Extent of mathematics teachers' appreciation of the mathematical problem `multiple solutions

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The Abstract

Aims to find out the (Extent of mathematics teachers' appreciation of the mathematical problem `multiple solutions)

Research sample consisted of (100) mathematics teachers distributed on the General Directorates of Education in Baghdad (Rusafa 1/2/3) and (Karkh 1/2/ 3) There was two research approach which are:

The first - two different answers of students to the same issue where teachers must assess each answer and explain which one the teacher will accept and why?

The second - Different solutions of students' to the same issue, including wrong answers , Teachers should correct the answers and give them final grades (0-10).

Descriptive and analytical Approch was used in this **research methodology** And zero hypotheses, which are as follows.

1-Mathematics teachers' assessment of mathematical problems with multiple solutions is statistically identical in terms of greater than (0.05) level.

2. Mathematics teachers estimate the level of achievement of their students through different solutions to mathematical problems is statistically identical in terms of greater than the level (0.05).

Some of The search results are as follows:

1. The existence of a difference between mathematics teachers in the assessment of mathematical problems `multiple solutions

2. There is a difference in the assessment of mathematics teachers to the level of achievement of their students through various solutions to mathematical problems.

Key word: existence, Mathematics teachers estimate, level of achievement ,difference in the assessment

Research problem:

Most of the countries of the world discovered that the education process did not fulfill the tasks entrusted to them since the early fifties, so I began to review their educational systems with multiple pillars, and the teacher was at the head of it because it is the basis of the success of the teaching process in its various stages, so attention must be paid to curricula, books, decisions and school activities, including interaction With his students, he refines their personalities, refines their experiences, broadens their concepts, and develops their thinking and mental abilities. (Abdel Hamid, 1967: 46)

This, in our opinion, explains that solving the mathematical problem depends on mathematics teachers, who are sometimes unable to solve that problem, because it was presented to them in a manner that differs from the template they wrote and taught to their students years ago, and the lack of training of mathematics teachers and their lack of ability to deal with mathematical knowledge made them present their

material Their exams are according to the accustomed stereotypes, which sometimes make the student lose the desire to learn mathematics.

The benefit of those with experience and access to scientific references helps math teachers in identifying the shortcomings when solving the mathematical problem and working to treat it, and from here produces the research problem represented by the following question:

How do mathematics teachers estimate students' achievement through various solutions to math problems?

Research Objectives: This research aims to achieve the following: -

1. Mathematics teachers estimate mathematical problems with multiple solutions.

2. Mathematics teachers estimate the level of student achievement through various solutions to mathematical problems.

research importance:

Helping the teacher to obtain multiple mathematical solutions to a single problem with different methods of teaching mathematics and how to estimate them and their evaluation of these different solutions to mathematical problems among students. (2000, NCTM)

Emphasizing the self-development of students and enabling them to solve mathematical problems and questions that have one result in different ways and attention to expressing views with more emphasis on the use of mathematics problems and questions that have more than one result.

The importance of constructivism in teaching students with the educational philosophy it provides provides better learning, which makes it imperative for teachers not to rush and provide information to students on gold plates. They should be assigned to do some work to obtain the information, such as searching for it in the various sources of information available such as the library, home, the Internet, etc., And do scientific research appropriate to their age and raise their skills in the field of communicating with others in all its forms, exchanging information and experiences, and providing an environment rich with information and its sources, and this theory is very important in teaching mathematics and building mathematical concepts as the development of mathematics is the main focus of Multiple discussions around the world. (Ghoneim, 1: 1991)

"Solving mathematical problems in multiple ways contributes to developing student creativity and critical thinking." And attention to the importance of solving problems in different ways by realizing that students return that the problem is at hand can be solved or allowed to be solved in different ways and is determined by the level of student understanding of information, and how to distinguish it and transfer it to it. (234: 2008, Leikin & Levav-Waynberg)

And "eliciting the mathematical results of students, enabling them to obtain solutions of more scientific value. (1983 Schoenfeld,)

What confirms the proper functioning of the educational process in the right direction is the improvement of students' achievement in mathematics, and this develops the teacher a positive reinforcement towards the teaching profession. (Rumen, 1998: 86)

We see that the greater the network of connections between new information and existing information in the cognitive structure, the deeper the treatment. The use of

non-routine problems in teaching mathematics provides opportunities for different outcomes, places few restrictions on students 'methods of solution, and enhances students' thinking methods.

