

**IMPROVING THE METHODOLOGICAL PREPARATION OF FUTURE PRIMARY SCHOOL TEACHERS FOR TEACHING BASED ON THE TIMSS INTERNATIONAL ASSESSMENT PROGRAM**

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**Abstract**

This article examines the improvement of methodological preparation of future primary school teachers based on the requirements of the TIMSS (Trends in International Mathematics and Science Study). The study analyzes the content of the TIMSS framework, its assessment criteria, and effective ways of integrating its principles into the educational process. Particular attention is paid to the development of pedagogical competencies, critical thinking skills, and the use of innovative teaching methods in primary education.

**Keywords:** TIMSS, primary education, methodological training, pedagogical competence, innovation, assessment system

**INTRODUCTION**

In the context of globalization and the rapid development of educational systems, the quality of education is increasingly evaluated through international assessment programs. These programs provide an opportunity to compare students’ knowledge and skills across countries and identify strengths and weaknesses in national education systems. One of the most influential international studies in this field is the TIMSS program, which assesses the achievements of primary and secondary school students in mathematics and science.

The growing importance of international benchmarks has led to the need for aligning teacher education with global standards. In particular, future primary school teachers must be equipped not only with subject knowledge but also with methodological skills that enable them to prepare students for competency-based assessments like TIMSS. This requires a shift from traditional teaching approaches to more student-centered, inquiry-based, and problem-solving-oriented methods.

Moreover, modern primary education emphasizes the development of higher-order thinking skills, such as analysis, reasoning, and application of knowledge in real-life situations. These competencies are central to TIMSS assessment frameworks and must be reflected in teacher training programs. Therefore, improving the methodological preparation of future teachers becomes a crucial factor in enhancing overall educational outcomes.

This article aims to explore the theoretical foundations and practical approaches to improving the methodological readiness of future primary school teachers in accordance with TIMSS requirements. It also highlights innovative pedagogical strategies and identifies key challenges and solutions in this area.

### **Main Part**

#### **The Essence and Structure of TIMSS**

TIMSS is an international assessment conducted every four years to evaluate students' performance in mathematics and science at the 4th and 8th grades. The framework focuses on three cognitive domains:

- knowing;
- applying;
- reasoning.

These domains reflect not only the acquisition of knowledge but also the ability to use and analyze it in different contexts.

#### **Methodological Preparation of Future Teachers**

The methodological readiness of future primary school teachers includes several components:

##### 1. Theoretical knowledge:

- deep understanding of subject content;
- awareness of international assessment frameworks;
- knowledge of modern pedagogical theories.

##### 2. Practical skills:

- use of interactive and student-centered teaching methods;
- ability to design TIMSS-type tasks;
- implementation of formative and summative assessment techniques.

##### 3. Pedagogical competencies:

- fostering critical and creative thinking;
- applying differentiated instruction;
- integrating digital technologies into teaching.

#### **Effective Strategies for TIMSS-Oriented Training**

To prepare future teachers effectively, the following strategies should be implemented:

- modernization of teacher education curricula based on international standards;
- increasing the share of practice-oriented training;
- application of innovative approaches such as Problem-Based Learning (PBL) and STEAM education;
- use of digital tools and online assessment platforms.

#### **Challenges and Possible Solutions**

Despite ongoing reforms, several challenges remain:

- insufficient methodological resources related to TIMSS;
- dominance of traditional teaching practices;
- lack of practical training opportunities.

To address these issues, it is necessary to:

- enhance professional development programs;

- incorporate international best practices;
- develop modern teaching and learning materials.

### Conclusion

Improving the methodological preparation of future primary school teachers in accordance with TIMSS requirements is essential for enhancing the quality of education. By integrating innovative teaching methods, developing key competencies, and aligning curricula with international standards, it is possible to prepare highly qualified teachers capable of meeting global educational demands.

