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THE PREFERRED LEARNING STYLES ACCORDING TO THE VARK MODEL AMONG FIFTH GRADE PRIMARY STUDENTS AND THEIR EFFECT ON THEIR ACQUISITION OF SCIENTIFIC CONCEPTS

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ABSTRACT

The aim of this research is to identify the preferred learning styles according to the VARK model of fifth grade primary students and their effect on their acquisition of scientific concepts, by verifying the following null hypothesis:

There are no statistically significant differences at a level of significance (0.5) between the average scores of the students of the experimental group and those studied according to the (VARK) model for learning styles, and the average scores of the pupils of the control group who are studying according to the traditional method of examining the acquisition of scientific concepts and for the purpose of verifying the goal and testing The validity of this hypothesis has adopted two approaches:

The first curriculum: the descriptive curriculum, where the researchers conducted an exploratory experiment that included a group of supervisors and teachers of the fifth grade science subject, whose number reached (22), to determine the patterns preferred by the fifth grade primary students in their study of the science subject according to the patterns specified in the VARK model and confirmed the four patterns, respectively (Visual learning pattern, auditory learning pattern, reading / writing learning pattern, and practical / motor learning pattern), and a questionnaire to ensure that there is a problem that exists till now.

The second approach: the experimental approach, as a continuation of the procedures, we may see an experiment which is conducted to identify the effect of the preferred patterns in acquiring scientific concepts. It took an entire semester by adopting the experimental design with two experimental and control groups, one of them controlling the other partially and those with a pre and post- test to acquire scientific concepts of the science subject, the current research community was determined Fifth grade primary school students in the Adhamiya primary school and Abu Hanifa al-Nu'man primary school.

They were intentionally chosen, for the academic year (2019-2020), the number of students in the two schools reached 70 students, where the first school was chosen randomly as an experimental group that studied according to the preferred learning styles according to the VARK model and the other (A) control group studied according to the traditional method, and after excluding female pupils who had failed, the number of female students in the two groups reached about (59) students by (29) pupils representing the experimental group and (30) pupils representing the control group, the death of students of the two groups in the variables (intelligence, previous achievement, Chronological age in months, pretest for the acquisition of scientific concepts).

As well on controlling other variables for the sake of the internal and external safety of the research, the researcher studied the students of the research sample in the two groups on their own. The scientific material was defined in the first three units (classification and diversity, the human body and health, the subject) from the science book for the fifth grade of primary school, 4th ed., Ministry of Education for the year 2019. The behavioral objectives of the components of the acquisition of the scientific concept (definition, distinction, application) were identified (231) behavioral purposes.

In order to test the validity of the null hypothesis, the two researchers prepared the scientific concepts acquisition test consisting of (48) paragraphs of the multiple test type representing the components of concept acquisition by (3) paragraphs for each main concept of (16) concepts. We obtain an average agreement ranging (87% -100%) according to Cooper's formula for agreement.

The test was applied to two survey samples other than the main research sample, the first numbered about (20) students, the purpose of which was to know the extent of clarity of the test items and determine the time to answer them As for the second, the number of students reached about (100) students, and the purpose of which was to analyze the test items statistically, as the psychometric properties of the test were extracted (difficulty coefficient, ease, distinction strength, and the effectiveness of false alternatives). The experiment was conducted in the first semester of the academic year (2019-2020) AD, and after the end of the experiment.

A post-acquisition test was applied; the data were statistically treated using the t-test for two samples. Two independent individuals are not equal in size, and the research reached the following results:

* The preferred learning styles according to the VARK model have an effect on the acquisition of scientific concepts of the science subject for the experimental group to a large degree and the size of its effect (0.16) compared to the standard.

First: Learn about the Research 1-1: Problem of the research

Several local studies have found that teachers today are still content with learning specific content only, without being accompanied by the growth of thinking with the intention of completing the course at the time specified for them. (Fakhro, 2000: 35) This shows many difficulties that primary school students may face in learning the science subject and increases the gap between them and their teachers who are accustomed to routine educational situations that do not correspond to the pattern that students prefer in acquiring and learning the scientific material, and thus the teacher is considered a reason Direct lack of effective education.

