DOI: https://10.5281/zenodo.17785559

ON THE PROBLEMS AND SOLUTIONS OF IMPLEMENTING THE NATIONAL CURRICULUM IN PRIMARY SCHOOL MATHEMATICS CLASSES

Eshboeva Bagira Abubakir qizi
1st year Master of Angren University

ABCTRACT

The article describes the competency-based approach to mathematical education as the acquisition by students of various skills that allow them to act effectively in situations encountered in professional, personal, and social everyday life. The competency-based approach focuses on strengthening the practical, applied aspects of the foundation of mathematical education.

Keywords: Program, standard, education, education, education, elementary school, mathematics, pedagogy.

National curriculum for mathematics in general secondary education. Draft. Republican Education Inspectorate. 2021.

Educating the younger generation worthy of our great scholars such as Muhammad al-Khwarizmi, Ahmad al-Farghani, Abu Raykhan Beruni and Mirzo Ulugbek, who made a great contribution to the creation of the foundations of mathematics, conveying modern knowledge to students, and creating conditions for the youth of our country to enjoy the beauties of mathematics is both a debt and an obligation for everyone.

Mathematics is the basis of knowledge of the world, is of great importance in revealing the specific laws of events and phenomena occurring around us, and in the

development of production, science and technology.

As is known, mathematics sharpens the human mind, develops attention, cultivates determination and will to achieve the intended goal, teaches discipline in an algorithmic way, and most importantly, encourages reflection and expands thinking. As our esteemed President Sh.M.Mirziyoyev noted, “Mathematics is the basis of all sciences. A child who knows this science well grows up intelligent, broad-minded, and can successfully work in any field” [1].

In our country, mathematics has been identified as one of the priority areas for the development of science in 2020, and a number of systematic works are being carried out aimed at bringing the development of mathematical science and education to a new qualitative stage. In particular, the “Concept for the Development of the Public Education System of the Republic of Uzbekistan until 2030”, adopted on the basis of the Decree of the President of the Republic of Uzbekistan No. PF-5712 dated April 29, 2019, Resolution No. PQ-4387 of July 9, 2019 “On measures to provide state support for the further development of mathematical education and science, as well as to radically improve the activities of the V.I. Romanovsky Institute of Mathematics of the Academy of Sciences of the Republic of Uzbekistan”, Resolution No. PQ-4708 of May 7, 2020 “On measures to improve the quality of education and develop scientific research in the field of mathematics”, and the Address to the Oliy Majlis of January 24, 2020 set out a number of significant tasks for the comprehensive improvement and development of mathematical science and education[2].

In particular, the “Concept for the Development of Mathematics Education” included in this program was developed to ensure the implementation of the above-mentioned tasks to comprehensively improve mathematics education and bring it to a new qualitative stage.

Mathematics is the basis of knowledge of the universe, the world, and is of great importance in revealing the specific laws of events and phenomena around us, so that without mathematical knowledge it is impossible to imagine the development of production and science. Therefore, mathematical culture is a component of universal

human culture[11].

The modern goals and objectives of teaching mathematics are as follows:

- to form and develop in students a system of mathematical knowledge and skills necessary for their application in everyday life, study of sciences and continued education;

- to form a person who can successfully function in a rapidly developing society, who can think clearly and clearly, critically and logically;

to value national, spiritual and cultural heritage, rationally use and preserve natural and material resources, and to educate mathematical culture as a component of universal culture.

The integration of our country into the world community, the development of science, technology and engineering, and the competitiveness of the younger generation in a changing world require excellent mastery of subjects, which is ensured by introducing international experience and standards into the education system, including in the teaching of mathematics.

This is also evidenced by studies by a number of international organizations on education. In this regard, the results of the PISA - International Program for Student Achievement Assessment, which is aimed at assessing the literacy level of 15-year-old students in their native language, mathematics and natural sciences, are noteworthy[12].

