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The effect of the preferences pyramid strategy on providing second-grade students with deep understanding skills

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Abstract---The research aims to find out the effect of the priority pyramid strategy on providing second-grade intermediate students with deep understanding skills. In order to verify the objective of the research, the researcher developed a null hypothesis regarding the variables of her research. The effectiveness of the priority pyramid strategy in providing second-grade intermediate students with deep understanding skills compared to the usual method. The possibility of applying the priority pyramid strategy in teaching biology to second-grade intermediate students. Adoption of the pyramid of preference strategy in teaching that makes female students more interesting and interesting for the lesson and interacting with the study material, as it has created an enjoyable cooperative and interactive study environment.

Keyword---pyramid strategy, providing second-grade, students, deep understanding skills.

Summary of the research

The research aims to find out the effect of the priority pyramid strategy on providing second-grade intermediate students with deep understanding skills. In order to verify the objective of the research, the researcher developed a null hypothesis regarding the variables of her research. The research sample was intentionally selected from second-grade students in the middle school in Al-Makassed Intermediate School for Girls in the city of Mosul for the academic year

(2021-2022), and a group of (80) students divided into two groups of (40) students for each experimental group and the other control group. The equivalence process was conducted between the two research groups in the variables (chronological age in months, educational level of the parents, general average, intelligence quotient). The experimental group was taught according to the priority pyramid strategy, while the control group was taught according to the usual method.

The researcher prepared the necessary research requirements, represented in defining the scientific material, formulating the behavioral objectives of the specific subject, and preparing teaching plans for teaching the experimental and control groups, according to the strategy of the pyramid of preference and the usual method. 21) A test paragraph for (4) main dimensions, namely, generative thinking with its four skills (hypotheses, prediction in the light of data, fluency, flexibility) as well as three skills: (interpretations, decision-making, asking questions), and three paragraphs are allocated for each skill. It measures the deep understanding of the students, and its validity and reliability have been confirmed. Its stability reached (0.83) and the discriminatory power was used for it.

The experiment was applied starting from the first semester of the academic year (2021-2022 AD), where the experiment began with teaching the experimental and control groups on (14/11/2021) and continued for an entire semester at a rate of (2) lessons per week, so that the total of the total lessons is (18) for each A group, and after the completion of the experiment, the tool was applied remotely (deep understanding test) on (1/22/2022), and then the data was collected and analyzed statistically using the t-test for two independent samples. In light of the results of the research, the researcher concluded the effectiveness of the priority pyramid strategy and its positive impact on providing second-grade students with average deep understanding skills. The pyramid of preference strategy, as it enhances their deep understanding skills, as suggested by a number of future research in the field of teaching methods.

Problem of the Research

Biology is an essential subject in the natural sciences system, and there have been quantitative and qualitative changes in it during the past few years, including drawings, shapes, questions, and educational activities. Given the importance of biological concepts and the need to develop them among our students as the most prominent goals of teaching biology for all academic levels, students face difficulties in absorbing this quantity. From the biological concepts, this reality requires great efforts from teachers in providing students with deep understanding skills, and here the need arises to use modern teaching methods and methods that provide the content of the scientific material in a manner commensurate with the students' mental abilities and characteristics, taking into account individual differences, and making the teaching and learning process more effective and positive.

As you find that most of the female teachers take themselves as the center of the education process without activating the role of female students and making them the main focus in the educational process. Based on the foregoing dimensions of

the problem, the researcher decided to implement a modern strategy that fits the current educational reality in our schools and takes care of the educational needs of female students. Therefore, she chose the priority pyramid strategy, and the problem of the current research was to answer the following question:

What is the effect of the priority pyramid strategy on providing second-grade intermediate students with deep understanding skills?