The prescribed material itself may have been written in a manner that ignores the abilities and desires of the pupils, and another that relates to the student himself, his level, maturity and environment, and in general, regardless of the multiplicity of reasons, teaching methods and contemporary educational methods can have an effective role in the extent to which these difficulties are facilitated or facilitated and work to overcome them.

Educators agree that there are individual differences between learners that the different stages of education in their abilities, motivations for learning and methods of dealing with the problems they encounter, and each of them has his own way of studying, daily preparation or preparation for the exam, that is, each learner has a preferred style that may agree with his peers in the class or with the teaching methods that he follows The teacher, as the preferred learning styles have an important role in the performance of students and improving their learning of the science subject.

These preferred patterns may be affected by the classroom situations positively or negatively. The positive effect is when learning styles are in harmony with teaching methods and different activities that take into account the presence of various learning styles in the classroom. While the negative performance of learners is affected by ways of dealing with information when teaching methods and classroom activities do not meet the diversity of pupils according to their educational styles.

The researchers believe that identifying the students' preferred learning styles helps in providing various educational and learning activities and experiences with their educational patterns, which leads to their encouragement and increase in their motivation, their willingness to learn, and their academic achievement, and then achieving effective learning whose positive benefits appear in the future, and the teacher's consideration of the preferred patterns of his students It does not start just by starting his executive process procedures in the lesson, but it is much earlier.

When the teacher begins preparing for the lesson and preparing his plan, the teacher must give the various learning styles great importance and be aware of the preferred patterns, so he works on selecting the activities and procedures that achieve this. These patterns have two sides, The first: a learning style for

pupils, and the second: an educational style that the teacher employs in light of the first, and that is the dependence of teachers on traditional methods of teaching science subjects that are based on achieving the goal of information without the other goals of thinking, research and achieving meaning for the scientific concepts under study that require pupils to practice operations Several mentalities and skills, despite the fact that the science curriculum encourages it within the fields of researcher or thinker.

The activities of the development of scientific thinking and its basic processes and others, ignoring these matters lead to preserving the academic content without understanding, which is reflected in the weak acquisition of students of scientific concepts that require them to have the skills of definition, distinction and application, which makes their level of achievement in the elementary stage of the science subject is limited. In the following two questions:

1- What are the preferred learning styles according to the VARK model among fifth grade primary students?

2- Do the preferred learning styles according to the VARK model have an effect on the fifth grade pupils' acquisition of scientific concepts in science subject?

1 -2: Importance of the Research

The importance of the current research is summarized in the following points:

1- There is no Iraqi study (according to the researchers' knowledge) dealing with teaching according to the (VARK) model and demonstrating its effect on the acquisition of scientific concepts among fifth-grade primary students, which enhances the conduct of experimental research to know the effect of the model in the acquisition of scientific concepts after it has been experimentally proven its effect in the acquisition of concepts in materials Non-science subject.

2- The results of the current research may contribute to guiding science teachers to the necessity of diversifying teaching methods, experiences, and educational activities that correspond to the preferred learning styles of learners.

3- The current research may benefit from giving a clear perception of the curriculum developers and developers to diversify content and experiences in line with the learners 'preferred learning styles.

4- The current research may contribute to discovering the preferred learning styles according to the (VARK) model of primary school students according to their age levels.

5- The plans and tests prepared according to the purposes of the current

research may benefit science teachers in the elementary level, especially the fifth grade science teachers.

6- The necessity of using modern teaching models to improve science teaching. Therefore, the current research is an experimental attempt that may contribute to developing science teaching at the primary level.

7 - The current research may add a qualitative addition to the central library, as it can be used by researchers and master's students in the approach, procedures, goals and results.

1-3 : Aim of the research and its hypotheses:

The current research aims to identify: -

1- Preferred learning styles according to the (VARK) model among fifth grade primary students.

2- The effect of preferred learning styles according to the (VARK) model on the acquisition by fifth grade female students of scientific concepts in the subject of science.