In addition, the TIMSS - the International Monitoring of Mathematics and Science Education Program, organized by the International Association for the Evaluation of Educational Achievement (IEA), can also be cited. This study helps to compare the level and quality of students' knowledge in mathematics and science in different countries and to identify differences in national education systems. Based on the results of the research, it would be advisable to introduce the content, assessment criteria and mechanisms of international assessment programs into mathematics education, taking into account local conditions.

STEAM (S – science, T – technology, E – engineering, A – art, M – mathematics)

educational technology is aimed at demonstrating the relevance of students' acquired knowledge, skills and competencies to everyday life in the exact sciences block module, conducting educational research, conducting experiments, cultivating creativity aimed at designing, and developing their interest in creating innovations in class and extracurricular activities. In the implementation of this technology, students perform tasks such as creating projects for the manufacture of various technical devices, creating a model of the device based on the project and using it in practice, finding and eliminating shortcomings[13].

The competency-based approach to mathematical education involves the acquisition by students of various types of skills that allow them to act effectively in situations that arise in professional, personal and social everyday life. Thus, the competency-based approach focuses on strengthening the practical, applied aspects of the basis of mathematical education. In order to form basic competencies in students and increase their interest in studying general education subjects through small educational research, practical exercises and applications, as well as project work, were introduced into the science curricula. This not only improves the quality of mastering a specific subject, but also opens up interdisciplinary and everyday life opportunities and increases the effectiveness of education.

When organizing mathematics lessons, it is necessary to pay more attention to practice than to theory and to some extent abandon the approach based on providing students with ready-made educational materials. It is recommended to use more interactive methods such as cases, research, projects, small learning discoveries in mathematics lessons. In order to form small research skills in students, it is necessary to use scientific research methods such as observation, experiment, measurements, analysis and synthesis, induction and deduction, comparison and analogy. It is important to form in students not only knowledge and skills, but also the competencies to apply them in real life situations[14].

The role of project work is noteworthy here. Students are recommended to complete only one project work in a subject or field of study that interests them in one

academic year. Project work topics are selected by teachers as problem situations or cases within one or more academic subjects. Students can work on the project work topic individually or in groups of 3-4 people, depending on their interests. Project work ends with a defense at the end of the academic year. The defense can be held in the form of a conference within one or more academic subjects. Individual or group work of students on the topic of the project work may include the following educational activities: planning their research activities, distributing tasks among themselves, setting learning goals, searching for the necessary information, searching for solutions to a problem situation on the topic, choosing the most appropriate one and substantiating it, conducting surveys or experiments if necessary, preparing a report on the results of the project work, analyzing and evaluating their activities, preparing a presentation for the defense of the project work and defending it. Students usually conduct their research on the problem of the project work in independent extracurricular activities.

Integration of mathematics with other subjects. In teaching mathematics, not only its internal interaction between departments, but also its external integration with subjects included in related block modules is of great importance. In particular, its close interaction with the following subject areas is important:

Competencies formed through the mother tongue and literature, foreign languages play an important role in teaching mathematics in developing students' creative thinking, in forming the skills to express their views fluently in writing and orally, in teaching them to use scientific terms correctly and to communicate freely in the process of discussions.

The science of informatics and information technologies creates great opportunities for increasing the effectiveness of the teaching process of mathematics through the use of various forms of information and communication technologies and computer equipment. In teaching physics, students, along with understanding natural phenomena and basic physical processes, learn to use mathematical formulas in the development of techniques and technologies. Many physical problems require the

formation of the ability to construct equations or systems of equations and work with them. In teaching physics, mathematics is used not only as a computing device, but also allows us to draw physical conclusions about the nature of reality and phenomena using mathematical reasoning, and to think about physical phenomena by studying these processes and solving mathematical equations[5].

In the process of analyzing physical problems in mathematics lessons, it is envisaged to develop students' logical thinking skills, mental development and the formation of universal human values, as well as to develop their thinking about a single picture of the world and to form the skills to solve life problems and use the acquired knowledge in everyday activities.

Biology forms in students a sense of the objects and systems of living nature, the connections between living and inanimate nature. At the same time, a positive attitude towards the living nature surrounding us, preserving natural diversity, as well as a strong sense of responsibility are formed. In mathematics lessons, integration between these two disciplines is ensured by analyzing life issues about biological laws and models of living nature.

