

THE NECESSITY AND IMPORTANCE OF PREPARING FUTURE PRIMARY SCHOOL TEACHERS FOR THE TIMSS INTERNATIONAL ASSESSMENT PROGRAM

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Annotation: This article examines the levels and quality of knowledge acquired by 4th- and 8th-grade students in mathematics and science within the framework of the TIMSS international assessment program. In addition to comparing national education system differences, the study also explores factors related to the content of mathematics and science education in schools, the learning process, institutional resources, teachers' competencies, and family-related influences on students' performance.

Keywords: TIMSS, international assessment, quality of education, mathematics and science, innovation, assessment methods.

The TIMSS (Trends in International Mathematics and Science Study) program assesses students' knowledge in mathematics and science at the international level. Therefore, it is essential to prepare future primary school teachers for the criteria and requirements of this assessment. The main importance of such preparation lies in the following aspects:

- Improving the quality of education. Teachers trained according to TIMSS standards are able to apply modern and effective teaching methods, which leads to an improvement in students' knowledge levels.

- International competitiveness. To raise students' academic performance to a global level, teachers must be prepared in accordance with international standards. This, in turn, strengthens the competitiveness of the national education system in the global educational arena.

- Methodological innovation. Teachers trained in line with TIMSS requirements master new pedagogical approaches, innovative learning methods, and educational technologies, resulting in qualitative improvements in the teaching process.

- Sustainable development of the education system. Knowledge and skills acquired in primary education serve as a foundation for lifelong learning. Therefore, the preparation of teachers plays a decisive role in achieving long-term educational

standards. Hence, preparing future primary school teachers for the TIMSS international assessment program is of great importance for strengthening education quality and enhancing the competitiveness of the national education system.

- TIMSS international research methods include the following: positive test results and surveys (for students, teachers, school administrators, education specialists, and research quality monitors); methodological support such as guidelines for national coordinators, school coordinators, test administrators, scoring open-ended responses, and data entry procedures; and software tools for class and student selection and data processing.

- International tests are developed based on the following principles: adequate coverage of learning content and cognitive activities under evaluation; maximum alignment of test content with the materials taught in most participating countries; ensuring inter-test comparability; relevance of tested content for the development of mathematics and science education; appropriateness to students' age characteristics and achievement measurement objectives; and compliance with requirements for large-scale assessments.

At this point, there is also a story based on this education system.

Story

Once upon a time, in a small village school in Uzbekistan, there was a young teacher named Nodir. He loved mathematics and was passionate about improving the knowledge of the younger generation. However, some of his senior colleagues believed that "it is impossible to compare our students with those from other countries." Nodir wanted to prove that this belief was wrong.

One day, while studying international education systems, he came across information about TIMSS — the Trends in International Mathematics and Science Study. TIMSS is an international research program conducted in more than 60 countries that assesses the mathematics and science knowledge of 4th- and 8th-grade students. The essence of the program is that each participating country can measure its students' knowledge through this standardized test and compare the results with other countries.

Nodir explained this opportunity to his school administration and colleagues and prepared a presentation about it. According to him, the goal of TIMSS is not only to

assess students' performance but also to identify the strengths and weaknesses of the education system in order to improve it. By understanding which topics their students performed well in and which ones caused difficulties, teachers could focus their efforts more effectively.

The school administration and teachers supported this initiative. Over time, they introduced new teaching methods, interactive lessons, and laboratory activities to better prepare students. By participating in the TIMSS assessments, they began to see where they stood not only at the national level but also globally.

The test results turned out to be highly beneficial. It was discovered that while Uzbek students lagged in certain areas of mathematics, they were stronger in some fields of science. This became an important signal for the country's education system, leading to curriculum reforms and professional development programs for teachers. Nodir, meanwhile, applied the new knowledge in his village school, transforming his students' learning experience. The school's performance improved, students began achieving higher scores in international tests, and their confidence grew.

Thus, TIMSS became more than just a test — it turned into an effective tool for improving education quality. For Nodir and his colleagues, this international project served as a powerful motivation, introducing competitiveness and innovation into the educational sphere.

Conclusion: TIMSS helps compare the quality of education among schools and countries. Through this, weaknesses can be identified, curricula can be updated, and teachers' skills can be improved. Nodir's story shows that even in the smallest place, if every teacher strives toward international standards, both the school and the nation's education system can rise to new heights.

References

1. Mullis, I.V.S., Martin, M.O., Goh, S., & Cotter, K. (Eds.). (2016). TIMSS 2015 encyclopedia: Education policy and curriculum in mathematics and science. Retrieved from Boston College, TIMSS & PIRLS International Study Center website: <http://timssandpirls.bc.edu/timss2015/encyclopedia/>
2. Mullis, I.V.S., Martin, M.O., Goh, S., & Cotter, K. (Eds.). (2016). TIMSS 2019 encyclopedia: Education policy and curriculum in mathematics and science. Retrieved from Boston College, TIMSS & PIRLS International Study Center website: <http://timssandpirls.bc.edu/timss2019/encyclopedia/>

3. Mullis, I.V.S., Martin, M.O., Goh, S., & Cotter, K. (Eds.). (2016). TIMSS 2015 encyclopedia: Education policy and curriculum in mathematics and science. Retrieved from Boston College, TIMSS & PIRLS International Study Center website: <http://timssandpirls.bc.edu/timss2015/encyclopedia/>
4. Raupova, S. A. (2024). Requirements for completing timss tasks. *World of Scientific news in Science*, 2(6), 132-136.
5. Raupova S. Boshlang'ich sinf o'quvchilarining aniq va tabiiy fanlar bo 'yicha savodxonligini shakllantirishda ilg'or xorijiy tajribalar //Interpretation and researches. – 2024. – T. 1. – №. 1.
6. Sojida R., Maftuna I. On the skills of preparing primary school students for the tests of the timss international control program //International journal of scientific researchers (IJSR) INDEXING. – 2024. – T. 6. – №. 1. – C. 313-315.
7. Nigora X., Sojida R. TIMSS xalqaro baholash dasturida to 'rtinchi va sakkizinchi sinflar o 'rtasida matematika fanini bilish sohalarini shakllantirish //International journal of scientific researchers (IJSR) INDEXING. – 2024. – T. 6. – №. 1. – C. 316-319.
8. Raupova S. A. Requirements for completing TIMSS tasks //World of Scientific news in Science. – 2024. – T. 2. – №. 6. – C. 132-136.
9. Raupova, S. (2024). TIMSS-2023 xalqaro baholash dasturida 4-sinf o'quvchilarining tabiatshunoslik fani bo 'yicha natijalari. " *Science Shine*" *International scientific journal*.
12. Raupova, S. A. (2024). Forming elements of ecological education in primary class students by using timss sample tasks. *Modern Scientific Research International Scientific Journal*, 2(6), 65-68.
13. Raupova, S. A. (2024). Requirements for completing TIMSS TASKS. *World of Scientific news in Science*, 2(6), 132-136.