# Measurement methods used to determine the first period of secondary mathematics teachers in Ahvaz and meet the teachers to measure the high-level thinking in the classroom

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Abstract: This study aimed to determine the types of measurement methods Astfadh Y first period of secondary mathematics teachers in Ahvaz and Trading of thinking that teachers with high-level assessment was conducted in the city of Ahvaz. The sample includes school math teachers Mtvsth Y period of Ahvaz and the sample based on the sample of 141 people for the use of cluster sampling and were randomly selected. The research method is based on the objective of applied research, based on data types and descriptive correlational research is conducted. A questionnaire was used to run. As well as the analysis of one sample t parametric test data is Ayastfadh. The results of the study showed that more teachers Yafth Ay written procedures and performance measurement, as well as the first secondary school mathematics teachers to use appropriate methods to measure, are satisfied. The findings also showed that the first high school mathematics teachers Nhvh Y measured with mathematical analysis, logic and reasoning, judgment, problem solving and creativity of the students are familiar.

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Key words: evaluation, approval, analysis, logic and reasoning, judgment, problem solving, creativity.

#### Introduction

One of the major goals of education is to prepare students for life in the real world. To achieve this goal, training programs has always been Taz·h¬Tryn scientific findings and if necessary, the dynamic form has been amended. In this regard, in recent years one of the hot Bhs¬Hay educational circles of the educational reform movement. Educational reform teaching and learning outcomes for each of the components has its own process and in the meantime, measurement known as the pioneer of education reform and the role and use of evaluation methods to emphasize is the right way.

In the past, evaluation of teaching and learning something separate class My¬Shd seen primarily as a tool for making decisions about the upgrade Mstnd¬Sazy academic achievement and their students to use higher Payh¬HayMy¬Rft. In other words, evaluation, the educational activities of the teacher My-Md account. But today, the interaction between assessment and learning are fundamental class has been revised. The evaluation considered the teachinglearning process is an essential part of Jdayy¬Napzyr and only used to document the progress of students and classified them Nmy¬Rvd, but known to exist as an effective factor in increasing learning ¬Mvzan role is Tyyn¬Knndh¬Ay. Mfhvm¬Sazy and new attitudes of assessment has led to new methods of evaluation there.

This study aims to determine the methods of measurement Astfadh¬Y secondary mathematics teachers of the first period and the satisfaction of the appropriateness of the methods of measurement Hdf¬Hayfocused.About types of methods used to measure satisfaction and meet teachers and provided them with a variety of methods of educational planning, other teachers and parents and place.

#### problem statement

The main purpose of any education system is to provide the skills necessary for people to be useful as part of an effective role in society. Due to the characteristics of today's society, mathematics Arayh¬Y These skills play an important part because the mathematics of observation, measurement, calculation, analysis, inference, deduction, proof and predict deals and sewage As a communication system helps people to understand the depth of information, patterns and earn argument. (Brvmz quotes dignity, 1390) George Puglia (2007), believes Ayn¬Kh goal Despite Avlyh¬Y mathematics, mathematical skills to students Mvzsh¬ is, and more importantly it is a greater good This objective, namely thinking and Bh¬Vyzhh, Hl¬Msalh power is growing.

The processes in the program. The National Curriculum in mathematics Hvz h¬Y referred to them, related to higher levels of cognitive Tbqh¬Bndy¬Hay by different Sahb¬Nzran offered. Mrvf¬Tryn this Tbqh¬Bndy¬Ha, belonging to Bloom. His cognitive functions into six categories, from simple to complex classification of passes that include knowledge, understanding, application, analysis, synthesis and evaluation. Three levels of this classification, the analysis, synthesis and evaluation, high-level thinking My¬Namnd. When students in the field of high-level thinking skills training My¬Bynnd better performance in a full range of standard tests Andaz h-Gyry-Ha done-that of the large scales start Tklyf¬Hay class decreased to continue. Students who are regular and routine thinking, engaged and high-level thinking My-Snjnd teachers teach students who think better My-Gyrnd. According to the high-level thinking, sensing this kind of thinking in mathematics include: assessment of mathematical analysis, evaluation logic and mathematical reasoning, judgment, math, math Hl¬Msalh measurement and finally, measure mathematical creativity. (Anderson and Kratvl, 2001, quoted by Brvkart, 2010).

