

THE CONTENT OF EXPERIMENTAL WORK AIMED AT THE FORMATION OF "TEACHER-STUDENT" COOPERATION ON MATHEMATICS LESSONS OF ELEMENTARY CLASSES

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Abstract. *This article presents the content of experimental work on increasing the effectiveness of education through the technology of cooperative teaching in elementary school mathematics classes. Also, ways to achieve educational efficiency through the technology of cooperative teaching in mathematics classes have been revealed.*

Keywords: *primary education, mathematics, cooperative lessons, technology, method, experiment-test.*

In the Republic of Uzbekistan, the content, purpose and task, tools and methods of the study activities of the younger generation require improvement of the forms of organization and based on scientific pedagogical foundations. In "Strategy of actions on the five priority directions of the development of the Republic of Uzbekistan in 2017-2021" the President of the Republic of Uzbekistan expressed his opinion that specific mechanisms for raising the standard of living of our people have been determined, we emphasize that this strategy has become an important document that has attracted the attention of not only our people, but also the world public and at the same time the words of our President Sh. Mirziyoyev about the fact that "The future of our planet and its well-being depend on how our children grow up to be human beings. Our main task is to create the necessary conditions for young people to show their potential".

In connection with the implementation of large-scale reforms in the educational system of the Republic of Uzbekistan, special attention is paid to the organization of an individual-oriented educational process. The experience of interaction between pupils during the educational process has a positive effect on the formation of their personality and serves to form their communication and cooperation skills.

In the process of cooperative education, the teacher uses practical experiences with a new content. His pedagogical skills are improved with the help of new knowledge and pedagogical technologies. In most cases, teachers do not analyze them scientifically while adopting advanced pedagogical practices. For this reason, in order to improve the mechanisms of using methods of cooperation with students in the teacher's work, preliminary test materials were prepared in the 2021-2022 academic year. The following were considered in these materials:

–To increase the level of didactic training of elementary teachers of general secondary educational institutions, which are intended to conduct experimental work, to create an environment of mutual cooperation.

–To use interviews, questionnaires and creative tests to study the level of formation of the skills of working in a cooperative learning environment of primary school pupils.

–To implement interactive methods and proprietary technologies designed to increase cognitive activity in the environment of mutual cooperation of 1st-4th grade pupils of general secondary educational institutions.

–To organize lessons aimed at developing the competencies of 1-4 graders based on the National Curriculum with the help of authoring technologies and interactive methods.

Questionnaires were collected from pupils, subject teachers, school head-teachers, and parents in order to increase the effectiveness of education based on collaborative technology on mathematics lessons of elementary classes and to determine the factors affecting pupil's knowledge and teaching quality. Lessons were organized in general secondary educational institutions, and pedagogical observation was carried out within the framework of the research. During the observation, individual interviews were organized with the teacher and pupils. During interviews it was studied which aspects of the teaching process teachers pay more attention to and on the basis of which principles they organize them, activity efficiency, pupils' knowledge acquisition and teacher's attitude towards pupils. As a result, the following conclusions were reached:

- teachers pay attention to the activation of pupils in the organization of the lesson process;
- in many cases, they organize the lesson process not on the basis of a technological approach, but on the basis of a traditional approach. That is, they do not adhere to the establishment of "subject-subject" relations;
- teachers evaluate the effectiveness of activities based on quantitative indicators of pupils' knowledge, skills and qualifications. In fact, quantity and quality indicators should be taken into account;
- the process of acquiring knowledge of pupils is not modeled, that is, the harmony of the relational, active, valuable approach is not provided. In teacher-pupil relations, authoritarian management style prevails over democratic principles.

During the interviews with pupils, attention was paid to their interest in classes, their attitude to reading and learning additional literature outside of the textbook, and their ability to freely, openly, and clearly express their opinions. The results of the interview led to the following conclusions:

1) In mathematics classes, the pupils have not developed a valuable approach. Almost 75% of the respondents just try to master subjects and get 107 high marks. It became known that the pupils read and study a small amount of additional literature in addition to the textbook, and do not consolidate the studied materials. In their relationship with the teacher, most of them mentioned that they could not have a friendly relationship;

2) During the question-and-answer session with the pupils, it became clear that most of them are unable to express their opinions freely, clearly, and thoughtfully without hesitation.

