



THE EFFECTIVENESS OF THE (WITTRICK) MODEL IN PREVENTION AWARENESS AMONG THIRD GRADE MIDDLE SCHOOL STUDENTS AND THEIR COGNITIVE CURIOSITY

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Article history:	Abstract:
<p>Received: December 30th 2023 Accepted: February 22th 2023</p>	<p>The current research aims to identify the effectiveness of the Wittrock model in the Prevention Awareness of third-grade middle school students and their cognitive curiosity, to achieve this, an experiment was conducted that took about two months, as the researcher deliberately selected the Hammurabi medium for boys as a sample for research, and the 195 middle school third-grade students were divided into 4 people, of whom two groups were randomly selected by 38 students for the control group and 38 students for the experimental group, after which the two groups were rewarded in variables IQ - age - cognitive curiosity - Prevention Awareness and the researcher adopted the experimental design with partial control of two equal groups, and the extraneous variables were adjusted, and the experiment was applied in the first semester of the academic year 2023-2024. After the experiment, the results were analyzed statistically using the T-test for two independent eyes and concluded that there were statistically significant differences in favor of the experimental group in the two scales of Prevention Awareness and cognitive curiosity.</p>

Keywords: Wittrock model - Prevention Awareness - cognitive curiosity - Third Grade Middle school Students

CHAPTER ONE: INTRODUCTION TO RESEARCH

First : The Problem of the Research

The global atmosphere today is characterized by the information revolution and modern and amazing technological progress, in addition to rapid development in all fields, and imposes many challenges in various systems, especially education. This requires dealing with this rapid change effectively and consciously to understand and adapt to the data of the present and then preparing to face future challenges. This change requires learners who have a store of knowledge and cognitive curiosity to be able to absorb the tremendous information and technological changes and contribute to solving the problems, especially the environmental ones facing them in their daily lives. Therefore, it is necessary to think about a new type of education, education for the development of thinking, education that gives the learner the data and skills he needs to be able to use thinking processes in employing concepts to solve the problems and obstacles he faces and employ knowledge to reach innovative solutions to serve the environment around him.

Through the researcher's experience in teaching the third middle school grade by 13 years, he sought an apparent weakness in Prevention Awareness and cognitive curiosity and their development among students because teachers often take advantage of explanation most of the time without paying attention to intellectual questions and cognitive activities that require careful consideration and thinking and giving the positive role of the student to practice thinking. This problem was clearly illustrated by directing a questionnaire to a number of 15 biology teachers whose experience is not less than 10 years from different schools of the center of Diwaniyah Governorate. From discussing their answers, the researcher concluded that 80% of teachers believe that most teachers follow the traditional method of indoctrination and delivery in teaching , and 20% follow modern methods of teaching , and 100% of them have no idea about the Wittrock construction model. 70% also believe that students have poor Prevention Awareness as a result of not employing sufficient intellectual activities and skills to develop students' thinking, and 70% of teachers are dissatisfied with the cognitive curiosity of third-grade students in biology.

In light of this, the researcher expects that the Wittrock model, which is based on the constructivist theory, which makes the student inclined to dialogue, negotiation, meaning generation and problem solving , may contribute to raising the degree of student's efficiency in facing everyday situations and the ability to solve them , which the researcher hopes will contribute to increasing cognitive curiosity and Prevention Awareness. All of this led to a sense and feeling of the research problem, which can be formulated as follows: - What is the effectiveness of teaching the Wittrock model in the Prevention Awareness of third grade middle school students and their cognitive curiosity ?

Second: Significance of the Research

1. The importance of the Wittrock model in teaching as one of the important models, which considers the learner a pivot in the educational process, as the student is given the right to discuss, dialogue and negotiation with the teacher and among the students themselves .
2. The current research dealt with a new variable, which is Prevention Awareness, which local and Arab studies did not address – to the best of the researcher's knowledge - which makes the research important and possible to benefit from in future studies.
3. Current research contributes to providing a theoretical framework for research variables that is added to local and Arab libraries.
4. The current research draws the attention of educators interested in modern teaching models to the adoption of models based on structural theory, which may pave the way for other studies complementary to this trend or other materials.

Third: Research Objectives:

The current research aims to define: -

- The effectiveness of the Wittrock model in the Prevention Awareness of third-grade middle school students.
- The effectiveness of the Wittrock model in the cognitive curiosity of third grade students.

