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TIMSS INTERNATIONAL ASSESSMENT IN MATHEMATICS AND SCIENCES

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Abstract. *This article discusses the assessment scope of the TIMSS study. Information about the curriculum of mathematics and natural sciences is presented. In addition, the evaluation experiences of the TIMSS 2019 survey are noted.*

Key words: *TIMSS, OECD, IEA, TIMSS, curriculum, questionnaire, cognitive measurement.*

Enter. On the basis of the decision of the Cabinet of Ministers of the Republic of Uzbekistan "On measures to organize international research in the field of education quality assessment in the public education system", it was decided to introduce PIRLS, TIMSS, PISA and TALIS international studies in Uzbekistan. The National Center for the Implementation of International Research on the Evaluation of Education Quality was established under the Inspectorate. These international evaluation programs and research within them are organized by the Organization for Economic Co-operation and Development (OECD) and the International Association for the Evaluation of Educational Achievements (IEA) in cooperation with the countries of the world on a certain periodic basis. According to the agreement documents signed between the State Inspectorate for Quality Control of Education and the OECD and IEA organizations, Uzbekistan began to participate in the International Student Assessment PISA-2022 (formerly PISA-2021) and the International Program for Assessing Students' Reading Comprehension PIRLS-2021. Now, participation in the TIMSS-2023 international program has begun. In this regard, in accordance with the IEA organization's "Official invitation to participate in International Mathematical and Scientific Research (TIMSS) 2023 trends", on the issue of Uzbekistan's participation in the TIMSS program for the first time, based on the preliminary dialogues between the National Center for the Implementation of International Research on the Evaluation of Educational Quality under the Education Inspectorate, the IEA leadership consent

was obtained. The leadership of the IEA said that they are pleased with the participation of Uzbekistan in this study.

RESEARCH MATERIALS AND METHODOLOGY TIMSS (Trends in International mathematics and science study) is a program for assessing the level of mastery of mathematics and natural sciences of 4th and 8th grade students, and this study is conducted once in four years. In addition to comparing the level and quality of knowledge acquired by 4th and 8th grade students in mathematics and natural sciences in the TIMSS international assessment program, as well as identifying differences in the national education system, in addition, the content of education in mathematics and natural sciences in schools, the educational process, the capabilities of the educational institution, teachers' potential, factors related to students' families are studied. In the study, to what extent are the students of the 4th and 8th grades of Uzbekistan more literate in mathematics and natural sciences compared to their peers in other countries? Is math and science interesting for 4th and 8th graders? How does the family contribute to children's learning of mathematics and natural sciences? How is the process of teaching mathematics and natural sciences organized in our country today? Is the process of teaching mathematics and natural sciences in Uzbekistan unique compared to other countries, and if so, what is it? How do teachers' methods of teaching mathematics and natural sciences in our country differ from teachers' methods in other countries? such main issues are studied and researched. The answer to these questions can be found out based on the results of international evaluation programs conducted in Uzbekistan. Of course, the interest of every young generation to study exact and natural sciences will change our education index. Continuous participation in the study every four years allows to monitor the effectiveness of the education system of our country on a global scale. These programs serve to improve the quality of education by improving the national evaluation system of the Republic of Uzbekistan and introducing the competence evaluation system.

RESEARCH FINDINGS

TIMSS surveys have followed updated assessment frameworks for math and science in each assessment over the 24-year history of TIMSS. There are two dimensions of coverage: the content area dimension, which indicates the topic being assessed, and the cognitive dimension, which specifies the thinking processes that should be assessed as students engage with the content. the usual practice of transfer is followed. The TIMSS 2019 assessment scopes for these assessments are summarized below:

Mathematics Content Areas

• Fourth Grade: Numbers, Measurement and Geometry, Working with Data

• Eighth Grade: Numbers, Algebra, Geometry, Working with Data, Statistics, and Probability Science Content Areas

• Fourth Grade: About Life science, physics, earth science

• Grade eight: biology, chemistry, physics, earth science

Undoubtedly, the experiments, researches and inventions carried out in the field of exact and natural sciences encourage our republic to be among other foreign countries. In addition to mathematics, physics, biology, the role of chemistry is incomparable. 4th grade assignments may be easier than 8th grade assignments, but they encourage the student to think more. TIMSS makes extensive use of curriculum as a key organizing principle in examining how educational opportunities are provided to students and the factors that influence student access to these opportunities. The TIMSS curriculum model has three dimensions: curriculum to be planned, curriculum to be implemented, and curriculum to be achieved. In turn, they state that students should be educated in mathematics and natural sciences, as specified in the country's curricula; as well as how to organize the educational system to facilitate this educational process; a description of what is actually being taught in classrooms, who is teaching it, and how it is being taught; and finally, what students have learned and what they think about learning these subjects.

Also, in the TIMSS survey, students, their parents or guardians, teachers, and school principals are asked to fill out questionnaires about their activities at home and at school and the conditions for learning math and science. Questionnaires are constructed according to a carefully developed scope, updated at each assessment through iterative reviews by TIMSS National Research Coordinators and international experts from the TIMSS Questionnaire Review Committee. Data from these surveys provide insight into the implementation of educational policies and practices that can suggest ways to improve education and raise important issues. By the fourth year of schooling, Plab children are completing basic arithmetic and learning broader areas and concepts of mathematics. However, for a variety of reasons, there are countries where most fourth graders are still developing basic numeracy skills. Thus, the IEA has advocated, and continues to do, ways to offer a relatively non-challenging assessment of mathematics in fourth grade.

In short, the TIMSS international assessment program teaches students to think deeply and independently. Conveniences in teaching mathematics and natural sciences for students are opening the doors of their opportunities at a deepened level. Teachers also have a big role to play in making the tasks of each assessment program perfect. They need to familiarize themselves more with the directions of each program.

For example, I think it is appropriate to study and analyze the areas of the TIMSS program and create tests of a perfect level that will be understandable to everyone. Only then, when the test results are checked, it will not be allowed to cause problems among the students. Along with foreign countries, Uzbekistan is improving its results in international evaluation programs in a positive way. We should also be among countries such as Finland, Singapore, Hong Kong, and Japan, which show advanced results in international evaluation programs. For this purpose, we, the young generation, need to make good use of the opportunities created in order to reach higher heights.

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