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**BO‘LAJAK BOSHLANG‘ICH SINIF O‘QITUVCHILARINI TIMSS XALQARO  
BAHOLASH DASTURI ASOSIDA O‘QITISHGA METODIK TAYYORGARLIGINI  
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### Annotatsiya

Mazkur maqolada bo‘lajak boshlang‘ich sinf o‘qituvchilarining TIMSS (Trends in International Mathematics and Science Study) talablari asosida metodik tayyorgarligini takomillashtirish masalalari yoritilgan. TIMSS dasturining mazmuni, baholash mezonlari va ta‘lim jarayoniga integratsiya qilish usullari tahlil qilinadi. Shuningdek, pedagogik kompetensiyalarni rivojlantirish va innovatsion metodlardan foydalanish zaruriyati asoslab beriladi.

Kalit soʻzlar: TIMSS, boshlangʻich taʼlim, metodik tayyorgarlik, kompetensiya, innovatsion taʼlim, baholash tizimi.

Kirish

Bugungi globallashtirish sharoitida taʼlim sifatini xalqaro darajada baholash muhim ahamiyat kasb etmoqda. Xalqaro baholash dasturlari, xususan, TIMSS oʻquvchilarning matematika va tabiiy fanlar boʻyicha bilim darajasini aniqlashda muhim vosita hisoblanadi. Shu sababli, boʻlajak boshlangʻich sinf oʻqituvchilarini ushbu dastur asosida tayyorlash zamonaviy pedagogikaning dolzarb yoʻnalishlaridan biri hisoblanadi.

Asosiy qism

TIMSS dasturining mazmuni va oʻziga xosligi

TIMSS dasturi 4 va 8-sinf oʻquvchilarining bilim darajasini baholashga qaratilgan boʻlib, quyidagi kompetensiyalarni oʻlchaydi:

- bilim va tushunish;
- qoʻllash;
- tahlil va mantiqiy fikrlash.

Mazkur dastur oʻquvchilarning nafaqat nazariy bilimlarini, balki amaliy muammolarni hal qilish qobiliyatini ham aniqlashga xizmat qiladi.

### **Boʻlajak oʻqituvchilarning metodik tayyorgarligi**

Boshlangʻich sinf oʻqituvchisining metodik tayyorgarligi quyidagi asosiy komponentlardan iborat:

1. Nazariy tayyorgarlik:

- fan asoslarini chuqur bilish;
- xalqaro baholash mezonlarini tushunish;
- zamonaviy pedagogik yondashuvlarni egallash.

2. Amaliy tayyorgarlik:

- interaktiv metodlardan foydalanish;
- muammoli vaziyatlar yaratish;
- TIMSS tipidagi topshiriqlar tuzish.

3. Kompetensiyaviy yondashuv:

- tanqidiy fikrlashni rivojlantirish;
- individual yondashuvni qoʻllash;
- raqamli texnologiyalarni integratsiya qilish.

### **TIMSS asosida oʻqitishga tayyorlash yoʻllari**

Boʻlajak pedagoglarni tayyorlashda quyidagi yondashuvlar samarali hisoblanadi:

- oʻquv dasturlarini xalqaro standartlarga moslashtirish;
- amaliy mashgʻulotlar ulushini oshirish;
- STEAM va PBL metodlarini joriy etish;
- raqamli taʼlim platformalaridan foydalanish.

### **Muammolar va yechimlar**

Tahlillar shuni koʻrsatadiki, quyidagi muammolar mavjud:

- TIMSS boʻyicha metodik materiallarning yetishmasligi;
- anʼanaviy oʻqitish usullarining ustunligi;
- amaliy tayyorgarlik darajasining pastligi.

**Ushbu muammolarni bartaraf etish uchun:**

- malaka oshirish tizimini takomillashtirish;
- xalqaro tajribalarni joriy etish;
- zamonaviy o'quv qo'llanmalar yaratish zarur.

**Xulosa**

Bo'lajak boshlang'ich sinf o'qituvchilarini TIMSS asosida metodik tayyorlash ta'lim sifatini oshirishning muhim omilidir. Zamonaviy pedagogik yondashuvlar, innovatsion texnologiyalar va xalqaro tajribalarni uyg'unlashtirish orqali yuqori malakali pedagog kadrlarni tayyorlash mumkin.