Fourth: The two research hypotheses: Hypotheses of The Research

For the purpose of achieving the two objectives of the research, the following two null hypotheses were formulated: -

- 1- There is no statistically significant difference at the level of significance (0.05) between the average scores of the students of the experimental group studied according to the (Wittrock) model and the average scores of the students of the control group studied in the traditional way in the Prevention Awareness test for middle third grade students.
- 2- There is no statistically significant difference at the level of significance (0.05) between the average scores of the students of the experimental group studied according to the (Wittrock) model and the average scores of the students of the control group studied in the traditional way in the cognitive curiosity scale for the middle third grade students.

Fifth: Limitation The Research

The current research was limited to:

- 1- Students of the third middle school grade in Hammurabi Middle school School for Boys, affiliated to the Directorate General of Qadisiyah Education.
- 2-The first semester of the academic year 2023-2024AD).
- 3-The first six chapters of the book of biology for the third middle school grade (building the human body - the structural system – the muscular system - the digestive system - the circulatory system - the respiratory system) 9th edition, 2022AD .

Sixth: Definition of The Terminology

1. Effectiveness

" The magnitude of the effect that independent variables have on the dependent variables that underlie the design of his research" (Asr , 2003 : 650)

Theoretical definition: The expected impact of the teaching model in raising the level of students.

Procedural definition: The extent to which the Wittrock model has an impact on Prevention Awareness and cognitive curiosity among students of the third middle school grade by calculating the size of the impact (d) of the differences between the averages of the scores of the research groups on the scales of Prevention Awareness and cognitive curiosity .

2. Wittrock Model

A structural model that works to link the previous experiences of the learner with his subsequent experiences and to form a relationship between them so that the learner builds his knowledge through generative processes that he uses to modify alternative perceptions and false events in the light of correct scientific knowledge. (Afana and the Army , 2008 : 239)

Theoretical definition: The researcher adopts the definition of (Afana and the Army , 2008) to suit the objectives of the research .

Procedural definition: A set of teaching procedures and practices and regular and interrelated educational activities, which adopt the inclusion of a set of steps (introduction or perceptions of knowledge and experience , stimulating thinking , attention , generation / generation , metacognition) through which the content of biology subject is taught to students in the third middle school grade (experimental group) , and its effectiveness is measured in Prevention Awareness and cognitive curiosity .

3. The Prevention Awareness

"Correct and sound preventive practices in order to raise the preventive level of individuals, identify the dangers of diseases, disasters and environmental pollutants and guide them to preventive means." (Abdul Aal and Abdul Masih , 2006 :2)

Theoretical definition: The researcher adopts the definition of (Abdul Aal and Abdul Masih , 2006) to suit the objectives of the research .

Procedural definition: Students' awareness of the correct preventive concepts, trends and practices while dealing with the environment in their daily lives, such as the use of chemicals inside or outside the laboratory, confronting disasters and pollutants, methods of treatment and reducing their environmental, social and other effects. It is measured by the degree obtained by students in the Prevention Awareness scale prepared for this.

4. Cognitive Curiosity

The individual's desire to seek and integrate knowledge about the environment for the purpose of stimulating or improving mental work. (Slater, 2009: 11)

Theoretical definition: The researcher adopts the definition of (Slater, 2009) to suit the objectives of the research .

Procedural definition: It is the desire, discovery, and inclination to research among the students of the third middle school grade in the experimental and control groups, which are measured by the scores obtained by the students when answering the items of the cognitive curiosity scale prepared by the researcher for this purpose .

CHAPTER TWO/THEORETICAL BACKGROUND

This model was proposed by Wittrock, who was a translator of Vygotsky's ideas in learning , which suggests that learning occurs when learners access existing information and new information to build new ideas that fit their concepts. It is also one of the models of constructivist philosophy in learning and consists of five educational stages or phases:

1. **Step 1:** Preamble or perceptions of knowledge and experience : In which the learners' previous experiences and perceptions about a specific topic are revealed, and the learners' minds are prepared by linking the topics of the previous lesson to the current topic.
2. **Step 2:** Stirring thinking : In which the concepts are presented by writing the basic topics on the board , as this stage aims to motivate the learners and raise their curiosity and the learners show their interest in the topic of the lesson by asking themselves , why did this happen? What do I know about this?
3. **Step 3 : Attention:** In this step, the learners' attention is drawn by asking questions and focusing on interpreting and explaining the meaning reached .
4. **Step 4: Generation:** This is one of the most important steps where learners are left to generate meaning by linking previous information to new information, where a new meaningful idea based on understanding is born.
5. **Step 5 : Beyond Knowledge:** This step is used to help learners use the comprehension and application processes and use the concepts they have learned to be more problem-solving . (Blabel , 2012 : 28-29)