For the teachers of general secondary education selected in order to increase the effectiveness of education based on the technology of cooperative teaching in mathematics classes: 1. The goals and objectives of experimental work were introduced; 2. Process methods designed to increase the effectiveness of education based on the technology of cooperative teaching in mathematics classes were reported to the teachers of the experimental-testing school, and scientific-practical seminars were organized for them; 3. Before starting the experimental work, individual interviews were held with the teachers, the questions of their interest were clarified, and

scientific and practical advice was given on the implementation of the experimental work; 4. The teachers were introduced to the forms and methods of control before and after the experiment, and conclusions were drawn on gathering and summarizing the results.

In the recommendations developed for teachers, the conditions for organizing classes were described: organizing each lesson into 3 stages - challenge - understanding - thinking; ensuring that the whole class does full mental work during the lesson; individual and differentiated approach to pupils; respecting and appreciating pupils' freedom, initiative, diversity of opinions; providing the classroom with the necessary didactic tools, creating conditions for reading and studying additional educational literature; it was envisaged that the teacher should be able to plan the entire lesson process - to clarify the teacher's goals and the tasks of the pupils, to be able to correctly choose teaching methods, forms and tools, and to determine the expected results in advance.

The introduction of clarifying experimental work on the research was carried out through a questionnaire and a creative test aimed at determining the attitude and level of "teacher-pupil-pupils" cooperation.

The questionnaire was developed in general for students of 1-4th grade, it was tried to study their need to know information, events; attitude to the occurrence of things and events; attempt to analyze information; ability to compare information and events with each other; ability to summarize information, events; ability to distinguish the information that is important for them; ability to draw conclusions based on information and events; to analyze, to try to draw conclusions.

Taking into account the fact that the questionnaire has an individual description, and the pupil does not have a realistic approach in all cases, separate creative tests were developed for each class. When creating creative tests, the age and level of preparation of pupils, the knowledge, skills and abilities they have acquired were taken into account.

After the completion of the clarifying experimental work, control and experimental groups were established in the experimental schools, in the control groups, teachers used the traditional method, and in the experimental groups, lessons were organized based on the recommended method of working in mutual cooperation. For this, several sample technological maps on lesson organization in experimental groups were developed for teachers and recommended to be used.

The "Let's Read Together" technology, designed for cooperative learning technology, was used in primary grade mathematics classes. The main task of this technology is to organize collective group activities of pupils during classes and extracurriculars.

As a result of the use of the "Let's study together" technology, which helped to increase the effectiveness of teaching based on cooperation technology in primary classes, the attention was paid to:

a) determining the dynamics of fulfilling the requirements of the National program of general secondary education by primary school students; b) according to the results of collaborative monitoring, determining the measures aimed at filling the gaps identified in the pupils' knowledge and increasing the quality of the educational process; d) development of measures to identify the gaps in the use of advanced pedagogical, information and communication technologies, psychological, didactic and methodical methods by pedagogues in the educational process, and to coordinate the determination of ways to fill them; e) determining the fulfillment of the requirements for the formation of an environment of mutual cooperation by teachers in primary grade mathematics classes and in this regard determining the rating of the regional public education management bodies based on the indicators of the quality of education.

The use of interactive methods is of particular importance in ensuring the effectiveness of the collaborative educational process within the framework of experimental research. Because interactive methods are convenient for creating an environment of conversation, debate, and interaction, which is an important form of collaboration. Through the use of interactive ways and methods, effective formation of cooperative cognitive activities of pupils in mathematics lessons was achieved. Among the methods: "Debate", "Brain-Ring", "Brainstorming", "Pinboard", "Zig-Zag", as well as role-playing games, the method of projects, the method of working on problematic tasks, group research, educational tournaments were used.

Thus, each teacher should clearly distinguish educational goals in the course of his work. Because, with the help of these educational goals, the teacher creates an atmosphere of cooperation in the lesson. As a result of the creation of mutual cooperation between the subjects of the educational process in mathematics lessons, comprehensive diagnosis of the pupils' mastery of the subject, their intellectual development, logical thinking, openness to cooperation and effective organization of the educational process are created.

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