It was found that enabling students to solve problems and questions in different ways has important implications for learning and demonstrating students' mathematical thinking methods. (2000: NCTM) (Schoenfeld, 1992,)

Research limits: This research was limited to the following limits: -

1. Time limits: - The research was applied in the second semester of the academic year 2018-2019

2. Spatial limits: - This research was limited to middle school mathematics teachers in the middle and secondary schools of the city of Baghdad and their students (Al-Karkh

- Rusafa).

3. Thematic limits: - The research was limited to the content of different solutions to mathematical problems and the mathematics teachers' appreciation of them.

Search terms:

Estimation in the Arabic lexicon: It is the confirmation and compliance with the standard specifications or one of them and making sure of the accuracy of records and instructions, to achieve the specific goals of efficiency and effectiveness.

Estimation theory is a theory that deals with the estimation of values from parameters

1.   and represents a branch of statistics science and information processing.

Parameters describe an implicit physical condition in a manner based on measured (experimental) data that is taken randomly and affects the distribution of the measured data.

Theoretical definition of estimation: It is a systematic, systematic, planned process that is reached by measuring and issuing judgments on behavior or thought compared to a standard that was precisely defined in advance.

research assumes :-

1. Mathematics teachers' estimation of mathematical problems `with multiple solutions is statistically similar with a significance greater than the level (0.05).

2. Mathematics teachers estimate the level of achievement of their students by the various solutions of mathematical problems, which are statistically similar with a greater significance than the level (0.05).

Research background and previous studies

In the name of God, the Most Gracious, the Most Merciful (the sun runs to a stable place, for that is the appreciation of the dear, the knowledgeable), (And the sun and the moon, according to that

To improve attitudes towards mathematics and raise the level of achievement, attention must be paid to teaching methods, as the teaching method has a great influence in helping the teacher and student as an active process in teaching and learning.

(Al-Duwairi, 1981), (Al-Sharabi, 1989)

And the importance of the different solutions to the questions in changing the atmosphere of the classroom, and its environment enabling students to freely express their own solutions, which helps to develop students' independence and their understanding of the subject. (1997: Cobb)

Although teachers of mathematics play a pivotal role in benefiting from various solutions to problems and questions in the teaching of mathematics and how to estimate them. Instead of the role of the sender in teaching to create a classroom culture that enables students to acquire basic skills such as critical and creative

thinking, communication, interrogation and problem solving, and the use of information technology. (11, MONE 2004)

Learning about the most effective thinking programs, and taking into account the concern of all students and not just a few of them and relying on general guidelines and directives for teachers to provide better (educational - learning) opportunities for students is one of the ways to improve thinking in our schools.

The importance of Performance Criteria rules

The rules and criteria are the basis for good evaluation of performance and are the specific aspects that a student must perform in order to implement a specific task, activity or product appropriately, and the performance evaluation includes various realistic tasks with a wide range of skills.

Methods for assessing student performance:

This estimate is based on criteria and scales of appreciation for all levels that require preparation of logical thought and full awareness of the quality of the various cognitive and performance tasks that depend on estimating the levels of multiple levels of student performance and responses, because there is no specific correct response or error for the performance tasks.

The Rating Scale is a Rating System that determines a student's level of competence in performing a particular task, or using knowledge or concepts. Because there are multiple methods for estimating student performance and outcomes, we will adopt the two main methods (the total and analytical methods)

Overall method: Holistic

The method that relies on evaluating performance or response criteria without separating them, i.e. estimating one overall score for these aspects combined as components that are interconnected, by representing the results for each point of the rating scale by writing a brief description of performance).