The goal is achieved by validating the following null hypothesis: -

(There are no statistically significant differences at the level of significance (0.5) between the average grades of the experimental group students who study according to the (VARK) model for learning styles, and the average grades of the control group students who will study according to the traditional method of the test of acquiring science concepts prepared for the purposes of the current research. .

1-4 : Limits of the research:

The current research is limited to:

1- Fifth grade primary students from the Adhamiya Primary School and Abu Hanifa al-Nu'man Primary School of the Baghdad Education Directorate / Rusafa 1.

2- The first semester of the academic year 2019/2020.

3- Specific topics of the first three chapters, which include: -

(The first unit: classification and diversity _ the second unit: the human body and health _ the third unit: the material)

1-5 : Definition of terms

Learning styles:
- Farrell-moskwa, 1992)): (It is the way in which an individual learns to receive or analyze information and how to deal with problems that obstruct the progress of his progress). (Farrell-moskwa, 1992: 122).

Procedural definition:
The method preferred by fifth-grade primary students in teaching them the subject of science by adopting the senses and direct sensory experience so that it is easy for them to receive, organize and process it.

VARK model:
- Fleming & Mills, 1992: It is the learning style that was modified by classifying learners into four different modes, based on different senses, which are visual, auditory, reading, kinesthetic, and the designation of the model relative to the first letters of the senses (V, A, R and K), (Fleming & Mills, 1992: 137).

Procedural definition:
The method preferred by the pupils of the experimental group in receiving, organizing and recording scientific concepts and practicing practical activities related to them by following the patterns (visual, audio, reading / writing, process) planned by the teacher in organizing the content of science subjects that will be taught during a period.

Effect: -
Al-Matroudi, (2006): that he refers to the rest of the thing as they call it the consequences of the thing. (Al-Matroudi, 2006: 22-21)

Procedural definition:
The amount of the effect of the VARK model for the students of the experimental group in their acquisition of scientific concepts compared to their readership in the control group according to the criterion specified for the size of the effect.

Acquisition:
Reigeluth (1997): a process that takes place with the help of the learner to collect examples indicating the concept or to classify them in a way that enables him to arrive at the desired concept. (Reigeluth, 1997: 3

Procedural definition: It is the ability of the students of the research sample to understand the components of the concept. Definition of the concept, distinction of the concept, application of the concept, which is represented in the degree that they obtain through the scientific concepts acquisition test prepared for the purposes of the current research.

Scientific Concepts:
Abdel-Saheb, and Ashwaq (2012): Scientific concepts are a group of facts

or converging ideas that express a word or a brief terminology. (Abdel-Saheb and Ashwak, 2010: 33).

Procedural definition: It is the mental image of a term that results from the pupils' perception of the characteristics or characteristics that share a set of examples, facts, phenomena, events, or things indicative of that concept, which can be expressed in a verbal word or a symbol that has a representation of the mind and makes sense.

Second: theoretical background

The first axis: the (VARK) model

In 2002 Fleming & Bonwell developed a model to classify learners based on their preferences and preferences

And it was called VARK, which is an abbreviation for the initials of four learning styles preferred by learners:

Visual learning style (V):

In this style, the learner relies on visual perception and visual memory, and he learns better by seeing the educational material, such as drawings, shapes, graphic and graphic representations, graphic presentations, and display devices and other visual techniques.

Aural learning style (A):

In which the individual relies on auditory perception and auditory memory, and they are characterized by an understanding of auditory experiences, and they have a high ability to listen and prepare audio experiences and information, such as listening to lectures, recorded tapes, discussions, oral conversations, and other oral and audio practices, (Abdelkader and Qashoush, 2019: 206).

Read / Write (R), Kinetic Learning Style:

In this style, the learner relies on his tactile perception to learn ideas and meanings, and the learner who prefers the kinesthetic style learns better through manual work, in addition to the laboratory and the work of models, designs and models, and conducting experiments and movement activities, decoding, synthesis, presentations, procedures and applications.

The Kinesthetic (K) Reading / Written Learning Style:

In this style, the learner depends on the awareness of the ideas and meanings read and written, where he learns better, by reading or writing ideas and meanings, which require books, references, dictionaries, articles, pamphlets and worksheets, in addition to written works, and noting notes and their

summaries. (Abbas, 2017: 24-25).