So on the one hand, the global Hdf-Hay mathematics program. The national curriculum, it is necessary to Hvz h¬Y mathematics, high-level thinking (analysis, synthesis and evaluation), to be trained and assessed and fast-growing and information technology, cognitive skills required to students who have like problem solving, critical thinking, analysis and interpretation of data and information Arayh¬Y be increased. Hence, the construction of new forms of measuring the result of the learning process and learning can-essential measure is stopped. (Dndys, 2013) Therefore, the need for accurate measurement techniques N¬Chh shows that the student has learned and not learned to focus and also, requires complex and multiple methods, including written, oral and Nshan¬Dadny (View) to be applied. (Anderson, 1998 and Byrivn, 2011) Byhagar believes that in order to provide more opportunities of students with learning. assessment methods old must be replaced with new ones. (2007, quoted by Dndys, 2013) he wrote:

"If we really believe that anyone can learn and deserve the best kind of education, another traditionally designed using the measurement model and on the selection, as it focuses on certification, will be Ghyrqabl¬Thml."

Naturally, given the recent emphasis on issues related to differences learners and Tvanayy¬Haba significant measure due to the position as well as high-level cognitive processes, other traditional math exams, valid sizes the ability of students to mathematics able to meet. Consequently, the need for alternative methods for measuring effective integrated range of mathematical abilities of students felt. (Dndys, 2013). Accordingly, in recent years, alternative practices to assess mathematics in class, have been proposed by various Sahb¬Nzran. This alternative methods, Piaget and Vygotsky-based philosophies and emphasize Sakhtn¬Grayy (twentieth century) emphasized the importance of them are students rather than selection. (Dugan, 2001) Zhanysh, Lee and Akrvf (2007), the importance of methods of measurement expressed in the classroom Speak: Snjsh¬Hay alternative theoretical framework used in class include: looking at learning As a manufacturer of knowledge and experiences can find the authenticity of the material, the use of dynamic and continuous evaluation tools, and finally, entrusting students. Using these ideas in education, individual properties for innovation, choice, self-discipline, empathy, trust each other and self-regulation in students increases.

Byrjyn (2011), the alternative methods include My¬Dand: Dstvralml¬HayNmrh¬Dhy, conceptual maps, Pvshh¬Karha, articles, students, self-assessment and Hmklasy-Snjy. Despite extensive efforts to change but the general philosophy of mathematics education, many math teachers still Chndgzynh¬Ay questions and exams Kvth¬Paskh to measure progress in mathematics Dansh¬Mvzanshan addressing. This type of measurement is based primarily on memorizing and recalling power and high-level thinking Nmy-Snjd. This measurement methods, creativity and innovation in students, encourage Nmy¬Knd and therefore, the distance between the teacher and students to encourage Shagrdn increases and gives up just to keep the facts in mind action. (Kim and Noah, 2010) studies class exams decades limitations analysis, to conclude that more Snjsh¬HayRsydh¬And teachers in the classroom, only needs to recall information. (Marceau and Pig, 1993), however, when they were asked to what extent My¬Knyd thinking, reasoning and thinking My¬Snjyd high level, both elementary teachers (Macmillan, Miron and Workman, 2002) Secondary teachers (Macmillan, 2001) claimed that the cognitive levels significantly My-Snjnd. It is obvious that many teachers believe that high-level thinking My-Snind but in fact not the case. In this case, one hypothesis is that they probably measure higher order thinking and practices it is not well-known.

Given the importance of using alternative methods to assess mathematics in class and significant impact that the measurement methods, the students could have high-level thinking, problem is that firstly, the period of Teachers of Mathematics Now what procedures to assess mathematics in secondary students in the class used, deals, secondly, the extent of methods to measure higher order thinking students in mathematics are aware.