It is possible to rely on the classification of products in groups in terms of their levels or their degrees, as is the case in estimating the scores of the article's questions. Each group can be reviewed to see whether the products belonging to a specific group have the same level. Therefore, the overall method is distinguished by its ease of application and suitable for many products. (Darwazeh, 2005: 123)

Analytical Method

The use of multi-dimensional evaluation methods to provide multiple opportunities to understand and learn for each new, because the use of new methods for this type of evaluation is more complicated than traditional methods and requires continuous professional training of distinct quality and discussions between teachers within the educational institution and check the quality of evaluation because the evaluation must meet conditions Multiple drivers, such as honesty, scientific accuracy, and logical consistency, must also be closely related to important skills and knowledge linked to educational content and established curricula, and this depends on multiple levels of student performance and performance evaluation based on grade assessment at. (53: 2001, Airasian)

(Darwazeh, 2000) (Jaber Abdel Hamid, 2008)

The new intermediate mathematics curriculum pays serious attention to the issue of multiple solutions and asks teachers to create "classroom environments through which students can provide different solutions to mathematical problems so that they learn to evaluate different solutions strategies in the problem-solving process and that the task of creating such classroom environments has primarily been put on the shoulders of teachers They are strongly encouraged to create a classroom environment conducive to meaningful learning for students.

Whereas, the teacher who raises the thinking of his students with issues commensurate with their information through encouraging questions may gain them a taste for thinking about mathematical operations and creates a taste for mental processes that leaves their character on their thinking while a teacher who teaches his students on repetitive processes impedes the growth of their minds and wastes the opportunity of understanding them. (30: 1979, Polya)

The open questions are to provide opportunities for students to engage in situations that may require them to formulate or reformulate the mathematical issue. (1995: Silver & Kenney) Various solutions to mathematical problems and questions showed the ability to

change the quality of mathematics lessons and contribute to conceptual learning for students. (1998: Boaler)

It was found that different solutions to questions may change the classroom atmosphere, and enable students to freely express their own solutions. (1996: Cobb & Yackel)

(AMT) emphasized the promotion of building mathematical links between mathematical concepts and relational understanding to enable students to use different methods to solve advanced mathematical problems. (2331: 2007, AMT (

The researcher believes that the various solutions can facilitate the communication of a problem to different elements of knowledge that the student may be familiar with and that solving problems in different ways that enhance mathematical thinking. The open questions give a clear picture of the performance of each student without comparing it with the performance of his peers, or the performance of a representative sample For these peers, and to give students the opportunity to solve problems invarious ways that contribute to the development of their knowledge and skills. This clearly indicates the pivotal role of the teacher in finding solutions to a problem or question in the teaching of mathematics.

Previous studies :

Study (Salim, 1996), an analytical study, "College of Education, Helwan University, Egypt, studies and researches of the basic education conference, present and future."

The problem defines evaluation as one of the important educational process aspects. The exam count is one of the evaluation methods used by the teacher to determine the effectiveness of his teaching, and the study aimed to Evaluating the teacher's

performance in one of the basic teaching tasks, because it reflects the adequacy of the educational process represented in the evaluation of exam questions.

Study (Ibrahim, 1998) field study at the Faculty of Art Education, Helwan University,Egypt, the fourth issue of the Egyptian Association of Curricula and Teaching Methods, and the study aimed to evaluate the performance of students of the fourth stage in the Faculty of Art Education for some skills and teaching methods

Search procedures :

This chapter includes research and methodological procedures and defining the general framework of society, and the questionnaire has been completed

Preparing its items and finding the psychometric properties to identify honesty and consistency.

First: Research methodology:

An analytical descriptive approach was used.

Second: Research Society:

The research community means all individuals who the researcher studies the phenomenon or event upon them.

(Melhem, 2000: 219)

The research community consists of middle school mathematics teachers in the general directorates of education for the Baghdad governorate along the Rusafa and Karkh sides of the academic year (2017-2018).

Third: The basic research sample:

The research sample means a partial group of society that the researcher chooses to conduct his research according to special rules and be representative of that community. (Abu Allam, 1989: 83)

The basic research sample reached (100) male and female teachers, close to (784).

Fourth: Research tools:

The researcher must use a tool or several tools to carry out the research, and make sure that this tool is suitable for research to achieve its goals and hypotheses. The research tool is the means by which the researcher can solve a research problem. (Mahgoub, 2002: 163) The teachers' questionnaire:

A- Building a questionnaire for middle school mathematics teachers to determine theoretical premises and basic concepts:

We adopted the logical and mental approach together in building the questionnaire.

B- Determining the teachers resolution items:

The researcher returned a questionnaire for teachers consisting of two issues, which include two items

The first item: I presented two different responses to students on the same issue for the gathering and the researcher asked the teachers to estimate each answer and explain which one or that answer the teacher will accept and why?