Research importance

Our current era in which nations rise and advance and enhance their development in the field of natural sciences; As its various applications have clearly affected the increase of knowledge in a large quantity and quality in all fields; As the world was going through a revolution of information in the branches of science, science and its applications became associated with contemporary society. (H.E., 2018: 29). Modern scientific education focuses its attention on the higher levels of thinking in a way that is consistent with contemporary life. (Tinker, 2003: 112). Therefore, modern education gave great importance to teaching methods, and considered them as the cornerstone of the educational process, because of their great importance in achieving its goals and translating the goals of the curriculum into concepts, trends and tendencies that the school aspires to achieve and have a clear impact on students' attitudes and attitudes towards the subject and towards their teachers; Therefore, it was necessary to devise new strategies and methods of teaching appropriate to the development taking place in the objectives and contents of the curricula. Therefore, educators called for the adoption of modern strategies, methods and models that take care of the student as the focus of the educational process. (Razuki et al.: 2005: 7)

The priority pyramid strategy is one of the strategies based on team and cooperative work among students, and highlights the importance of this strategy as it aims to train students to work with others, and develop thinking and decision-making skills, and implements this strategy at any time the teacher deems appropriate. (Ambosaidi and Huda, 2016: 104). Since the constant strategy of the priority pyramid is one of the active learning strategies, and the latter is one of the contemporary educational trends that have a great positive impact on the learning process in the classroom, which calls for the positive role of the learner in the educational situation; The learner is described in active learning as an active participant in the educational process, as the learners perform several activities related to the material being learned, such as asking questions, imposing hypotheses, participating in discussions, research, reading, writing and experimenting. As for the component, the facilitator is the teacher in active learning. A guide to learning. (Al-Turki, 2013: 253).

The educators explained that the priority pyramid is an effective means through which the teacher can assess the student's ability to comprehend and move away from the traditional situation, as the student reads all the phrases and then analyzes them well in order to choose the most important cards and rearrange them in the pyramid according to their importance so as to help equip the student So that he is able to integrate more into the various active learning strategies and

help him connect, understand and analyze. (Shaheen, 2010: 104). When talking about the necessity of the student's ability to understand and analyze, the importance of deep understanding, which is deep learning represented by deep understanding, emerges. The Understanding Project Understanding Scientific was concerned with developing a theory of scientific understanding that clarifies the foundations of what scientific understanding is and how it can be achieved and to develop a model for the dynamics of understanding with the aim of measuring the extent and strength of understanding. Modern global projects have also agreed with the idea of deepening knowledge and diversifying tasks and activities for learners. Instead of many sub-topics that distract the learner's mind and do not help understanding and depth, and these trends include TIMSS 2008 (NRC 2012) (AAAS 2012) (NGSS 2013), as these projects recommended the need to search for strategies that contribute to the acquisition of scientific knowledge in a functional way, Contributing to deepening understanding, and developing many thinking skills, which facilitates the process of teaching deeply, efficiently and effectively (Ford, 2015, 143).

The aim of the research

The research aims to find out the effect of the priority pyramid strategy on providing second-grade intermediate students with deep understanding skills.

The research hypothesis

To achieve the aim of the research, the following hypothesis was formulated: There is no statistically significant difference at the level of significance (0.05) between the average degrees of acquisition of deep understanding skills for the students of the experimental group who studied according to the priority pyramid strategy, and the students of the control group who studied according to the usual method.

Limitation of the Research

The current research is determined by the following:

- Female students of the second intermediate grade in the middle and secondary day schools for girls in the city of Mosul for the academic year (2021-2022).
- The first semester of the academic year (2021-2022) AD.
- The scientific subject, which includes: The four chapters of the science book to be taught to second-grade intermediate students (Daoud and others, 2017 first edition).

Definition of Basic terms

Strategic Priority Hierarchy

Al-Qusair (2018): an educational-learning activity carried out by students collectively with their colleagues, in which the teacher asks a question and the students identify the best ideas related to the question posed and arrange them in a hierarchical form, as the organized ideas in the hierarchical form are graded

from the most related to the question and are placed at the top of the pyramid To the least related to the question, and the base of the pyramid takes a place for it, and the students must justify the way these ideas are organized.

Procedural definition of the advantage pyramid strategy

It is a set of procedures that the researcher follows to teach the experimental group of the research sample in science collectively with each other. In the hierarchical form, from the most related to the question at the top of the pyramid to the least related to the question, and the base of the pyramid takes a place for it, and the students must explain the way these ideas are arranged.