# The importance of and need for research

Measurement of high-level thinking in the classroom, was given special emphasis. Pzhvhsh¬Hayy that has been done in this area, containing useful information about the advantages of

using this type of measure are in the classroom. When thinking shows that students do not show especially designed applied, the teacher's understanding of how students and Ayn¬Kh They are learning what they are thinking. improve decreases. skills bv Tfkrdansh¬Mvzan as well their as overall performance should be better ¬Shvd. Students, by making available means and combining new content with images, remember My¬Gyrnd, therefore, improve thinking skills, have the same size, content knowledge and understanding will also improve. (Brvkart, 2010) Huggins, Hall, Barnfyld and Mosley (2005), a meta-analysis of studies on the effects on cognition Mdakhlh<sup>¬</sup> in thinking skills, and attitudes made progress. Overall, the meta-Huggins and his team, this gives Conclusions confirmed that Mdakhlh¬¬Y thinking skills in students thinking development, progress and motivation Hvz·h¬Y content is effective.

Research results by Dndys (2013) as determined by measurement of math teachers were Astfadh¬Y, show that math teachers are still the traditional written tests to measure mathematical abilities My¬Gyrnd Dansh¬Mvzanshan interest; Although his teachers, the tests used dissatisfaction with addressing.

Also, the measurement of high-level thinking skills, increase the academic achievement of students. Newman, break and Nagvavka (2001), Tklyf¬Hay math and reading teachers Payh¬Hay Chicago in the third, sixth and eighth investigated. Tklyf¬Hayy students who had received the correct mental performance in sectors which require math and reading tests basic skills in parts of reading, writing and mathematics Nmrh¬Y gained more than average.

High-level thinking is effective measure to increase the motivation of students. Studies have shown that responsible for keeping students for highlevel thinking Vsylh¬Y that require critical thinking and mental function are Tklvf¬Ha and Snjsh¬Havy, students motivation as well as the progress Education, increases. Students with their studies, fascinated and excited Nmy-Shvnd, but they are thinking about particular issues, fascinated to learn them, are the motivated. High-level thinking, feeling "control on thoughts" in students increases. Thinking, memorization is very Lzt¬Bkhsh¬Tr. (Brvkart, 2010)

On the other hand, using traditional measurement methods, examinations are reminded level, students from the rest of the period. For example, only at the same level. Branson and Carter (1995), believe that traditional measures to help students to seek higher Payh¬Hay to learn. N¬Gvnh that Mskal (2000) says, "One can not score to the students, give feedback." For example, students who Nmrh¬Y 70 of 100 My¬Gyrd, maybe he does not know how it could improve its performance in the next Tst¬Hay. Just one score, students without a clear vision for improvement, turns left. In contrast, Dstvralml¬HayNmrh¬Dhy well designed, can be used to process their resolution, provide feedback and performance expectations for students with clearly defined criteria, show. Thus, students from the teacher how to earn points, will have a better understanding.

In Iran, international studies have shown that students in the mathematical situation is not optimal. The results of the Third International Math and Science Study Thames in 2003 shows that educational outcomes Iran even in developing countries significantly Dard. nmrat Iranian students in the math test, the average for the countries participating in the study are Lower Thames so that the study of Iranian students' average score was 389, while the average score was 495 participating nations. Of the reasons why the Institute of Education, Ministry of Education brought about these results is that the Iranian teachers, modern methods are known and are used less and teacher-centered teaching practices takes place. The content of all courses by teachers with an emphasis on homework will be transferred. (Abtahi, 1387)

Therefore, alternative Snjsh¬Hay benefits mainly related to high-level thinking skills, and having regard to the lack of attention to nurturing these skills can be Jbran¬Napzyry injuries in students, Hvz·h¬ math education in general, leave the education system, it is necessary to assess the situation Hvz·h¬Y mathematics teachers, in order to be examined and described if necessary, make changes or improvements to be done in this area.

# **Research purposes**

## **Overall objectives**

• Determine the types of assessment methods Astfadh¬Y first secondary school mathematics teachers and the consent of the appropriateness of the methods of measurement Hdf¬Hay

• Trading in the secondary school mathematics teachers by measuring the high-level thinking in the classroom

#### Specific goals:

• The original measurement methods Astfadh¬Y high school math teachers first

• The first high school math teacher satisfaction measurement methods to assess the suitability

• Determine the status of the first secondary school teachers familiar with Nhvh¬Y measure mathematical analysis.

