

## IMPROVING THE BLENDED LEARNING METHODOLOGY OF FUTURE MATHEMATICS TEACHERS IN THE CONTEXT OF DIGITAL LEARNING

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**Abstract.** This article contains math lessons *Improving Blended Learning Methods for Future Mathematics Teachers in a Digital Educational Environment*. The article highlights the content of the use of digital technologies in the process of expanding the possibilities of independent learning in digital education, and also determines the level of effectiveness of the results obtained on the basis of experiments.

**Keywords:** digital education, blended learning, cognitive, creative, talent, motivation, innovation, creativity, critical thinking,

## RAQAMLI TA'LIM SHARTLARIDA KELAJAKDAGI MATEMATIKA O'QITUVCHILARNING QO'SHIMCHA TA'LIM METODIKASINI TAKMILLATISH

**Annotatsiya.** Ushbu maqolada matematika darslarida raqamli ta'lim muhitida bo'lajak matematika o'qituvchilarning aralash o'qitish metodikasini takomillashtirish raqamli ta'lim sharoitida mustaqil bilim olish imkoniyatlarini oshirish jarayonida raqamli texnologiyalardan foydalanish mazmuni yoritilgan, shuningdek, tajribalar asosida olingan natijalarning samaradorlik darajasi aniqlanadi.

**Kalit so'zlar:** raqamli ta'lim, aralash o'qitish, kognitiv, kreativ, iste'dod, motivatsiya, innovatsiya, ijodkorlik, tanqidiy fikrlash

## СОВЕРШЕНСТВОВАНИЕ МЕТОДИКИ СМЕШАННОГО ОБУЧЕНИЯ БУДУЩИХ УЧИТЕЛЕЙ МАТЕМАТИКИ В КОНТЕКСТЕ ЦИФРОВОГО ОБУЧЕНИЯ

**Аннотация.** В этой статье уроки математики *Совершенствование методов смешанного обучения для будущих учителей математики в цифровой образовательной среде*. Освещено содержание использования цифровых технологий в процессе расширения возможностей самостоятельного обучения в цифровом

образовании, а также определен уровень эффективности полученных на основе экспериментов результатов.

**Ключевые слова:** цифровое образование, смешанное обучение, когнитивный, творческий, талант, мотивация, инновации, креативность, критическое мышление,

## INTRODUCTION

Today, interest in digital education is growing. E-learning occupies a strong place in the modern education system (from the generally accepted term e-learning; in fact, the concepts of "distance education" and e-learning are not the same, but some interpret them in the same way).

Particular attention is paid to new pedagogical models of competence development, continuous education, assessment of the quality of education and support for independent learning, the use of distance learning technologies in the educational process [12]. Today, e-learning has become an important component of the modern education system, significantly expanding the capabilities of the traditional education system in terms of access and management of educational resources, organizing the management of the educational process using distance learning technologies. Digital education is understood as the organization of educational activities, interaction between students and teachers, processing of information contained in databases and used in the implementation of educational programs, and the use of information technologies, technical means, as well as information and telecommunication networks that ensure the transmission of this information over communication lines [11].

Blended learning is a combination of traditional forms of face-to-face learning with elements of e-learning, which uses special information technologies such as computer graphics, video and audio, interactive elements and others.[9].

## LITERATURE REVIEW

Chinese scholar Jia Zhang defines blended learning technology as “a descriptive method used to visually demonstrate the blended learning process and explain each learning process.”

There are several blended learning methods: skill-based mode, attitude mode, ability management mode and Bamum and Panmnam mode.

The competency-based mode combines independent student learning with online tutoring, where students and teachers interact primarily through email and online forums[10].

The learning process is different from the usual one: the student studies some sources on the topic at home using information technology. But we do not consider this distance learning. Since there is practically no help from the teacher in mastering the subject, the teacher can provide materials and tasks related to the subject. Moreover, this is not individual learning on the computer: the student will have to be part of a group and work together with its members..

Many educators offer innovative teaching methods that can provide the support and resources needed to deliver a comprehensive, evidence-based approach to blended learning that includes any form of blended learning, educational commitment, and curriculum. Scholars such as Graham, Woodfield, and Harrison argue that “simply using the Internet or technology in any way is not blended learning.” insists.

### RESEARCH METHODOLOGY

The American magazine Its Learning lists the following benefits of teaching using blended learning technology:

Use your study time productively. Blended learning technology allows teachers to use their time with students more productively. By moving traditional classroom teaching into the online world, you can spend less time speaking to the class and more time working individually with students. Research by Professor John Hattie of the University of Auckland shows that one of the keys to successful learning is time spent interacting with the teacher and improving relationships between students and teachers.[8]

Stratified tasksp.If more time is needed for individual work with students in the classroom, the teacher will assign tasks based on the abilities and knowledge level of each student. Many online resources also automatically differentiate themselves: for example, math exercises can become more difficult the more correct the student's answers.



Active students. Unlike traditional educational technologies, blended learning uses online videos and electronic resources to help students prepare for class. Thus, students come to class with theoretical knowledge, and the main focus of the lesson is on applying this theory in life, that is, developing students' competence in the subject. In this model, the science teacher acts as a leader and coach.[9]

It is also possible to assess the work done by students before the lesson - this way the teacher knows exactly what information the students need. This is related to another conclusion of John Hattie: 50 percent of what is studied in the lesson is known to the students before the lesson.

Creativity. There are thousands of online resources that allow students to create videos, animations, and new media. This opens up new opportunities for students to work independently and apply their knowledge in practice. Students can also read additional materials and complete assignments online to gain a better understanding of a topic without wasting valuable class time.

Preparing students. When students prepare online in advance (for example, with a carefully designed lesson model), they are better prepared for the lesson. This means that students will be exposed to more topics within their subject.

Teaching 21st century skills. Today's students need to learn how to work and share information online. They also need to develop the critical thinking and creative skills that today's employers demand. Blended learning technology helps students develop these skills by encouraging them to work, share, and collaborate online.

Avoid paperwork. Almost all teachers' desks are piled high with papers with work documents and students' assignments that need to be checked and completed. Assessments should be recorded in the student's diary. Online learning platforms digitize many assignments, so the necessary checking can be done online (at the school or at home).

In addition, it is possible to take tests and complete independent work of students online and automatically assign grades[7].

## ANALYSIS AND RESULTS

Definition: Blended learning is a form of learning that combines the best of traditional and e-learning methods and makes effective use of educational technologies.

In traditional education, students are taught, while in blended learning, they are taught to read and develop independent activities. They organize.

In traditional education, the teacher is at the center, Blended learning and - the student will be in the center. In this case, the student works hard, and his success depends on himself..

All learning resources in one place. Online resources can be accessed from any computer connected to the Internet. This means that we only need to download a video, a website link, a newspaper article or other resource once. We and our students, as well as other teachers, will have access to it not only from computers connected to the Internet, but also through mobile devices.

## CONCLUSION

While installing the ICT necessary to implement blended learning may require some initial investment, many schools and academic high schools will see a reduction in overall costs through reduced expenses on textbooks, paper, and photocopying.

The use of methods and technologies of both face-to-face and e-learning allows for the simultaneous use of the advantages of these forms of learning. Elements of personal communication are used to motivate students. Traditional forms of learning are based on direct personal contact between the student and the teacher.[5].

At the end of the course, students left the following comments about learning in a blended format:

"I liked studying in this mode because I could always talk to the teacher and classmates about my difficulties."

"I have more opportunities for education because I enjoy blended learning and for me, learning starts with less negative emotions."

"The opportunity for strong students to develop was very beneficial. It allowed me to learn from their example."

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