As such, we may find some who can learn using two styles and not one style. There are learners from a complex pattern, such as: a visual, reading / writing style, or an auditory / kinesthetic pattern, and so on ...

The (VARK) model is one of the most popular models used by teachers to identify and define the learning styles of learners. (Al-Thuwaikh, 2016: 11). It is possible to emerge from these four patterns according to the (VARK) model. Six learning styles are the multi modal compound preferred by learners, which is In those who have more than one aspect of the preferred style, which helps them choose more than one style, and deal with it, which are represented by the following patterns:

1-Visual and auditory style. 2- Visual and reading style. 3- Visual and practical style. 4- The audio-reading style. 5- Practical audio style. 6- Practical reading style. (Abbas, 2017: 25-26).

The second axis: scientific concepts and their acquisition

Teaching scientific concepts is one of the contemporary trends in science education. The interest in scientific concepts stems from the fact that they achieve meaning for the scientific material, unlike other components of science, such as laws, facts and theories. (Al-Muhaisin, 2007: 117).

Learning concepts is an inevitable necessity for the meaningful learning process, as it is the way to build thought firmly in the minds of students and a basic goal of school learning, which is the basis of the thinking process, expanding scientific knowledge and competing with nations.

It is a general idea or a term that individuals agree upon as a result of going through multiple experiences about something that all members of this type share, and they may differ in some of the characteristics that this concept may share with other topics. (Peter, 2004, 21)

The formation and acquisition of concepts is a long process, as it basically consists of two steps, it requires the individual to comprehend the first frame of the concept, and this represents a type of mental processes that are not complete in terms of dimensions and interrelationships, but nevertheless contain some key elements, and after that the concept must be used To analyze a new experience or information in order to have new meanings and perceptions. Thus, we expand and clarify the first concept by adding dimensions that appear clear during this experience. (Algebra, 1983: 68).

Third: Previous studies

Seq.	Name Of The Researcher, Year & Country	Subject Of The Research	The purpose	The used procedure	Stage	Data size	Study tools	Statistical means	Results
1	Baker & Zayton 2016 Amman Jordan	Analgesic physical	Investig-ating the effect of using comp-uted mind maps in solving physical problem s among tenth grade students	Descriptive procedure Practical procedure	Basic 10th	172	1-A test of solving problems 2-learning styles scale (Vark)	Analysis of binary variance (ANOVA) Schiffe test	The existence of significant differences in favor of the two modes of visual and multiple learning, and a statistical effect on the students, performance in the exam of solving physical problems. This indicates an interaction between the teaching strategy and the learning styles.
2	Monthl y 2018	Preferre d learning styles accordin g to the FARK model among students and their relations hip to the two variable s (gender, specializ ation)	Exposin g the learning styles most preferre d among secondar y school students in Al-Namas Governo rate and their relations hip to the heterose xual (male/ female), and specializ ation (scientifi c/ literary	Descriptive procedure	Seco nd and third grade s stude nts in the secon dary stage (SCI ENTI FIC/ LITE RAR Y) IN Al-Nama s Gove rnorat e	252	Adjuste d (VARK) scale	SMA -standard deviation T-Test for two independe nt samples	The pr eference of high school students for the practical learning style over patterns, and the absence of statistically significant differences in the learning patterns of the gender variable and the specialization variable (scientific/ literary)

Fourth: Research methodology and procedures:

4-1 : Research Methodology A- Descriptive Approach:

The two researchers used the descriptive method in surveying the opinions of supervisors and science teachers for the fifth grade stage, by distributing a questionnaire that includes all learning styles according to the VARK model and determining the preferred ones for the learning of elementary school students in addition to a second questionnaire surveying opinions of science teachers about a subject, and the preferred learning styles have occurred. The average percentage of complete agreement between supervisors and science teachers ranges between (77% - 100%).

In addition, an open questionnaire was directed to verify the existence of the problem and dealt with the nature of teaching science subjects for the fifth grade of elementary school and their knowledge of the preferred patterns. A number of studies and sources that dealt with preferred learning styles were also used in addition to the model used in the study (VARK), in order to identify the most important of these patterns and their effect on teaching fifth grade female students in science.