And the second item: It contains different answers to the students 'solutions to the same issue, including wrong answers. The researcher asked the teachers to correct the answers and give them final grades of (0-10) degrees by the teachers, the reason for choosing this result, and why? And compare the final grades given by teachers to one answer per student.

The first item:

Two different responses were provided to the students to combine in the

$$= 3 \frac{2}{5} + 4 \frac{1}{3}$$

then the two students reached the same result. Please rate each
answer and explain which one or which answer and why they are accepted?

The second item: is linked to the calculation of the grades that teachers gave to the
solutions of three students to the equation

$$x + 24 = \sqrt{64}$$

Where did the teachers classify the solutions in a range of 0 to 10 and the reason for
that classification?

C- Determining the relative importance of the questionnaire items:

The goal is generally to demonstrate that mathematics teachers are responsible for the
different solutions of students to one subject and to the same group of students.
Likewise, teachers appreciate the correct and wrong answers and the reasons behind
their appreciation.

W - Preparing the instructions for the questionnaire: The instructions for the
questionnaire were prepared, which included how to answer his paragraphs, and he
urged respondents to be completely accurate and straightforward.

M- Exploratory sample:

To find out the clarity of the paragraphs and their suitability for application, 10
teachers were chosen to apply the survey research tool, where we took (10%) of the
research sample of (100 teachers)

D- Description of the questionnaire in its primary form:

After the procedures that were achieved in the previous steps, the questionnaire, in
its initial form, became composed of (5) paragraphs, divided into two items, namely:

The first item: How to solve a student for a single paragraph

Not agree	Sometimes	agree	Solution B	A Solution	A , B	Solution student	n	vo
						A Form ula A	.1	Mathematics teaching
						Formul a B B	.2	

It consists of (2) formulas, and we have placed before each paragraph three graded
alternatives, which are, respectively:

Ok, sometimes, I don't agree

The second item: How to estimate the degree when correcting the same answer by
teachers, and it consists of (3) paragraphs. Before each paragraph, ten graded alternatives
were placed, which are in order of (0-10). The question was a solution of an equation of the

first degree with one variable

Reason	Degree from (10−0)	How to correct a paragraph	s	the field
		Solution formula A	1	
		Solution formula B	2	correction
		Solution formula C	3	

First: Verify the questionnaire:
Honesty is an important standard feature that should be available in psychological
measures:
The researcher extracted two types of honesty, namely (apparent honesty, and
sincerity of construction) as follows:
Apparent honesty: It indicates that the best way to verify the apparent honesty of the
questionnaire is to present it to a number of arbitrators to estimate the extent to which
the paragraphs of the questionnaire achieve the attribute or property to be measured. .
(1972: 566, Ebel)
Constructive honesty: It is the range by which we can determine that the questionnaire
measures a specific theoretical construct or a specific feature. (Stanley & Hokins,
1972: 111)
Resolution of stability:
Consistency is one of the characteristics that should be verified in psychological
measures, although honesty is more important than persistence, since an honest scale
is by its nature fixed while the fixed scale does not necessarily have to be honest, but
the calculation of stability gives us another indication of the accuracy of the scale and
its homogeneity. In measuring the property, in addition to this, there is no
psychological measure that is completely honest.
(Zeller & Cormunes, 1980: 77)
The Cooper equation was used for the purpose of calculating the agreement
percentage, which amounted to (80%), which means that the percentage of stability
can be used in light of it.
Research Methodology:
An analytical descriptive approach was used, where the two questionnaires were
applied to 100 teachers and schools in different schools in the first course when they
had the addition of the relative numbers, and the average time taken for correction
was the rate (30 minutes) in the questionnaire. The first questionnaire included the
first item related to the formula of the solution was given to 60 middle school

teachers, and the second questionnaire included the second item was given to 100
teachers to assess the degree for each solution formula and the degree was allocated
from (0-10) and the degree given by the teachers was varied and the time allocated

(30) Accurate)

1- The first questionnaire: related to adding fractional numbers.

