EXCELLENCIA
INTERNATIONAL MULTI-DISCIPLINARY JOURNAL OF EDUCATION
Volume 02, Issue 05, 2024 ISSN (E): 2994-9521

Forms and Methods of Testing Knowledge and Skills in Mathematics in Elementary Grades

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Abstract:

The scientific article is devoted to the issue of using innovative approaches to assessing learning outcomes in mathematics in primary school. The article provides an overview of innovative methods of assessment in mathematics in primary school, such as: formative and summative assessment, criterion-based self-assessment, concept map, test preparation, portfolio, programmed approach, rating system for assessing the quality of learning material. The author considers the possibility of their implementation in the educational process, and provides examples of their use by a teacher when assessing learning outcomes in mathematics in primary school.

Keywords: Innovative approaches to assessing results, criterion-based self-assessment, formative and summative assessment, test, portfolio, programmed approach, concept map, rating system for assessing the quality of learning material.

INTRODUCTION

In recent years, assessment activities in the education system have been undergoing global changes. This can be seen in the change in the nature of control, since today a comprehensive assessment of students' academic and extracurricular achievements is becoming relevant, and the assessment system forms the basis of diagnostic and control processes.

MATERIALS AND METHODS

The modern approach to the system of monitoring assessment achievements in mathematics requires the inclusion of diagnostic tests of a subject and meta-subject nature. The current current

situation in the assessment activities of the educational space brings to the fore the assessment of meta-subject and personal results. This is a complex, complex process that requires the determination of approaches to its implementation, systematicity, and transparency, so that a single educational space with uniformity in the understanding of this process is created in the school [1].

There are two main approaches to assessing the achievements of junior schoolchildren - traditional and innovative.

Innovative approaches to assessment in the process of teaching mathematics in primary school include the following: formative and summative assessment, criterion-based self-assessment, concept map, compilation of tests, portfolio, programmed approach, rating system for assessing the quality of learning material [2].

Formative assessment is assessment during the learning process, when knowledge, skills in mathematics, values and grades, as well as student behavior are analyzed, and teacher-student feedback is established. The main goal of formative assessment is to motivate students to plan goals and ways to achieve educational results in mathematics, for the purpose of further training and education [4].

RESULTS AND DISCUSSION

Summative assessment is carried out with the aim of establishing the compliance of students' knowledge with the norms and requirements of federal training standards and ascertains the fact of students' proficiency in mathematics.

Criteria-based self-assessment is as follows: a child can independently, using assessment criteria that are known to him, present to the teacher his point of view regarding the relative level of the material learned in the subject "Mathematics". Criteria-based self-assessment can be carried out using the following methods: "Traffic Light", "Zuckerman Ruler", etc.

Programmed control or selection method. It consists in the fact that the student is asked to answer questions, each of which has several possible answers, but only one of them is correct. The positive side of this approach is that several similar questions and answers can be given to all children in the classroom at the same time, either on separate forms or on a computer screen, allowing their knowledge to be tested within a few minutes. Examples of the use of programmed control programs in mathematics in elementary school can be the following:

"Multiplication tables in cartoons 2.0" 2nd grade; "Division table in cartoons" 3rd grade; "Math in 10 minutes a day" 1st grade; "Time Move - movement in time", etc. The main disadvantage of programmed control is that with its help you can control only some aspects of assimilation of the material being studied. However, this method does not reveal the entire volume and completeness of knowledge.

The rating method is a system that organizes the educational process and actively influences its effectiveness. This assessment system takes into account all the active activities of students associated with the formation of universal educational actions and other indicators in mathematics, and also contributes to the formation of personal qualities of primary school students [5].

The greatest objectivity is typical for assessments obtained by written testing. If we consider the problem of assessing knowledge as a method of comparison, then two different students should be offered the same tests and the time for completing them should be limited. One of the options for such testing has been used in schools for a relatively long time in the form of examinations, assessments, and lesson (work) tests for the ongoing assessment of students' knowledge. In addition, lesson tests, if necessary, can replace exam tests, but the reverse replacement is impossible due to the gradual passage of the educational material. Examples of such written tests in

mathematics are: online tests, free choice tests; tests in which compliance is required; alternative tests, where it is necessary to determine the truth or falsity of the proposed statements; tests that involve choosing an answer(s) from a number of options; tests leading to the creation of various diagrams, graphs, etc.

In addition, in primary schools this assessment technique can be used as evidence. This technique involves the child filling out a table as he goes through the material in mathematics, which makes it possible to identify positive dynamics at the beginning of a certain topic and at the end of its study [2].

The method for assessing real achievements, truthful, objective control is a portfolio. The advantage of this method is that it is a multifunctional tool for both assessment and self-assessment of one's own achievements.

Thus, for an educational organization, the use of this method, firstly, provides the opportunity to provide assessment in a situation where assessment criteria have been previously discussed with students, and, secondly, allows the student to predict results, as well as design types, forms and means of own educational activities. The student can individually or together with the teacher choose which evidence of achievement should be placed in the portfolio. The above allows us to assert that the student's portfolio becomes a working tool that allows him to effectively monitor, plan and evaluate his achievements [1].

The essence of a learning portfolio is to demonstrate everything that a student is capable of. Having it in a child will make the assessment optimistic and prevent loss of faith in oneself and one's strengths at the very beginning of the journey [5].

Templates help younger schoolchildren understand the principle of creating a map and ultimately receive a structured reminder on the topic, as well as solving the problem of filling out a template. A concept map can be solved in at least two ways:

- Collective filling out an enlarged exact template of a memory card during work in the lesson. Any participant in the educational process can fill it out: teacher, student. It is also possible for students to work "in a chain"; here the teacher is free to choose the form of work in the lesson depending on the preparation and temperament of the class (group of students). An example would be a Concept Map template on the topic "Integers";
- Collecting the Map by "bricks" - blanks. For example, a concept map template on the topic "Family of parallelograms."

CONCLUSION

Thus, in order for training not to be of a formal nature, in addition to traditional, fairly clear quantitative criteria (percentage of correctly solved problems, number of errors made in dictation), it is necessary to use innovative approaches to assessing the results of students that help determine the quality of education. This allows us to assess whether the student can apply the acquired knowledge in simple, familiar situations that were encountered in textbooks and in lessons, and whether he is able to apply the knowledge in a new situation. That is, the introduction of innovative approaches allows students to form a value judgment and reorient control aimed at the learning outcome to control over the process of cognition.

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