Chemistry develops students' skills in perceiving organic and inorganic substances and structures as objects of nature. In mathematics lessons, by analyzing geometric, qualitative and quantitative quantities related to the composition of substances and structures, studying their chemical properties, researching and drawing conclusions, an integral connection between these two disciplines is ensured.

Geography develops students' systematic, joint perception of objects created as a result of the gifts of nature and human economic activity. In mathematics lessons, the connections between these two disciplines are determined by solving and analyzing life problems related to geographical objects.

The competencies acquired through technology are important in the process of teaching mathematics to guide students to a profession, develop their technical creativity, and develop the skills of preparing creative projects.

In the process of studying the basics of economic knowledge, the goal is to

strengthen macroeconomic stability and maintain high economic growth rates, aimed at further developing and liberalizing the economy, to find the most optimal solution in specific life situations related to socio-economic activity, and to teach students to make the right decisions. It is important to develop the skills of building a mathematical model of economic problems and analyzing economic processes using mathematics and making predictions based on it[13].

Studying the basics of entrepreneurship involves the formation of students' future entrepreneurial skills. The role of mathematics in planning entrepreneurial activities is invaluable, and a business plan developed in order to attract entrepreneur funds and investments to the economy must be justified using mathematical calculations. There are important factors in entrepreneurial activities such as profit, loss, income, and risk, which are also justified in advance using mathematical calculations - they play an important role in ensuring the effectiveness of entrepreneurial activities. Solving economic problems and issues in mathematics lessons enriches the content of mathematics with real-life issues and leads to an increase in students' interest in the subject.

The science of history is also directly related to the science of mathematics. Historical data is of great importance in showing the impact of scientific achievements on the development of production sectors, economic and social relations, and the state of the environment.

The current state of mathematics education and existing problems The introduction of modern pedagogical innovative methods of providing education to students in general secondary schools is one of the important conditions for the economy of the Republic of Uzbekistan to join the ranks of developed countries in the world in the next 10 years, that is, to become one of the world's leading countries in the field of science and technology by 2030. [1].

The implementation of the basic educational content provided for in the requirements of the State Educational Standards, which are mandatory for all educational schools of the Republic of Uzbekistan, requires an approach to the

curriculum as a fundamental, theoretical or experimental science based on the requirements of the time, a philosophical and methodological renewal of the science, the development of improved, effective management methods for the content of education and teaching methods.

The analysis of the situation in the mathematics education system in recent years is determined by the following urgent problems:

Insufficient assessment of the role of mathematics in society;

The high level of requirements for the DTS in the subject and the excessive load of the curriculum;

The "dryness" of the content of the subject in textbooks, its detachment from life and its obsolescence;

Low interest of students in studying the subject;

Lack of qualified mathematics teachers;

Insufficient development of the teaching methodological support of mathematics (teacher’s book, multimedia applications, didactic materials, etc.);

The existence of imbalances in the sequence and level of complexity of teaching sections and topics of the subject, taking into account the age and psychological characteristics of students;

Outdated methods of teaching mathematics;

Lack of attention to interdisciplinary connections and practical approaches in general education subjects;

The quality of knowledge and skills of pedagogical personnel being trained in mathematics in existing higher educational institutions does not meet today’s requirements.

REFERENCES:

1. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated December 8, 2018 No. 997 “On measures to organize international research in the field

of assessing the quality of education in the public education system" (National Database of Legal Documents, 10.12.2018, No. 09/18/997/2289)

2. OECD (2013), PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy, OECD Publishing.

3.Angelovski K. Teachers and Innovation: A Teacher's Book: Translated from Macedonian. - Moscow, 1991.

4.Babanskii Yu.K. Problems of Improving the Effectiveness of Pedagogical Research: Didactic Aspect. - Moscow, 1982.

5. Bakhvalova, L.V. Techniques of Pedagogical Technology in the Work of a Vocational School Teacher: A Textbook-Methodological Handbook / L.V. Bakhvalova. 3rd ed., reprinted. Minsk: RIPO, 2020. 148 p.