The Prevention Awareness

It includes the planned knowledge, skills and attitudes that individuals must know to behave properly in their daily lives and help them make appropriate decisions to confront problems, crises and disasters and their health, psychological and social risks that may affect them and society. " (Abdeslam , 2001 : 364)

Subjects and dimensions of Prevention Awareness :

There have been many studies among them on the subjects of Prevention Awareness and their dimensions , as both (Al-Sherbini and Al-Tanawi 2001) believe that preventive education has two dimensions, namely health education and security education . (Al-Sherbini and Al-Tanawi, 2001 :113) , while (Amin and Azmi 1997) classified preventive education into two basic elements: nutrition education and health education. (Amin and Azmi 1997: 159), and (Abda and Fouda 1997) also specified that preventive education is : security education, health education, and confronting natural and industrial disasters. (Abdo and Fouda , 1997 : 38) , and (Shair 2005) agrees with both Abdo and Fouda in including the concept of preventive education in these three areas: security education, health education, and natural and industrial disasters. (Shair, 2005 : 164)

Cognitive Curiosity

Previous studies of the subject of curiosity began at the hands of early philosophers and thinkers, and Socrates was the first to believe in the importance of curiosity and asking questions in generating ideas, as thinkers saw curiosity as a state of wisdom rather than a psychological component. (Borowkex, 2005: 3) , Curiosity is a concept that affects the behavior of individuals positively and negatively at all stages of their lives , and the role of curiosity is strengthened as a driving force in the development of students and has great importance in achieving scientific success, and it is a major driver in the learning process and the basic motivation in educational achievement, but the areas of cognitive curiosity only included four areas, which are as follows :

1. Curiosity of Knowledge - Specific :
It is the individual's quest to discover new knowledge and seek clarification and a deeper understanding of the world around him.
2. curiosity of knowledge - multi dimensions :
Using leisure time to search for new knowledge by engaging in recreational activities aimed at acquiring new knowledge, such as reading or watching documentaries.
3. Perceptual Curiosity - Specific :
It is the individual's exploration of diverse sensory experiences, such as sounds, flavors, and scenes, by experiencing different types of food, touching fabrics, or smelling flowers.
4. Perceptual curiosity – multi diminished:
It is the use of free time to discover various sensory stimuli, such as wandering through markets, visiting museums, enjoying outdoor views, and exploring new ways of dealing with tissues and perfumes.
(Slater, 2009 :43-44)

CHAPTER THREE: RESEARCH METHODOLOGY

First: Research Methodology: The researcher used the experimental research method because it is the most appropriate for the current research procedures.

Second: The experimental design of the research: The researcher adopted the semi-experimental design with partial control of the equivalent groups, which includes the experimental and control groups with pre and post-test, according to the following figure: 1

Post-test	The dependent variable	The independent variable	HSA Group
<ul style="list-style-type: none"> - Prevention Awareness Scale - Cognitive curiosity Scale 	Prevention Awareness Cognitive curiosity	Witrock Model	Experimental group
		Usual method	Control group

Third: Research Community: The researcher identified the research community in all middle and secondary schools in the center of Qadisiyah Governorate for the academic year 2023-2024 .

Fourth: The research sample: The researcher was chosen in an intentional way, as a teacher in the school, the research sample, represented by Hammurabi middle school students for boys, by (38) students for the experimental group and (38) students for the control group .

Fifth: Equivalence of the two research groups: The researcher rewarded the two research groups in a number of variables, including:

- **Chronological age in months:** The data was obtained from the school administration and after conducting the statistical analysis, it was found that the two groups are equal in this variable.
- **IQ:** The researcher used the three-dimensional IQ test for Sternberg, which consisted of (36) items of the multiple choice type, and after collecting and analyzing the data statistically, it was found that the two groups are equivalent in this variable.
- **Prevention Awareness Scale:** The researcher applied the scale to the research sample and after conducting statistical analyses, it was found that the two groups are equal in their Prevention Awareness.
- **Cognitive curiosity scale:** The researcher applied the scale to the research sample and after conducting statistical analyses, it was found that the two groups are equal in their cognitive curiosity .

Sixth: Control of extraneous variables: It is necessary to control the extraneous variables that may affect the course of the experiment. These variables include: (maturity - experimental extinction - conditions of the experiment and accompanying accidents - measurement tools - selection of the research sample - experimental procedures, " including: subject, school, distribution of classes, confidentiality of the research, educational means, duration of the experiment").

