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**O'ZBEKISTON RESPUBLIKASI
DAVLAT XAVFSIZLIK XIZMATI
CHEGARA QO'SHINLARI**

HARBIY–AKADEMIK LITSEY O'QUVCHILARINI VATANPARVARLIK RUHIDA TARBIYALASHNING MILLIY ASPEKTLARINI YARATISH VA ZAMONAVIY TA'LIM–TARBIYA TENDENSIYALARINI TATBIQ ETISH

mavzusidagi Respublika ilmiy–amaliy konferensiya maqolalari

TO'PLAMI



**"YOSH CHEGARACHILAR"
HARBIY–AKADEMIK LITSEYI**

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“YOSH CHEGARACHILAR” HARBIY-AKADEMIK LITSEYI

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RUHIDA TARBIYALASHNING MILLIY ASPEKTLARINI YARATISH
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ETISH”**

Respublika ilmiy-amaliy konferensiya maqolalari

Termiz 2025-yil 18-aprel

**РЕСПУБЛИКАНСКАЯ НАУЧНО-ПРАКТИЧЕСКАЯ КОНФЕРЕНЦИЯ
НА ТЕМУ: “СОЗДАНИЕ НАЦИОНАЛЬНЫХ АСПЕКТОВ
ПАТРИОТИЧЕСКОГО ВОСПИТАНИЯ УЧАЩИХСЯ ВОЕННО-
АКАДЕМИЧЕСКИХ ЛИЦЕЕВ И ВНЕДРЕНИЕ СОВРЕМЕННЫХ
ТЕНДЕНЦИЙ В ОБРАЗОВАТЕЛЬНЫЙ И ВОСПИТАТЕЛЬНЫЙ
ПРОЦЕСС”**

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“Harbiy-akademik litsey o‘quvchilarini vatanparvarlik ruhida tarbiyalashning milliy aspektlarini yaratish va zamonaviy ta’lim-tarbiya tendensiyalarini tatbiq etish” mavzusidagi Respublika ilmiy-amaliy konferensiya maqolalari to‘plami - 2025-yil 18-aprel “KITOB NASHR” nashriyoti – 712 bet.

“Harbiy-akademik litsey o‘quvchilarini vatanparvarlik ruhida tarbiyalashning milliy aspektlarini yaratish va zamonaviy ta’lim-tarbiya tendensiyalarini tatbiq etish” mavzusidagi Respublika ilmiy-amaliy konferensiya to‘plamiga OTM va harbiy-akademik litseylarning professor-o‘qituvchilari, mutaxassislari, ilmiy xodim va izlanuvchilari hamda iqtidorli talabalarining ilmiy ishlari kiritilgan.

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G‘.Z. Zulpiyev	DXX ChQ “Yosh chegarachilar” harbiy-akademik litseyi direktorining o‘quv ishlar bo‘yicha o‘rinbosari, a‘zo.
Q.T. Ulug‘berdiyev	DXX ChQ “Yosh chegarachilar” harbiy-akademik litseyi o‘quv-metodik bo‘linmasi boshlig‘i, a‘zo.
Dj.S. Umarov	DXX ChQ “Yosh chegarachilar” harbiy-akademik litseyi ijtimoiy-gumanitar fanlar kafedrasida bosh o‘qituvchisi p.f.b.f.d (PhD) mas’ul muharrir.
N.R. Usmanov	DXX ChQ “Yosh chegarachilar” harbiy-akademik litseyi psixologi, mas’ul muharrir.
O.M. Muxammadiyev	DXX ChQ “Yosh chegarachilar” harbiy-akademik litseyi ijtimoiy-gumanitar fanlar kafedrasida mudiri, a‘zo.
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B.I. Ashiraliyev	DXX ChQ “Yosh chegarachilar” harbiy-akademik litseyi kasbiy va amaliy fanlar kafedrasida o‘qituvchisi, a‘zo.

Mualliflarning nuqtayi nazariga putur yetkazmaslik maqsadida to‘plamga kiritilgan materiallar faqatgina texnik jihatdan tahrir qilindi, shuning uchun tahrir hay’ati matnlarda uchraydigan ba’zi bir noaniqliklar uchun javobgarlikni o‘zidan soqit qiladi.

DXX ChQ “Yosh chegarachilar” harbiy- akademik litseyi ilmiy - pedagogik kengashining 2025-yil 8-aprel kunidagi 14-sonli yig‘ilishida muhokama qilindi va nashrga tavsiya etildi.

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СПИСОК ИСПОЛЗОВАННОЙ ЛИТЕРАТУРЫ

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USE OF NON-TRADITIONAL METHODS AND INFORMATION TECHNOLOGIES IN TEACHING MATHEMATICS

Darmonova Adolat Bahodirovna¹,

Abdurakhmonov Hasanjon Kotibjon oglu²

CSPU Teacher of the Department of Mathematics Teaching Methods,

CSPU student

Abstract. This study analyzes the use of non-traditional methods and information technologies in teaching mathematics. The study examines how innovative approaches and technologies can be used to improve the effectiveness of mathematics and the quality of the teaching process. In particular, the importance and benefits of the integration of information technologies and interactive methods in mathematics education are studied.