• Determine the status of the first secondary school teachers familiar with logic and mathematical reasoning to assess Nhvh¬Y

• Determine the status of secondary school teachers first introduction to mathematical judgment Nhvh¬Y

• Determine the status of the first secondary school teachers familiar with Nhvh¬Y measure math Hl¬Msalh

• Determine the status of the first secondary school teachers familiar with Nhvh¬Y measure mathematical creativity

# Research questions

# The main questions

- The main methods used in the assessment are the first high school math teachers and their satisfaction with the aim of assessing the appropriateness of this approach is how much?

- Overview of high school mathematics teachers first learn how to measure higher order thinking in students like?

### **Special Questions**

- The first secondary school teachers, from what the main methods used to measure students' mathematical virgin?

- Have a high school math teacher first, the appropriateness of the methods used to measure, are satisfied?

- Do the math teachers of high school students are familiar with how to measure mathematical analysis?

- Do the math teachers of high school students are familiar with how to measure mathematical logic and reasoning?

- Is the first high school mathematics teachers are familiar with how to assess students' mathematical problem solving?

Do the math teachers of high school math students are familiar with how to measure creativity? **hypotheses** 

- The first secondary school mathematics teachers to use appropriate methods to measure, are satisfied.

- The first secondary school mathematics teachers Nhvh¬Y mathematical analysis to measure the students are familiar.

- The first secondary school math teachers math students are familiar with Nhvh¬Y measure of reason.

- The first secondary school math teachers math students are familiar with Nhvh¬Y judgment.

- The first secondary school math teachers math students are familiar with Nhvh¬Y measure problem solving.

- The first secondary school math teachers math students are familiar with Nhvh¬Y measure creativity.

# 1-6 conceptual and functional definitions

# 1-6-1 conceptual definition

Thinking Level: High-level thinking, critical thinking and problem-solving are usually defined. According to the Norris and Ennis (1989), critical thinking, reflective thinking or reasonable, with an

emphasis on Ayn¬Kh decisions about what to believe or do, well, problem solving, as "the non-automatic Trh¬Ryzy the need to achieve a purpose ", defined. (Nytkv and Brvkart, 2007)

Critical thinking: This means to apply prudent judgment in a particular subject. Logical thinking and reflection on what it believes to be done or focus. (Norris and Ennis, 1989)

Mathematical analysis: Mathematical Tjzyh¬Y to its parts and explaining the relationship between them and Qsmt¬Ha. (Brvkart, 2010)

Logic and mathematical reasoning skills of mathematical reasoning, including by analogy and Astqrast. Than the reasoning of a general principle of the original sample. Inductive reasoning of an item or items to a principle. (Brvkart, 2010)

Creative Mathematics: ability to solve mathematical problems by students with new methods and new look. (Brvkart, 2010)

Bringing things together in new ways and see things that perhaps others are not, making things new, unusual or unconventional method for the expression of an interesting thing. (Kvhltv, 2005)

Measurement analysis to evaluate the quality of students' thinking when it information on the indicators argue with that information, questions or assignments to the students want to find or describe the relationship between them to find. Questions surface analysis and materials available to students to answer (or decide they want to place materials); then pose questions or issues-such offer responses that require the separation of the components of each or organize them in a logical way. Explain the reasoning used to connect the components to each other, often part of the analysis. (Brooks, 2010)

Assessment evaluation to assess valuation, or tasks that you may need to ask "how to judge the students about the value of the materials and methods used for their intended purpose set" measure. Students can make products according to the criteria evaluated. These criteria can be standards or criteria that students make. This type of evaluation is a personal preference but a reasonable assessment that can be used as a default or conclusions, expressed and supported the development of evidence and logic. To measure the students how to evaluate the quality of the materials put at its disposal and ask them to determine the value of the materials for certain purposes. (Brooks, 2010)

People's evaluation or production: measuring whether students can be classified in Bloom "create" means to assess whether they can together dissimilar things together in new ways or things in the open Chinese to create something new or not. The students' task to do or a problem to solve a manager that includes the production of multiple solutions, process design to achieve a specific goal, or produce something new. Production here to discuss the same old Bloom is classified as "compound" and overlaps with creativity in the widest sense. (Brooks, 2010)