Seventh: Experiment Requirements:

- **Determining the scientific material:** The researcher identified the scientific material in the first six chapters, which are (building the human body - the structural system – the muscular system - the digestive system - the circulatory system - the respiratory system) .

- **Preparation of teaching plans:** The researcher (16) prepared a teaching plan for the control group and the same for the experimental group.

- **Research tools:** The researcher prepared two tools to achieve his goals and verify his hypotheses. The first tool was the Prevention Awareness scale, and the second tool was the cognitive preference scale.

Eighth: The two research tools: they were the Prevention Awareness Scale and the Scientific Preference Scale. The construction of each of them went as follows:

1. Prevention Awareness Scale:

The steps to build it went as follows:

- **Determine the goal of the scale:** The goal of the scale is to measure the Prevention Awareness of the students of the third middle school grade in the subject of biology .
- **Scale instructions:** It included instructions for answering the item of the scale and instructions for correcting it, as the scale is four substitutes (it applies to me completely, it applies to me often, it applies to me sometimes, it does not apply to me at all), as it gives grades (4, 3, 2, 1).
- The **first survey application:** The researcher applied the scale to a sample of (30) students on Sunday (8/10/2023) to ensure the clarity of the test instructions and items and determine the response time, which amounted to (30 minutes - 35 minutes).
- The **second survey application:** It was applied to a random sample of (300) students on Thursday, corresponding to (12/10/2023) AD to conduct statistical analysis.
- **Validity of the scale:**

- **Face validity:** The items of the scale and its instructions were presented to a number of specialists in the field of educational psychology and life sciences and methods of teaching them to express their opinions, suggestions and observations, and the researcher took an agreement percentage (80%) or more as a criterion for the validity of the items .

- **Construct Validity:** It was found by finding the coefficient of correlation of the degree of each item with the total degree of the scale.

- **Reliability :** The researcher used the equation of the Alpha-Cronbach coefficient, as the reliability coefficient reached (0.81), and this indicates that the reliability coefficient is good and acceptable.

7. The final version of the scale: The scale shall be (20). It included the cognitive and skill domain (12 items) , and it included the emotional domain (8 items) .

2. Cognitive curiosity scale: The steps of building it went according to the following steps:

- **Determining the goal of the scale:** It was to measure the scientific preference of the third middle school grade students.
- **Scale instructions:** The answer instructions and the instructions included correcting the answers, as the scale was three alternatives.
- The **first survey application:** The scale was applied to (30) students on Sunday, corresponding to (8/10/2023) to ensure the clarity of its instructions and items and determine the response time as it reached (30 minutes).
- The **second survey application:** The scale was applied to a random sample of (300) students on Thursday, corresponding to (12/10/2023) AD to conduct statistical analysis and calculate the psychometric characteristics of its vertebrae.

• **- Validity:**

- **Face validity:** Achieved by presenting the items of the scale to a number of specialists in the field of educational psychology and life sciences and methods of teaching them to express their opinions, suggestions and observations, and an agreement rate of (80%) or more was taken as a criterion for the validity of the items .

- **Construct validity:** By finding the correlation coefficient of the degree of each item with the field degree and the degree of each item with the total degree of the scale after conducting the second survey application, as the equation of the correlation of Point Essential was used for that.

- **Reliability :** The researcher used the test and retest and the reliability coefficient reached (0.78), which indicates that the reliability coefficient is good and acceptable.

7. The final version of the cognitive curiosity scale: It consists of (20) items distributed over four fields. Each field consists of (5) items . Agencies: Table (1) Areas of cognitive curiosity

No.	Domain Name	Number of vertebrae
1	Curiosity about knowledge - specific.	5
2	Curiosity about knowledge - multi dimensions (diverse)	5
3	Perceptual curiosity - specific.	5
4	Perceptual curiosity - multi dimensions	5
Total		20

Ninth: Application of search tools

The researcher applied the measures of Prevention Awareness and cognitive curiosity in their final forms to the research sample (experimental and control) after the end of the actual teaching on Tuesday, 2/1/2024AD.

Tenth: Statistical Means

The researcher used the Statistical Portfolio for Social Sciences (SPSS-10) and the software (Microsoft-Excel) to process the data.