Keywords: Mathematics, teaching methods, non-traditional methods, information technologies, interactive education, innovative pedagogy, methodology.

INTRODUCTION. In addition to traditional approaches to teaching mathematics, the use of non-traditional methods and information technologies plays an important role in improving the quality of education. The teaching process using modern technologies and interactive methods can be interesting and effective for students. Many teachers of mathematics teach lessons using traditional methods, but these methods are sometimes not enough to form in-depth knowledge of mathematics in students. Therefore, the study examines the importance and role of non-traditional methods and information technologies in education.

MAIN PART.

1. The importance of non-traditional teaching methods in teaching mathematics.

Non-traditional teaching methods help teachers to motivate students and engage them in the lesson. These methods allow them to learn mathematics not only theoretically, but also practically. For example, teaching mathematics through project-based learning, gamification, problem-solving, and role-playing can be

effective. Students consolidate their knowledge by participating in solving problems that they themselves can apply in practice.

Project-based learning is useful for broadening students' perspectives on mathematics and acquiring new knowledge. For example, students solve mathematical problems in groups and learn to solve problems in different ways. This method helps students develop their thinking skills. At the same time, gamification can make learning more interesting and motivating. Adding game elements makes learning mathematics more engaging and helps students focus on the lesson.

2. The role of information technology in mathematics teaching.

Information technologies create new opportunities in mathematics education. With the help of interactive whiteboards, virtual laboratories, online platforms and mobile applications, students solve mathematical problems more easily and effectively. The use of these technologies allows students to perform frequent tests and exercises, analyze their results, and receive interesting feedback from the teacher.

With the help of interactive whiteboards and online platforms, the student will have the opportunity to self-assess and discuss with the teacher. At the same time, virtual laboratories allow students to visualize complex mathematical processes, which allows the teacher to effectively manage education. Creating opportunities for easy and quick solution of mathematical problems through mobile applications will constantly involve students and teachers in the educational process.

3. The interaction of non-traditional methods and information technologies.

The integration of unconventional methods and information technologies increases the effectiveness of teaching mathematics. For example, the combined use of gamification and interactive technologies makes learning more interesting and easier for students. This process forms a new format for the teacher's method of managing the educational process, teaching students not only how to solve mathematical problems, but also how to freely express their thoughts when solving problems.

LITERATURE ANALYSIS. There are a number of scientific developments on the use of non-traditional methods and information technologies in teaching mathematics. A.A. Usmanov's book *Innovative Approaches to Teaching Mathematics* discusses the effectiveness of using technologies in teaching mathematics[1]. Also, B.T. Khojaev's article *Information Technologies and Education* examines the importance of information technologies in the teaching process[2]. Another important source is D.R. Karimov's book *Non-Traditional Teaching Methods*, which presents the advantages of integrating innovative pedagogical technologies into the teaching process of mathematics[3].

RESEARCH METHODOLOGY AND METHODOLOGY. The study used a combination of qualitative and quantitative methods. Quantitative methods measured student learning performance using questionnaires and tests. Qualitative methods included interviews with teachers and students to analyze how they use

information technology and non-traditional methods. Such a combination methodology helps to conduct a comprehensive analysis of the educational process.

CONCLUSION. The integration of non-traditional methods and information technologies in teaching mathematics makes the learning process of students effective and interesting. With the help of information technologies, students develop skills in solving real-life problems. Non-traditional methods, on the other hand, give teachers the opportunity to encourage students to be active and increase their motivation to learn. Thus, it is necessary to combine technology and non-traditional methods to increase the effectiveness of mathematics teaching.

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ЗАДАЧИ, ПРИВОДЯЩИЕ К УРАВНЕНИЯМ ГИПЕРБОЛИЧЕСКОГО ТИПА. УРАВНЕНИЕ КОЛЕБАНИЙ СТРУНЫ

Каржасова Азиза Рустамовна
студентка 4-курса Национальный университет
Узбекистана имени Мирзо Улугбека

Аннотация. В статье приведены некоторые примеры применения дифференциальных уравнений для моделирования таких реальных процессов, как колебания струны, электрические колебания в проводах, распространение тепла в стержне и пространстве.

Ключевые слова: Струно, принцип Даламбера, нелинейный уравнений гидродинамике, теории упругости, уравнение гиперболического типа, поперечный колебаний струны, продольных колебаний стержня.

Изучением дифференциальных уравнений в частных производных занимается математическая физика. Классические уравнения математической физики являются линейными.

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Muharrir:

Iqroriddin AYNIDDINOV

Mas'ul muharrir:

Muzaffar JUMAYEV

Jamshid UMAROV

Nusratullo USMANOV

Yetakchi dizayner va bosh muharir:

Behruz TOSHTEMIROV

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"Nodira" ko'chasi 6-uy.

Tel: (+998 99) 017-96-96