Among Elementary school pupils .**

A thesis

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(Science Curricula & Teaching Methodology)**

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*** Statement of The problem :-**

The problem of the present study is exemplified in that there are some alternative conceptions of some scientific concepts among elementary school pupils, the thing which is considered an obstacle in learning science .

- To face this problem, the present study will attempt to answer the following questions :-

1. What are the alternative conceptions of some scientific concepts among elementary school pupils ?
2. What is the form of the suggested strategy in modifying the alternative conceptions of some scientific concepts among elementary school pupils ?
3. What is the effectiveness of the suggested strategy in modifying the alternative concepts of some scientific concepts among elementary school pupils ?

*** Aims and significance of the study :-**

- 1- Preparing a diagnostic test of alternative conceptions of some scientific concepts, the thing which may be useful for researchers in the field in preparing similar tests .
- 2- Preparing the teacher's guide for illustrating how the suggested strategy can be applied, the thing which science teachers can make use of in modifying conceptions among their pupils .

- 3- Preparing a suggested strategy in modifying the alternative conceptions of some scientific concepts, the thing which those who are responsible for teacher preparation can make use of in implying it in teacher preparation programs .

*** Limitations of the study :-**

This study will be limited to the following :-

- 1- Some kinds of cognitive maps which suits the nature of the content and elementary school pupils' level .
- 2- The alternative conceptions related to the concepts of "the structure of the living organism" unit . This unit includes many related concepts which the pilot study emphasized that there are alternative conceptions among pupils in this unit – gist one of the first term units .
- 3- A group of sixth year elementary school pupils, as it is the end of the elementary stage and at the end of this stage, it is necessary to make sure that pupils have correct scientific conception, the thing which is the base of subsequent learning .

*** Procedures of The study :-**

The following procedures will be followed :-

- 1) Identifying the alternative conceptions of some scientific concepts among elementary school pupils through :-

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- a- Review of theoretical literature related to alternative conceptions (its definition – nature – modification strategies – diagnosis techniques).
 - (b) Preparing a diagnostic test (Prepared by the researcher) in the concepts of " the structure of the living organism " unit and applying it on a large group of sixth year elementary school pupils.
 - (c) Preparing a list of alternative conceptions, submitting it to a jury and modifying and setting it in its final form according to their suggestions.
- (2) Preparing the suggested strategy through:
- (a) Review of theoretical literature related to cognitive maps (its definition – kinds – characteristics)
 - (b) Identifying the bases and principles upon which this strategy will be built in the light of the theoretical and procedural identification of some kinds of cognitive maps, the nature of the content, learners, maturity level and the nature of alternative conceptions that will be revealed.
 - (c) preparing media, tools and equipments required for doing activities and experiments involved in " the structure of the living organism" unit.
- (3) Identifying the effectiveness of the suggested strategy in modifying the alternative conceptions of some scientific concepts among elementary school pupils through:-

- (a) Preparing the teacher's guide for implementing the suggested strategy.
- (b) Selecting a group of sixth year elementary school pupils, and dividing them into two groups: the experimental group and the control group.
- (c) Applying the diagnostic test on the two groups before teaching.
- (d) Teaching to the experimental group using the suggested strategy and to the control group using the regular method.
- (e) Applying the diagnostic test on the two groups after teaching.
- (f) Analyzing and interpreting results.
- (g) Recommendations and suggestions.

Terms of The Study:-

(1) Cognitive Maps:

Ackerman et. al (1991 : 1) defined cognitive maps as " A net of ideas that have shared connections in an assigned topic".

Venable (2000 : 1) defined it as " A technique for connecting aims, strategies, outputs and specific activities".

The researcher defined cognitive maps in the present study as " A diagram which represents the cognitive structures in a topic which the teacher builds with students in the light of their previous background and experience, and

information or ideas connect with each others with ties and connections. These maps are characterized by their variety and the fewness of limits which hinder their building.

(2) Strategy :-

El-Lakany and El-Gamal (1999) defined strategy as : " All procedures and practices that the teacher follows inside the class to reach outputs in the light of the objectives that he / she has assigned and include some methods, activities and evaluation techniques that help achieve these objectives.

The researcher defined as " A group of teaching procedures followed by the teacher and the learner in the teaching situation for modifying alternative conceptions of some scientific concepts. It includes a group of activities, some cognitive maps and evaluation techniques that help achieve objectives".

(3) Alternative Conceptions :-

Atifa and Abdel-Hameed (1994 : 10) defined alternative conceptions as : " being the result of imaginative efforts done by pupils for explaining events or abstract objects that are common in their environment and consistent with the pupils, experiences although they are partial interpretations and have limited range.

The researcher defined alternative conceptions in the present study as : " All the knowledge and ideas that the learner possesses in his cognitive structure about concepts related to " the structure of living organisms" unit and that are not completely consistent with correct scientific knowledge".

Example :

The trunk is the green part that grows over the surface of the ground. But there are some other kinds of trunks under the ground.

Hypotheses of the study:

There is difference in the static indication between the moderate degrees in practice of narrow and near for choosing it for near practical.

Results of the study:

This study reaches to these results:

- There is difference in the static indication between the moderate degrees in practice of narrow and near for choosing it for near practical.
- The suggested strategy had great effect in the changing the alternative perspectives for the scientific definitions.

Recommendations of the study:

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In the results that achieved to it the current study so, the researcher suggests these recommendations:

- 1- concern in knowing the alternative perspectives for the scientific definition before began in teaching .
- 2- assist the student of learning and this is through basing model and strategy.
- 3- Training the teachers who will teach on using strategies and based models in teaching
- 4- Concern with preparing the diagnosis exams for the alternative prospective for the students in the different levels in all studying levels.
- 5- Develop the science subjects in the different educational levels in case of the alternative prospective which is linked with scientific definition which is present in this level.
- 6- Training the teachers before services on using based strategies in changing the alternative prospective for students and this is through subjects of science teaching methods faculty.

Suggestions of study:

In the case of the results that achieved in the current study and its limit so the researcher suggest many studies, which is compleing the current study, and from it:

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- 1- Study the efficiency of the suggested study in the different studying levels.
- 2- Knowing the alternative perspective for the science teachers than the scientific definitions and its effect on the perspective of the students.
- 3- Knowing the alternative perspective for the scientific definitions which is linked with the unit of basing the human being in the different studying levels .
- 4- Comparing between the suggested strategy and any other teaching strategy in amending the alternative perspective for the scientific definitions.
- 5- Study the factors that effect on having alternative perspective for the scientific definitions and how to resolve this factors.
- 6- Study the efficiency of organizing the contents of sciences books according to the basing models in amending the alternative perspective for the scientific definitions .