Deep Understanding

Al-Jahouri (2012): A mental process that goes beyond superficial knowledge of science and refers to probing the student's thinking in integrated and multi-dimensional forms within his conceptual framework. 2012: 28).

Procedural definition to gain a deep understanding

It is a mental ability that the second-grade student performs in the average, in which she uses the skills of generative thinking, which is (setting hypotheses in the light of the data and using fluency and flexibility in ideas) and making a decision regarding a problem that she faces and interpreting and asking questions, and it is measured by the degree that the student obtains by answering the deep understanding test that Prepared by the researcher for this purpose.

Theoretical background

Active learning: The term active learning appeared in the last decade of the twentieth century, and the interest in it increased dramatically in the twenty-first century, as one of the contemporary educational and psychological trends in teaching and learning and the quality of its outcomes. The term active learning refers to the process in which learners are active in the learning process through reading, writing, thinking, discussion, participating in problem solving, and the ability to analyze, construct and evaluate. Until recently, there was no common definition of active learning. There are those who believe that all learning methods are active, while in most cases they depend on lecture and delivery. (Khalifa, Wahdan, 2014: 9)

Principles of active learning

Bonk (2006) put forward ten principles of active learning, which are summarized in:

- Considering the learner an independent person on the one hand, and an inquirer of matters on the other.
- Focus on students' useful and relevant interests.
- Linking active learning situations with the students' prior knowledge.

- There is an element of choice and an element of challenge.
- The teacher is considered a facilitator of the learning process and a participant in the learner. (Khairy, 2018: 28)

Preference pyramid strategy

It is one of the strategies that is based on team and cooperative work among students, and it is one of the strategies based on active learning (Ambo Saidi and Al-Hosania, 2016: 104). The researcher will address it in some detail; Because it is one of the important variables of her research and she tried her best to search for sources, but she is few in this aspect. He noted (Ambo Saidi and Al-Hosania, 2016) that the idea of the strategy is based on the students identifying the points that are more closely related to the main question put to them. In other words, defining the preference of ideas in relation to the question put to them, while specifying justifications for that; The student organizes the ideas in a hierarchical way, presented by the teacher or designed by the students themselves in a graphic or stereoscopic form. Students place the ideas most related to the question at the top of the pyramid, then the least related, and then the most distant from the question at the base of the pyramid. Students must provide explanations for the reason for their organization of ideas in the pyramid.(Ambo Saidi and Al Hosania, 2016: 104)

The purpose of using the strategy

It aims to train students to work with others, and develop thinking and decision-making skills. This strategy is implemented at any time the teacher deems appropriate.

Objectives of the strategy

The priority pyramid strategy, as indicated by (Fadil and Abdel-Hadi, 2019: 1580), aims to achieve the following:

- It enhances attention and increases students' readiness and orientation.
- It reduces learners' dependency on traditional teaching methods.
- It develops the learners' sense of responsibility towards themselves and towards others.
- It makes the learner more prepared for the learning process.
- The learner acquires the desired knowledge, skills and attitudes.
- Encouraging the learner to go through educational and realistic experiences.
- Encouraging the learner to ask questions and critical reading.

Deep understanding and its dimensions

Deep understanding is the product of deep learning that is based on the transfer of knowledge to new problem-solving situations with knowledge of what? How? Why ? when! Apply this knowledge. (Deng & Dong Yu, 2014:87). According to the sciences of knowledge, the term “deep understanding” generally refers to how concepts are represented in the mind of the learner, and more importantly, how

these concepts are related to each other, and representations are generally presented in the form of imaginary images in simple cases and forms with models for more abstract situations. Deep understanding means that the concepts are well represented. and link. (Zirbel, 2006:3)

The importance of deep understanding

(Zwain, 2018) explained the importance of deep understanding in the following points:

- The link between causes and effects, as it requires awareness of the processes of planning, exploration, monitoring and control that give great opportunities between operations, strategies, ideas and final results.
- Focusing on meaningful cognitive patterns, so that the resulting knowledge becomes more relevant and likely to be remembered, retrieved, used and applied in new areas.
- Achieving learning in meaning, and linking new knowledge with previous knowledge within a conceptual framework of the existing knowledge of the learner's cognitive structure, which leads to the coherence of ideas, the ability to compare and distinguish, and the understanding of contradictory ideas.
- Employing mental effort and the ability to achieve (Zwain, 2018: 159)

Deep understanding skills

The Training and Learning Development Institute (Teddi, 2003) referred to the educational dimensions of deep understanding, which were the growth and development of responses related to tasks, and the long-term survival of the learning effect. The ability to apply responses in new situations, to generate new meanings and models, to promote independence in learning and, finally, to be oriented towards self-learning. Although researchers disagree about the skills of deep understanding, the following skills are almost in agreement, which are the skills of generative thinking: (imposing hypotheses, forecasting in the light of data, fluency, flexibility), the nature of interpretations, decision-making, and asking questions. (Hossam El-Din, Ramadan, 2007 pg. 139)

Table 1
Studies dealing with Preferences pyramid strategy

Results	Statistical tools and tools	Study sample and grade level	Study variables	The aim of the study	The name of the researcher, year and place of study
The effectiveness of the priority pyramid strategy in the achievement	An achievement test consisting of (40) objective	Fourth grade science Biology 60 students	Preference pyramid. Deductive thinking skills.	The effectiveness of the priority pyramid strategy in	Al qaseer 2018 (Iraq)

of biology and inferential thinking among fourth-grade students	and essay items 2. A deductive reasoning test consisting of (40) items Statistical bag (pass-10) and (Microsoft Excel)		collection	the achievement of biology and inferential thinking skills for fourth-grade students of science	
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Table 2
Studies dealing with deep understanding

Results	Statistical tools and tools	Study sample and grade level	Study variables	The aim of the study	Name of the researcher, year and place of study
The effectiveness of teaching the two academic units "The Periodicity of the Elements and Their Properties" and "The Atmosphere and the Protection of Planet Earth." There was a statistically significant difference between the mean scores of the experimental group students and the scores of the	1. Deep Comprehension 2. Test Learning Motivation Scale 3. Statistical means 4. T-test for two independent samples	Second year middle school science subject 90 Female student and Male student	round house plan strategy Deep understanding and realism of science learning	The effect of the circular house plan strategy in developing the deep understanding and realism of science learning among second year middle school students	Tantawi 2021 (Egypt)

control group students in the post application, and this difference was in favor of the experimental group.					
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Research Methodology and Procedures

First: Experimental design

Experimental design is (a blueprint and work program for how the experiment will be carried out). (Abd al-Rahman and Adnan, 2007: 487). Based on the nature of the research, the researcher used the experimental design with two equal groups with two tests, pre and post tests, which includes two equal groups in a number of variables, one of which is taken as an experimental group studying science subject according to the strategy of the pyramid of preference, while the second group is taken as a control group that studies science according to the usual method.

Second: The research community and its sample

Research community

The current research community, which consists of all female students of the second intermediate grade for the academic year (2021-2022), whose number is (15,358) female students from middle and secondary schools for girls in the city of Mosul, was determined according to the book facilitating the researcher's task Annex (1) Distributors to the schools of Nineveh Governorate, and their number reached (68) schools.

- Choosing the research sample: The researcher intentionally chose the school, which is (Al-Maqasid school), for the following reasons:
- The school administration's readiness to cooperate with the researcher and provide the appropriate facilities for conducting the experiment
- Introducing the school of science within the school, in cooperation with the researcher
- The school includes a classroom prepared for conducting the experiment, and the researcher arranged it to suit the implementation of the priority pyramid strategy, and the control group was also studied there.
- The school contains (6) classrooms, which allows the researcher to randomly choose the two research groups
- Most of the female students are from one geographical area, which ensures convergence in the cultural and social level of the sample members. The researcher randomly selected the two divisions (D, E) using a simple random lottery method from a total of (6) study divisions; Division (D) was

chosen as an experimental group and Division (E) as a control group, and the study sample consisted of (86) female students before exclusion. earlier than last year.