B- Experimental Approach:

Follow the experimental research approach to complement the procedures for detecting the effect of preferred patterns in the acquisition of scientific concepts, as this axis deals with a presentation of the procedures required by the experience of the current study that requires the selection of an experimental design and found that the most appropriate experimental design with partial control) the design of the experimental and control groups with pre and post testing that are controlled One of the other is partial control (as this design gives accuracy to the results and is appropriate in selecting the research sample in addition to controlling all factors that work to determine internal safety (Hussein 1, 2017: 127), chart (1).

Group		Independence	Dependent	Dimensional
Experimental	-Previous achievement, -Chronological age calculated by months, -Intelligence, -A pre-test for scientific concepts.	VARK Sample	Acquiring scientific concepts	Acquiring for scientific concepts.
Control		Traditional way		

Certified experimental research

4-2 : Research community and sample:

A- The research community: It is all the common elements or units of the phenomenon that is intended to be studied and experimented with. (Fadel Wayman, 2016: 52). The research community was intentionally chosen from the two schools of Al-Adhamiya Mixed Elementary School and Abu Hanifa Al-Nu'man Elementary Coeducation School of the General Directorate of Education in Baghdad / Al-Rasafa Al-Aula for the academic year (2019/2020). Both schools contain two divisions, one for boys and the other for girls, and the researcher proceeded on this The procedure because she did not obtain a sample of pupils in two groups in one school with the exception of two schools that did not give the researcher initial approval to conduct her research.

B- Research sample:

She was intentionally chosen from the two schools of the research community, and after obtaining the approval of the General Directorate of Education in Baghdad to facilitate the task, the researcher chose one division for girls from Al- Adhamiya Elementary Mixed School and the same from Abu Hanifa Al-Nu'man Mixed School to apply the experiment and in order to ensure that the pupils do not have previous experience in science subjects that will be taught via the period during which the experiment will be conducted, which may affect the results of the experiment.

The researcher excluded statistically a number of female students who had failed in each division, respectively, as the number of students of the basic research sample became (59) pupils in both groups, and by (29) pupils of the experimental group in Adhamiya Primary School. (30) Female students of the control group in Abu Hanifa Al-Nu`man Elementary School, respectively, where the percentage of community representation was (80%).

4-3 : Equivalent of the Research Groups:

The two researchers were keen, before starting the actual experiment, to work on the parity of the students of the two experimental and control groups, which were chosen by random assignment to represent one of them the experimental group and the other is the control group. They start equaling the two groups through (chronological age in months, previous achievement of fourth grade female students, IQ test and pretest to acquire scientific concepts).

4-4 : Control of Intervening Variables:

- Controlling some extraneous variables (internal safety), incidents accompanying the experiment, maturity, time period, sample selection method, experimental extinction, and research confidentiality.
- Including the impact of experimental measures (external safety): (distribution of classes, the teacher, teaching aids, the duration of the experiment and the course material).

4-5 : Research Procedures:

1- Determining the scientific material:

The scientific material that will be studied during the experiment for students of the two groups (experimental and control) was determined according to the curriculum vocabulary of the fifth elementary grade science subject, represented by the topics included in the first units (: classification and diversity), the second (the human body and health) and the third (subject) to be taught For the academic year (2019-2020), where these units were determined based on the nature of the experiment and the period allowed for the completion of the research.

2- Determining the scientific concepts:

The scientific concepts of the science subject in the first units of the book scheduled for the fifth grade of elementary school were defined, as the researcher analyzed the content of these chapters and identified the scientific concepts present in them, as the number of concepts reached (16) main concepts.

3- Formulation of Behavioral Objectives:

The behavioral objectives were formulated based on the content of the scientific material and the general and special educational objectives of the fifth grade science subject, which included the experiment, so its number reached (231) behavioral objectives according to the components of the concept (definition, distinction, application).

4- Planning Instruction Preparation:

Planning for teaching in general and science teaching in particular is one of the necessary and indispensable matters, by preparing the tools, devices and means so that the work is not random and in light of the content of the first three units (1,2,3) of the science book for the fifth grade, and in light of the content The material for the experiment was prepared teaching plans for the two research groups (experimental and control) that included (33) plans for each group with (3) classes per week, prepared in a manner consistent with the independent variable, the VARK model for the experimental group, and using the usual method for the control group.