CHAPTER FOUR: PRESENTATION AND INTERPRETATION OF RESULTS

First: Presenting and interpreting the results

- **Results related to the first null hypothesis:** The null hypothesis was validated, which states: "There is no statistically significant difference at the level of significance (05,0) between the average scores of the experimental group students who studied according to the Wittrock model and the average scores of the control group students who studied according to the usual method in the Prevention Awareness scale." The researcher did the following:

1. Calculating the arithmetic mean of the scores of the experimental and control research groups in the Prevention Awareness scale, as the arithmetic means of the two groups are as shown in Table (2).

Table (2) t. test results for two independent samples equal in the Prevention Awareness scale

Groups	Number	Arithmetic average	Standard Deviation	T value		Statistical significance
				Calculated	tabular	
Experimental group	38	28.36	4.4	4.1	2	significance
Control group	38	23.52	4.5			

Table (2) shows that there is a statistically significant difference between the average differences of the computational media and in favor of the experimental group that studied the Wittrock model. The researcher attributes this to the fact that teaching with the Wittrock model provides effectiveness during teaching because it provides opportunities for

interaction between students, integration and searching for information from its sources. It also inventoried the students' dealings with the environment, which developed a positive attitude towards the subject, which in turn contributes to the development of their spirit of awareness, not only at school, but in aspects of their daily lives. This means rejecting the null hypothesis.

2. Calculating the size of the effect (d), which shows the size of the effect of the independent variable in the dependent variable (extent of effectiveness), as in Table (3).

Table (3) The size of the effect of the independent variable (Wittrock model) in (Prevention Awareness)

The independent variable	The dependent variable	Value (d)	impact size
Wittrock Model	Prevention Awareness	0.93	Large

By extracting the magnitude of the effect (d), which reached (0.93), which is an appropriate value to explain the magnitude of the effect by a large amount of the Wittrock model variable in the Prevention Awareness scale.

• **Results related to the first null hypothesis:** The null hypothesis was validated, which states: "There is no statistically significant difference at the level of significance (0.05) between the average scores of the experimental group students who studied according to the Wittrock model and the average scores of the control group students who studied according to the usual method in the cognitive curiosity scale." The researcher did the following:

1. Calculating the arithmetic mean of the scores of the experimental and control research groups in the cognitive curiosity scale, as the arithmetic means of the two groups were as shown in Table (4).

Table (4) The results of the t. test for two independent samples equal in the scale of cognitive curiosity

Groups	Number	Arithmetic average	Standard Deviation	T value		Statistical significance
				Calculated	tabular	
Experimental group	38	44,12	4.1	4.8	2	significance
Control group	38	36/70	5,1			

Table (4) shows that there is a statistically significant difference between the average differences of the computational media and in favor of the experimental group that studied the Wittrock model. The researcher attributes the superiority of teaching in the Wittrock model to teaching in the usual way, because of the use of various sources that increased student interaction as well as taking responsibility for their own learning as a structural model in which the student's role is positive. It also helped to attract the attention of students through the cognitive charts used during the steps of the model and to give students the opportunity to present their views on the topics presented, which are related to their daily lives, and this means rejecting the zero-sum hypothesis.

2. Calculating the size of the effect (d), which shows the size of the effect of the independent variable in the dependent variable (extent of effectiveness), as in Table (5).

Table (5) The size of the effect of the independent variable (Wittrock model) in (cognitive curiosity)

The independent variable	The dependent variable	Value (d)	impact size
Wittrock Model	Scientific preference	0.70	Large

By extracting the size of the effect (d), which reached (0.70), which is an appropriate value to explain the size of the effect by an average of the Wittrock model variable in the cognitive curiosity scale.

CONCLUSIONS

1. The effectiveness of the Wittrock model in the Prevention Awareness of third grade students and their cognitive curiosity .
2. The use of an unfamiliar style of teaching among students contributed to raising Prevention Awareness and cognitive curiosity .
3. Using the Wittrock model made learners more active in the lesson and added fun and excitement.

RECOMMENDATIONS TO

1. The necessity to use the Wittrock model in teaching and education.
2. Holding training courses by the Directorate of Training and Educational Supervision for teachers of biology to train them on the Wittrock model and use it in the teaching and learning processes.
3. Include in biology curricula educational-learning attitudes and activities that lead students to possess Prevention Awareness.

FIFTH: PROPOSALS

1. Conducting further similar studies and at different school stages.

2. Conducting further studies similar to the current research in other subjects.
3. Conducting studies similar to the current research and on other variables such as (innovative thinking, holistic thinking, IQ, scientific literacy).

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