Teaching one subject in different forms in mathematics for the same group of students and the extent of teachers 'approval of formulas for solutions to the given problem represented by this form of questions:

Where all students reached the same result represented by the following:

$$= 3 \ \tfrac{2}{5} + 4 \ \tfrac{1}{3}$$

Solution: A The principle of uniformity of denominators is used, then fractions are then combined

Follow the traditional method of addition

$$= \ = 3 \ \tfrac{2}{5} + 4 \ \tfrac{1}{3}$$

15 = 5×3 ....it ,5 ,3 number

$$= 3 \ \tfrac{2}{5}]3 \ + 4 \ \tfrac{1}{3}$$

$$= 3 \ \tfrac{6}{15} + 4 \ \tfrac{5}{15}$$

$$= 7 \ \frac{11}{15}$$

Solution B: The syntax principle is used for the fractional number to a regular fraction, then to unify the denominators and then add them

$$= 3 \ \tfrac{2}{5} + 4 \ \tfrac{1}{3}2$$

$$= \frac{17}{5} + \frac{13}{3}$$

$$= \frac{51}{15} + \frac{65}{15}$$

$$= \frac{116}{15} = 7 \frac{11}{15}$$

Please rate each answer and explain which one or which answer you will accept and why?

Table 1, numbers and percentages of teachers who support specific formulas

Approve the formula for the solution	A	B	A& B	total
the number	15	25	20	60
Percentages	42%	25%	23%	100%

Analysis of the results of the first questionnaire:

The questionnaire contains the preparation of percentage data for teacher correction and analysis as follows:

Table (1) shows that the majority of teachers (42%) chose only solution A, although all the answers are correct, so we asked why they said solution A, and

that **(25%) of teachers agreed to B, and almost (23%) of them would accept all answers And, in this way, we see that the majority of teachers prefer the solution given to them (the ideal solution) that was given to them and has no value for multiple solutions, teachers**

adopted solution A, and to find out the reason for their acceptance of this solution only in their view that it is not valuable for multiple solutions.

The teachers who adopted solution B are an easy and difficult method for students to

practice with mathematics.

For teachers who adopted solution B and A, they are highly experienced teachers

using the two formulas during the explanation to expand student information.

2- The second questionnaire: is related to the calculation of the grades that teachers

gave to the three students 'solutions to the following formula:

$$x + 24 = \sqrt{64}$$

Where did the teachers class the three solutions in a range of 0 to 10 and why?

Find the solution to the following formula:

$$x + 24 = \sqrt{64}$$

How can teachers classify these three solutions as (0-10) and the reason ?

Find the solution to the following formula:

Student M adds a peer to 24 for both parties

$$x + 24 = \sqrt{64}$$

$$x + 24 + (-24) = \sqrt{6\ 4} +) - 24($$

$$x = \sqrt{6\ 4} - 24$$

Then extracts the square root of the number

$$\sqrt{6\ 4}$$

$$x = 8 - 24$$

$$x = -16$$

As for student N, he will go to another cl : ass for another solution

$$x + 24 = \sqrt{64}$$

He transferred the empty number 24 to the other side and made the unknown alone

$$x = \sqrt{64} - 24$$

And that if the limit is transferred to the other side, its signal is changed

$$x = \sqrt{64} - 24$$

Then we extract $\sqrt{(6\ 4)}$ and replace it in the equation

$$x = 8 - 24$$

$$x = -16$$

:The other student, H, follows the following method of solution

$$x + 24 = \sqrt{64}$$

The root value is first extracted

$x + 24 = 8$

Then it goes on to make the variable alone either by the Student N method or by the Student M. method .

$x + 24 = 8$

Wrong student answers are used intentionally to learn how teachers are evaluated, as it is normal for some students to provide wrong answers to the problems posed and questions.

Table (2) students' grades with different grades for teachers

degrees	0	1	2	3	4	5	6	7	8	9	10	
M student	7 %7	10 10%	6 6%	6 6%	4 4%	5 5%	11 11%	12 12%	8 8%	9 9%	24 %22	100
N student	13 13%	7 7%	8 8%	4 4%	6 6%	11 11%	17 17%	10 10%	5 5%	7 7%	12 12%	100
H student	10 10%	6 6%	7 7%	11 11%	4 4%	9 9%	8 8%	6 6%	12 12%	10 10%	17 17 %	100

Analysis of the results of the second questionnaire:

The percentages for correcting the three students' answers by the teachers sample were shown as follows:

For the student M, the percentage of teachers who gave a score (0) is (7%) as a wrong answer, and the percentage of teachers who gave a full score is (22%) to thesame answer and the rest of the teachers gave an answer ranging between (1 and 9),so their rate (%) 69).