6. Belyaeva, O.A. Educational Technologies: A Textbook-Methodological Handbook / O.A. Belyaeva, T.A. Bobrovich. Minsk: RIPO, 2020. 182 p.

7. Belyaeva, O.A. Evaluation of the Effectiveness of Pedagogical Experience / O.A. Belyaeva, T.A. Bobrovich // Mastery Online [Electronic resource]. 2018. No. 4(17). Access mode: http://ripo.unibel.by/index.php?id=3807. Access date: July 14, 2022.

8.Belyaeva O.A.Training Model 4K.
https://ripo.by/assets/masterstvo_online/docs/.pdf

9. Dzhumaev M.I**.** Competence- based approach to teaching mathematics to primary school students according to the requirements in the national curriculum of Uzbekistan Science and innovation. International Scientific Journal Volume 3 Issue 2 February 2024 Uif-2022: 8.2 | Issn: 2181-3337 | Scientists.Uz. ***https://doi.org/10.5281/zenodo.10694172***

10.Dzhumaev M.I. Competence- based approach to teaching mathematics to primary school students according to the requirements in the national curriculum of Uzbekistan Science and innovation. International Scientific Journal Volume 3 Issue 2 February 2024 Uif-2022: 8.2 | Issn: 2181-3337 | Scientists.Uz. *https://doi.org/10.5281/zenodo.10694172*

11.Джумаев М.И. Перспективы совершенствования развития преподавания

математики в контексте национальной учебной программы Узбекистана. МАТЕМАТИЧЕСКОЕ МОДЕЛИРОВАНИЕ И ИНФОРМАЦИОННЫЕ ТЕХНОЛОГИИ В ОБРАЗОВАНИИ И НАУКЕ МАТЕРИАЛЫ X Международной научно-методической конференции, посвященной 40-летию школьной информатики и 80-летию доктора педагогических наук, профессора Е.Ы. Бидайбекова 307-312 ст

12. Dzhumaev M.I. Implementation of professional competence of teachers as a means of methodological and mathematical training in colleges. Professional education of the Arctic regions No. 4/2022.7-9 st. www.arctic-prof.ru

13.Dzhumaev Mamanazar Irgashevich va boshqalar. Improving Integral Education – An Opportunity to Prepare Future Primary Teachers for Computer Education. SKOPUS.*Journal of Management World* 2025, 2: st.587-599 https://managementworld.online/index.php/mw/article/view/10022.

14. Djumaev Mamanazar Irgashevich Ta'limda Yangicha Kompetensiyaviy yondashuv. Published in GOLDEN BRAIN, 3(3), 146-153, ISSN: 2181-4120, 2025. March 3, 2025 146-153 https://zenodo.org/records/14964423

15. Dzhumaev Mamanazar, Ergashev Jakhongir Mamanazarovich . Reasoning And Implementation of the National Curriculum for the Development of Mathematical Education in a Medical University https://www.mkscienceset.com/ https://mededu.jmir.org J of Med Ima & Med Edu Res 2025 Page No: 04 . J of Med Ima & Med Edu Res 2(3), 01-04

16. Pinskaya, M.A. 21st Century Skills: How to Develop and Assess in the Classroom? / M.A. Pinskaya, A.M. Mikhailova, O.A. Rydze // Educational Policy. No. 3. 2019. pp. 50–62.

17. Teslasuit: A Suit That Changes Reality [Electronic resource]. Access mode: https://ichip.ru/tekhnologii/teslasuit-kostyum-kotoryjj-menyaetrealnost-422052. Access date: July 14, 2022.

18. Formation of Transprofessional Competencies in the Process of Continuous Professional Education: A Methodological Manual / E.L. Kasyanik [et al.]. Minsk, 2020. 248 p.

19.https://www.gazeta.uz/ru/2023/12/30/4k/

20.Yusufbekova N. R. General Foundations of Pedagogical Innovations: Experience in Developing a Theory of the Innovation Process in Education. - M., 1991.