4-6 : Research Tool: Acquisition of Scientific Concepts Test:

A test for acquiring scientific concepts in the first three units of the science book for the fifth grade of elementary school was prepared according to the subject for the behavioral purposes that have been defined in the cognitive domain for levels (definition, distinction, application).

The two researchers relied on the following steps to prepare the acquisition test:

1- Preparation of test items: The objective of the test was determined and the main scientific concepts of the science subject were defined, which included 16 concepts. The test items were prepared in such a way that each main concept is measured by means of three test items (concept definition, concept distinction, concept application). The test (48) is a paragraph from the objective tests and from the multiple test type. For each paragraph four alternatives are specified, one of these alternatives is correct and the rest is false in order to reduce the guessing factor, because the multiple test questions have a specific answer and cover the content of the course, and do not accept interpretation One of its advantages is that the corrector is not affected by the student's language or organization of the answer. (Al-Dulaimi and Adnan, 2005: 53).

2- Test Instructions: The researcher prepared instructions for answering the test, which included:

A- Formulating test response instructions. B - Formulating test correction instructions.

3- Exploratory application: The test was applied in two stages:

A- Application of the test to the first pilot sample:

In order to ensure the clarity of the test paragraphs and its instructions and the difficulty of any of its paragraphs, in addition to the clarity of its instructions and the determination of the time for answering its paragraphs, and the clarity of the paragraphs in terms of linguistic and scientific terms, the test was applied to an initial exploratory sample of (20) pupils of the fifth grade of primary school At (Nazem Al-Tabaqjali Primary School) of the General Directorate of Education in Baghdad / Al-Rusafa / Al-Oula, on (Tuesday) corresponding to (01/14/2020). The students were informed of the date of the exam a week in advance, so that they could study the material well.

So, it was found that the test instructions and its paragraphs were clear and understood by all students, so the time taken to answer the test items was calculated by monitoring the time for the first three students to finish answering the test and the average time for the last three students to finish answering the test, (41-46), and thus the time was determined. The allocation in the answer is (45) minutes, depending on the total time spent for all students, divided by the number of students.

B- Applying the test to the second exploratory sample to conduct statistical analysis of the acquisition test items:

After the two researchers made sure of the clarity of the paragraphs of the acquisition test and its instructions, the students were informed of the date of the test a week ago, and one of the researchers conducted the test on the second exploratory sample, which numbered (100) students from the fifth grade of

primary school, chosen from one of the schools of the General Directorate of Education in Baghdad / Rusafa /.

The first is in the (Imams Bridge Martyrs' School), in order to verify the validity of the acquisition test with its psychometric properties, after the students finished studying the first three units of the science book, the test was applied on Sunday corresponding to (1/19/2020), after correcting Answers, the test items were analyzed statistically by taking the highest more than (50%) of the highest correct answers and (50%) of the answers that obtained the lowest grades, which amounted to (50) students for each group.

Thus the total of the questionnaires that were subjected to statistical analysis would be (100) questionnaires, then the researcher created the difficulty factor, which ranged from Between (0, 24 - 0, 77), and the discriminating power ranges between (0, 24 - 0, 84), and the effectiveness of alternatives ranges between (-0, 03
- 0.24).

- Validity of the test: in order to verify the validity of the test by finding the following types of validity:

A- The apparent veracity. B- Validate the content.

5- Stability of the test: The reliability of the gain test was calculated by using (Coder Richardson-20 equation) and the test reliability was (0.87).

6- Finalized Acquisition Test: After finding the validity of the test and the statistical analysis of its paragraphs, the acquisition test is ready in its final form to be applied to the students of the two research groups (experimental and control), where the test consists of (48) objective paragraphs of the test type of multiple, each paragraph contains Four substitutions one is true and the remaining three are false.

7- Procedures of Applying the Experiment:

The researcher started applying the current research experience from (Wednesday) corresponding to (2/10/2019) until (Thursday) corresponding to (12/26/2019) in the first semester of the academic year (2019-2020) at the rate of three lessons per week for each group.