As for the student's answer, N, the percentage of teachers who gave the degree (0) is(13%), and the percentage of teachers who gave a full degree is (12%) and the rest of the teachers give the remaining grades from (1 to degree 9), then their ratio constitutes(75%).

As for the student's answer, H, the percentage of teachers who gave the degree (0) is(10%), and the percentage of teachers who gave a full degree are (17%) and the rest of the teachers gave the remaining grades from (1 to degree 9), then their percentageconstitutes (73%.

This difference in grades is due to the correctors and their convictions, as this performance-based estimate as a whole rather than an estimate of the end result and these variations in degree constitute the viewpoint of teachers about the teaching and learning process, and to evaluate the new curriculum in Iraq requires new roles for teachers The teacher takes the role of facilitator of the educational process After modern teaching methods instead of the role of the teacher is dispatched and the student only has a future. And the accreditation of teachers teaching students through cooperative education among students (in the form of small groups), which leads toraising the general level of students and also stimulates curiosity among

students through encouraging questions, as it may gain them a taste for independent thinking, and create a taste for mental processes, thereby eliminating boredom, and the teacher also uses (Education until mastery) by repeating exams to achieve mastery in the subject.

Those who are interested in the new mathematics curricula for the intermediate to the elementary level curricula should give serious attention to multiple solutions and prepare teachers to take care of students to provide different solutions to the questions so that they learn to evaluate different solutions strategies in the problem solving process. (Polya 1973)

This leads to the fact that students who have learned mathematics through open activities have developed a conceptual understanding while students who have taken a traditional approach have come up with a procedural understanding. (1976, Skemp)

This study indicates the basic role of the teacher to find formulas for different solutions to the questions in the teaching of mathematics and that the pivotal role of preparing the teacher and the student is a complex and interrelated process based on

information in the cognitive structure. Including taking advantage of problems and questions with different formulas for solutions in teaching mathematics and teachers' approval of different solutions to mathematical problems and how to estimate them.

Research discussion:

This study aims mainly to the extent of acceptance and appreciation of some middle school teachers on the various solutions to mathematical problems and questions, which raised some of the following important issues:

1- The difficulty of implementing the new mathematical curricula for the intermediate

stage from the viewpoint of some teachers.

2- The failure of some teachers to accept solutions that do not make an ideal opinion as technology advances.

3- The teachers ' different beliefs and attitudes about mathematics.

4- Some teachers have difficulties in evaluating the open questions.

Therefore, it is necessary to draw the attention of the teacher to the modern teaching methods.

1- The difficulty of implementing new mathematical curricula for the intermediate stage from the viewpoint of some teachers.

The difficulty of implementing new mathematical curricula cannot be generalized to

all teachers, and no matter how small this percentage of teachers is, attention should be paid to a possible source of challenge and disclosure of discussion of another important issue which is the lack of knowledge of some of the content of content and

the implementation of the curriculum, which raises concern about the athletic competence of teachers to teach mathematics. There is evidence to show that the teacher's difficulties in teaching mathematics are not only strange to Iraq, but is in fact

true all over the world by observing previous studies, this may be understandable because these teachers are not familiar with the methods of teaching modern mathematics and are responsible for teaching various subjects and the need To take these difficulties seriously and search for ways to improve the mathematical content knowledge of middle school teachers and the need for developmental courses for teachers during service. Negligence in this regard leads to failure to implement the curriculum.

2- The failure of some teachers to accept solutions that do not make an ideal opinion as technology advances.

It turns out that teachers ' citations for judgment and practical application are related

to different personal theories, views, attitudes, and everything related to teaching and learning mathematics. It turns out that some teachers hold the view that solutions to

math problems should take some time and from these teachers, for example what some teachers explained in Table 2, there is a section of participating teachers who followed some rules to be able to get the correct answer quickly and is necessary in Mathematical problem solving This rule and practical application are important for teachers in evaluating different solutions to the mathematical question.

It turns out that some teachers accept multiple solutions that strongly encourage evaluation of different solutions to questions and openness in the teaching and learning process in different forms.

And that the use of formulas for multiple solutions is not limited to Iraqi teachers, and previous studies by teachers of the United States of America, Japan and Germany

showed that teachers participate their students in solving questions with multiple solutions and obtaining similar results. (Stigler and Hiebert 1999)

Multiple solutions for teachers during the implementation of the curriculum encourage their students to do different forms.