Measurement logic: Like other measures of highlevel thinking, you must first argument to measure the students something to argue the manager. For questions multiple choice, short answer and collection of, the introductory material to provide. To measure performance and longer projects can give students access to resources that already have seen or ask them to find the resources to ask the questions that required students to argue about the content There. (Brooks, 2010)

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Judgment to assess students' use of critical judgment, to which a scenario, a speech, an advertisement or any other information resources manager, then ask them to make a critical judgment. Here are the kinds of judgments that include a database validation, identification of implicit assumptions in this information and identify ways seductive and persuasive. (Brooks, 2010)

Measurement of creativity and creative thinking: certainly creativity is what teachers want the students grow. However, creativity is one of the weakest aspects of measurement used in the classroom as well.

Many teachers want students to be creative but do not quite know what they want. In some classroom projects, teachers have to be creative moments, but they leave it to be uncertain and undefined. Many of the activities and the typical classroom, students develop their creative work. For example, math teachers "guess and check" as a problem solving to students, teach. Guess the production process and then evaluate it based on how close the solution to the problem, including the production of both creativity and criticism. Brainstorming on any subject is an old creative activity. In a typical brainstorming session, all ideas are accepted and written, and then be evaluated. The result of this approach, the maximum number of ideas. (Brooks, 2010)

## functional definitions

Assessment: In this study, measuring the processes by first secondary mathematics teachers in Ahvaz to gather the information needed to make decisions about students to be considered.

Meet the measurement of high-level thinking: Trading in the secondary mathematics teachers in Ahvaz how to evaluate the ability to analyze, reason, judgment, problem solving and mathematical creativity of students who Vsylh¬Y questionnaire will be evaluated.

Understanding the mathematical judgment assessment of the amount of information the first secondary mathematics teachers in Ahvaz city in mathematical analysis and assessment practices that exist Bvsylh¬Y questionnaire measured.

Understanding the mathematical HI¬Msalh its assessment: the first high school mathematics teachers in Ahvaz information about mathematical problem solving and assessment practices that can result Bvsylh¬Y questionnaire measured.

### written test performance

The written test function mainly on the application of knowledge and skills in practical situations or simulated practice with emphasis placed Mvqyt-Hay. In these tests the performance, or

Bazdh¬Hay final or intermediate stages of learning are the performance measures that are necessary to achieve the desired end Bazdh-Hay, such as the correct use of tools and Dstgah-Ha. Students and students can also request a weather map, a histogram, electrical circuit design, design a dress, a short story or a map to build a scientific experiment. In these examples, the learning that writing is the result of a person's knowledge and the result of his expertise, and a practical scale to the degree that in itself is valuable and, unlike the non-functional tests, As Vsylh¬Ay to judge a psychological trait or ability to work Nmy¬Rvd imperceptible. In addition to the above, where the final product or in some cases are the final learning assessment test performance can also be used to measure the skills or activities Vasth¬Ay. For example, the use of a particular device or tool, such as micrometer, it may be necessary to learners on proposing scale, different Mvqyt¬Hay study. Functional tests can be written as a preliminary assessment of information about what that will do to apply. This type of information in writing and, if necessary, measured as a group (Saif al, 1384).

#### identification test

The purpose of the test is to identify a method to measure the learner's ability to detect Vyzhgy¬Ha, advantages, disadvantages and uses of different tasks, tests to identify types and different applications. In some Vqt¬Ha learner to develop a tool or machine can not identify or describe its work. In other Mvqyt¬Hay the learning difficulty such as short circuit in an electrical device, and asked him to tools, equipment and work practices meet the difficult choices. The more complex the test listen a faulty device, such as a car engine, and then identify the cause or Lt¬Hay forms Roy sound device (Shvndghrby, 1390).