View and discuss results

This topic includes a presentation of the research results reached by the researcher in the light of the research objective and hypotheses and the interpretation and discussion of the results as follows:

Results related to the research hypothesis

It states that "there is no statistically significant difference at the significance level (0.05) between the average degrees of acquisition of deep understanding skills for the students of the experimental group who studied according to the strategy of the pyramid of preference, and the students of the control group who studied according to the usual method." To verify this hypothesis, the researcher extracted the arithmetic mean and standard deviation of the degrees of acquisition of deep understanding skills for the experimental and control groups. Then a t-test was applied to two independent samples, and the results were included in Table (3).

Table 3

The results of the t-test for the mean and standard deviation for the experimental and control groups to acquire deep understanding skills

Indication level	T value		Standard deviation	SMA	N.O of students	The test
	Tabular	Calculated				
Significant	(1.991) (78)	8.033	6.922	59.388	40	Controller
			8.544	73.355	40	Experimental

By noting the previous table, we find that the calculated (t) value amounted to (8.033), which is greater than the tabular (t) value of (1.991) at the level of significance (0.05) and the degree of freedom (78), and this indicates the existence of a statistically significant difference in the acquisition of deep understanding skills between The researcher attributes this result to the effectiveness of the priority pyramid strategy, which would help in providing students with a degree of intellectual and cognitive skills and drawing their minds with ease and in an entertaining way. The hierarchy of preference is also an effective and easy way through which the school can assess the students' ability to comprehend, understand, analyze and link different synonyms.

The students read all the phrases and then analyze them well in order to choose some cards of the greatest importance and then link them to the top of the pyramid, followed by organizing and arranging the rest of these cards according to their degree of importance, and this has a positive impact in building deep understanding skills and this leads to a broader and deeper understanding of the lesson. The hierarchy of preference provides students with a classroom

environment full of educational activity; It develops mental abilities and generates ideas that connect students to fluency and flexibility skills and to predict what is appropriate to solve problems. It also helps to raise the degree of focus and attention of students and deep thinking in order to link the main question with the card most relevant to it. The students are the focus of the educational process and give them an opportunity to use mental practices to solve the problems they face through scientific interpretation and take appropriate decisions.

And It is an opportunity to reduce the teaching dependency on the school, as the female students here are participants and interact, and give them a sense of responsibility; Because she is the one who determines the shape of the pyramid and also organizes her own information and ideas, and the school discusses the results it has reached, and thus the strategy helps the students to conclude and make correct assumptions to solve problems and reach a deeper understanding. The results of this study are in agreement with the study (Hamada, 2020) and the study (Al-Qusayr, 2017) (and Sabah study, 2016).

Conclusions

In light of the results of the current research, the researcher concluded the following:

- The effectiveness of the priority pyramid strategy in providing second-grade intermediate students with deep understanding skills compared to the usual method.
- The possibility of applying the priority pyramid strategy in teaching biology to second-grade intermediate students.
- Adoption of the pyramid of preference strategy in teaching that makes female students more interesting and interesting for the lesson and interacting with the study material, as it has created an enjoyable cooperative and interactive study environment.

Recommendations

Based on the foregoing, the researcher's guardian mentioned the following:

- Encouraging teachers of biology to use the pyramid of preference strategy in teaching in general and in the biology lesson in particular.
- Establishing teaching courses for middle school biology teachers from the Preparation and Training Unit in the General Directorate of Nineveh Education to train them on the use of modern strategies, including the priority pyramid strategy.
- The science book for the second intermediate grade includes activities that provoke and develop deep understanding skills.

Propositions

To complement the current research, the researcher suggests conducting the following future studies:

- Conducting comparative studies between the priority pyramid strategy and other strategies in acquiring deep understanding skills.
- Designing a training program based on the priority pyramid strategy for male and female science teachers and its impact on providing students with deep understanding skills and their motivation towards learning.

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