However, the new Iraqi curricula showed that some teachers themselves do not appreciate the various solutions to mathematical questions and that they face difficulty in implementing the curriculum as required.

3- The teachers ' different beliefs and attitudes about mathematics.

Some research has shown that differing perceptions about the nature of mathematics

have a major impact on the methods by which material is presented within a class. ((Owens, 1987: 586

Mathematics and Curriculum Standards Global Document confirmed that mathematics is ideas. (NCTM, 1989)

The teacher of mathematics is one of the most important human inputs in the educational process, as the role of the teacher was historically a transfer of knowledge
in the classroom, and a source of authority in it, because the teachers are studying as
they are studying as shown by the organization (NCTM, 1991).
A section of mathematicians and their philosophers have shown that mathematics is a
type of mental activity and social construct that includes guesses, proofs, and justification. ((Thompson 1997: 128
Beliefs are what the teacher has of thought, mathematical opinion, and knowledge through a commander's instructional experience. (Al-Kazemi: 2014)
It turns out that teachers ＇ citations for judgment and practical application are related
to personal theories and their views, and attitudes and beliefs related to teaching and
learning mathematics. It seems that some teachers hold the view that solutions to mathematics problems should take some time, and these teachers follow the process of employing procedural rules.
It turns out that teachers ＇ interesting beliefs and the role of methods and texts that teachers impose on students in the emergence of some students＇ beliefs about mathematics are followed by some rules and the ability to obtain the correct answer quickly is necessary in solving mathematical problems. (1992, Schoenfeld)
It turned out that there is a similarity between teachers ＇ beliefs and students＇ beliefs,
as ＂students＇ beliefs in mathematics are shown in the following:
(A) Giving a ready-made way to solve a specific math problem.
(B) Work to find an answer to the problem in a short time.
The present research data revealed that the beliefs of the participating teachers contradict sharply with what is determined by the new curriculum, which strongly encourages teachers to open up to different solutions strategies after the teachers are
the "key to change and development"
4- The difficulties of some teachers in evaluating the open questions
The new curriculum focuses on the use of multiple solutions to open questions, and the differences in solving unexpected questions and responses among students raise challenges for teachers to estimate them differently. And that there is a big difference
in evaluating a particular answer for teachers when they assign degrees ranging from
(0 to 10) for the same answer. And that there is a great variation even in the degrees

of those teachers who found the solutions wrong. Interestingly, the student's solution got grades ranging from 1 to 5 from the same teachers who pointed out that the solution was wrong, some teachers gave an example (3 grades) to try to solve the problem, and some gave (4 grades) "as encouragement or reinforcement. While it received The student's answer is not correct until (7 grades) from another teacher. The results significantly reveal that there is a significant difference in the teachers' classification of different solutions to open questions. These results clearly indicatethat there is no evaluation criterion that teachers can benefit from assessing student work, and this difference is of great importance to what teachers appreciate; this study confirms that some teachers are not open to multiple solutions and have difficulty inestimating them.

Conclusions

The results of this study showed the following:

1. The evaluation of open questions depends on the experience and ability of the subject teachers.

2. Solving mathematical problems in various ways is of great importance for conceptual and meaningful learning for students.

3. Some teachers face difficulties in assessing the responses of many open solutions for students when implementing the new curriculum. 4. It was found that raising concerns about the new curriculum that has been used in

the past two years is related to the efficiency and readiness of teachers to implement the new curriculum.

Recommendations: In light of the results of the current study, we recommend the following:

1. Attention to evaluating the performance of teachers in the light of the new curriculum.

2. Paying attention to the teacher training courses and showing their importance.

3. Urging teachers of mathematics to give different formulas for one topic when explaining.

4. The interest of the Ministry of Education in developing the performance of teachers in general and teachers of mathematics in particular.

Proposals: To complement our findings, we propose the following:

1. The interest of the Ministry of Education in setting the first classes for the math lesson regarding the student's focus during the course of the lesson.

2. Teachers need support in many areas to implement the new curriculum.

3. There is a need for (educational - learning) programs designed specifically to help the professional development of teachers and their students.

4. Develop a training program for middle school mathematics teachers in light of the new curriculum to improve their academic performance.

5. Teachers' interest in open formulas when teaching mathematics and using the learning method so that when teaching the new curriculum.