Research (experimental and control). 4-8: Statistical Methods:
1- The t-test, 2- The Kuder Richardsad-20 equation, 3- Cooper's equation, 4- Impact size equation.
Fifth: Research results and recommendations:

5-1 : Search results

A- Presentation of results:
The post-test score is adopted to find out the significance of the statistical

differences between the average scores of the students of the two research groups in the post-scientific concept acquisition test for the science subject.
Table 2 shows the existence of statistically significant differences between the average scores of the acquisition at the level of (0.05) in favor of the students of the experimental group.

Table (2)

The significance of the statistical differences between the mean scores of the students of the two research groups in the scientific concepts acquisition test.

variable	**the group**	**The number of the sample**	**SMA**	**variance**	**T-test value**		**Degree of freedom**	**significance level (0,05)**
					The computed value	The tabular value		
Post-scientific concept acquisition test	Experimental	29	31,37	36,31	3,33	1,96	57	Function
	Control	30	25,1	69,23				

The two researchers calculated the size of the effect caused by using the law (η ^ 2) in table (3).
Table (3)
The value of (t) and (η ^ 2) and the effect size in the post-scientific conceptual acquisition test.

Tabular value	The computed T- test	value 2 **η**	effect size
1.96	3.33	0. 14 <0,16	Large

B- Interpretation of results: The researchers attribute the hypothesis result of the superiority of the pupils of the experimental group over their peers in the control group, which indicates that teaching according to the VARK model has a positive effect on the students 'acquisition of scientific concepts to the following reasons:

1- The reliance of science teachers on learning styles according to the VARK model in teaching science was reflected on the ability of female students and their attraction to move towards learning impulsively and effectively towards the subject matter, as the researcher found, through her teaching of the science subject, that all patterns contributed effectively to raising the level of achievement of the experimental group students In acquiring the scientific concepts contained in the academic subjects under experience through:

A - The visual pattern: The experimental group is exposed to an unfamiliar situation, as the students are accustomed to studying science topics in the usual way. The visual pattern played a fundamental role in the learning of science subjects.

B - The auditory learning pattern: It had an important role in improving the students' ability to listen and learn better in the material, as this pattern worked on the breadth of auditory perception and auditory memory through which the educational material was better learned.

C- The reading / writing style of learning: It had the ability to develop the students' expression in writing, as it works to broaden the comprehension of the ideas and meanings read and written.

D- The practical / kinesthetic learning pattern:

1- It has a great impact on the extent of students 'acquisition of the scientific subject under study, as it helps the teacher to implement all activities related to the curriculum that will develop her high skills in receiving, equipping and processing scientific experiences.

2- The occurrence of the interaction between the teacher and the students during the expansion by explaining and clarifying the ideas related to the subject matter during the application of these patterns. The researcher made a comparison between her previous studies in determining the size of the effect of the preferred learning styles according to the VARK model, in order to know which subject matter in which teaching using the preferred patterns according to the VARK model is more influential.

5-2 : Conclusions:

In light of the results, the following concludes:

Teaching the science subject with preferred learning styles according to the VARK model has a great impact on the fifth grade pupils' acquisition of scientific concepts with an effect size (0.16).

5-3 : Recommendations and Proposals:

A- Recommendations

Based on the results of the research and its conclusions, we recommend the following: -

1- The necessity to take into account the preferred learning styles according to the VARK model when conducting the planning, review and development processes of science teaching methods by adding them as vocabulary to the teaching methods subject in the science teacher preparation program.

2- Determine the preferred learning style for each student and place it in his school file.

3- A testimony of the fifth grade science teachers of the study plans and the

test of acquiring scientific concepts

B- Proposals:

To complete the research, we propose to conduct: -

1. Conducting studies to identify the effect or effectiveness of the VARK model in the subject of science and for variables such as (scientific trends, curiosity, scientific tendencies, scientific thinking and other patterns of thinking, andothers).

2. Study the effect of teacher training on preferred learning styles according to the VARK model on students 'achievement of different educational subjects.

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