#### Performance in simulated Mvqyt¬Hay

The test simulated or simulated performance Mvgvt¬Hay asked learner is an artificial or fictitious or simulated in a position to do the same things that are needed in real Mvqyt¬Hay. For example, driver training, before learning Hdh¬Dar real driving a car they put him in a car like a real car driving simulation and all machines such as the steering wheel, mirrors, etc. Pdal¬Ha There are deals and asked him to apply the vehicle driving on the artificial practice. Some experts assess learning rather than simulated Mvqvt¬Hav term performance measurement Brdh¬And Qyas¬Pzyr to work. They Qyas¬Pzyr to measure, view and evaluate learner performance in situations similar to real Mvqyt-Hay. The purpose of those measures deals Qyas¬Pzyr used to predict behavior in real life is measured (Sayf al, 1384). Works

In the works of learning occurs asked to do things that are representative of actual performance measurement. Therefore, this method of measuring the actual performance Nzdyk¬Tryn learning in natural environments. The method works, samples of learner want to do things that should be important elements of the overall performance, which runs under controlled conditions. For example, the test drive the car, the learner needs to exist during the interval that contains Mvqyt¬Hay normal driving and to drive real slow with them Atvmbyl¬RanyRvbh¬Rv occurs. According to the person driving the car during this span, compared to the overall driving ability he will be judged (Shvndghrby, 1390).

# Long-term projects

What long-known projects include two parts: 1) individual projects and 2) group projects. Individual projects are said to be a long-term student to a product or product as a template, a report, a device or a set (Collection) tangential direction. Features project in which students combine several different activities to a product are the result. For instance, a research library as a student project entails the following activities: the use of research resources available in the library, summarizing the contents, preparation of a report design, develop various materials collected, interpretation of results, organization of content and preparation of the final report. In addition to individual projects, the teacher can also assess the performance of students in group projects. Two or more of the students working on the projects addressing. The main objective of this project is to determine the group as a means of measuring whether students can collaboratively work together and produce a valuable product.

# Functional tests written

The written test function mainly on the application of knowledge and skills in practical situations or simulated practice with emphasis placed Mvqyt¬Hay. In these tests the performance, or Bazdh¬Hay final or intermediate stages of learning are the performance measures that are necessary to achieve the desired end Bazdh-Hay, such as the correct use of tools and Dstgah¬Ha. Students and students can also request a weather map, a histogram, electrical circuit design, design a dress, a short story or a map to build a scientific experiment. In these examples, the learning that writing is the result of a person's knowledge and the result of his expertise, and a practical scale to the degree that in itself is valuable and, unlike the non-functional tests, As Vsylh¬Ay to judge a psychological trait or ability to work Nmy¬Rvd imperceptible. In addition to the above, where the final product or in some cases are the final learning assessment test performance can also be used to measure the skills or activities Vasth¬Ay. For example, the use of a particular device or tool, such as micrometer, it may be necessary to learners on

proposing scale, different Mvqyt¬Hay study. Functional tests can be written as a preliminary assessment of information about what that will do to apply. This type of information in writing and, if necessary, measured as a group (Saif al, 1384).

### Measurement in natural Mvqyt¬Hay

In measuring the natural Mvqyt¬Hay rather than a task for the students to define and assess the situation under control, the teacher waiting My¬Mand to occur under natural conditions and then to measure the performance of the act. Because normal behaviors or a student measured in this way are the tasks that way a function also is said (Saif al, 1384).

#### Conclusion

The results of this study's results (1381) academic achievement of students in science class formative evaluation feedback, verbal, written and combines it had received two academic achievement Nmy¬Krdnd compared to those who received feedback. In this study were male students in fifth grade Bukan city. The results showed that:

1 between the academic achievement of students who receive feedback on developmental tests virgin, with students who do not receive feedback there is a significant difference.

2 between the academic achievement of students who receive written feedback on genetic tests, genetic tests with students there is a significant feedback.

3. the academic achievement of students who receive written feedback on developmental tests, with students hybrid feedback (verbal and written) will receive a significant difference there is harmony. Also thanks to the results of a study in 1378 entitled The effect of genetic testing on third-grade students did mathematics achievement. Statistical analysis of data showed no significant difference between the average mathematics students in many different genetic tests are received. Track method (Tukey) showed that those students who test for genetic progress in the medium frequency (three times every third) were received from two groups that genetic tests in the low frequency (twice in the third ) and high frequency (five times in the third) was better received. The results of this study suggest that genetic tests with an average frequency of two other groups have been more effective in raising student achievement is consistent and coordinated.

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