International Journal of Pedagogics

VOLUME Vol.05 Issue03 2025
PAGE NO. 249-252
DOI 10.37547/ijp/Volume05Issue03-71

Information and communication technologies in the work of a math teacher: pros and cons

A.V.Sadykova

Associate Professor, Tashkent State Pedagogical, University named after Nizami, Candidate of Pedagogical Sciences, Uzbekistan

L.A. Gazieva

Lecturer at the Tashkent State Pedagogical University named after Nizami, Uzbekistan

Received: 29 January 2025; **Accepted:** 28 February 2025; **Published:** 31 March 2025

Abstract: The article explores the utilization of information and communication technologies (ICT) in the teacher's work. It delves into the fundamental aspects of applying ICT in the educational process, examining both the positive and negative facets of technology use in teaching. The authors outline the benefits of ICT, such as enhancing student motivation, improving educational accessibility, diversifying educational resources, among others.

Keywords: Education, digitalization, ICT, digital resources, competency.

Introduction: Information and communication technologies (ICT) surround modern people everywhere, becoming an important integral part of their lives. In this regard, a reasonable question arises: how important is the use of information and communication technologies in an educational institution and will teachers be able to teach the younger generation without fashionable innovations?

The current domestic and foreign experience of informatization of the educational environment indicates that ICT can improve the effectiveness of the educational process, however, the use of this method, according to a number of authors, also has negative consequences.

According to O.I. Pashchenko, informatization of education is the process of providing the field of education with a methodology and practice for the development and optimal use of information technologies aimed at the realization of psychological and pedagogical goals of education. Informatization of education is the process of providing the education system with theory and practice for the development and use of new information technologies aimed at achieving the goals of education and upbringing.

In turn, a teacher who teaches classes using information technology has a qualitative advantage over a colleague who operates only within the framework of traditional technologies. Until recently, in the early 2000s, the teacher had only a chalkboard and paper illustrations at his disposal. It's not just chalk that the teacher is missing right now. The range of gadgets used in the educational process is increasing every year, and the quality of ICT is improving. Electronic textbooks, simulators, presentations, quizzes and crosswords, virtual excursions, interactive tests, reference books, libraries, and video materials are included in daily use. A huge amount of printed matter in the form of diagrams, tables, and illustrations has stopped taking up space in teachers' closets.

It can be stated with confidence that the lesson using ICT has become more visual, vivid, colorful, effective, interesting, fascinating, and most importantly, productive. As a rule, there is a more effective assimilation of knowledge, and the level of visibility improves. Thus, teachers actively use special presentation preparation programs, text editors, spreadsheets, database management systems, etc.

Through the Internet, students gain access to various online information resources (electronic libraries, etc.). For this purpose, classrooms are equipped with

personal computers, laptops, multimedia projectors and screens, televisions, interactive whiteboards.

Informatization of education has become an integral part of the modern educational process, having a significant impact, including on the teaching of mathematics.

First, the informatization of education makes it possible to expand access to education and mathematical knowledge. The use of ICT in education makes it possible to overcome geographical and social constraints by providing the opportunity to study remotely, online. This is especially important for those who do not have access to traditional educational institutions or live in remote areas.

With the help of computers, the Internet, and special programs, students can access educational materials, online courses, and educational resources that help them deepen their knowledge of mathematics and make learning more accessible, interactive, and personalized.

In particular, mathematics, as a science, requires understanding and practice, and the use of interactive mathematical programs and applications can help to better understand and apply mathematical concepts. In addition, informatization of education allows teachers to use various tools and methods to teach and evaluate students' knowledge. Online testing, electronic platforms for sharing materials and feedback, as well as data analytics can help in assessing academic performance and adapting the learning process.

However, it should be borne in mind that informatization of education is not a panacea and requires a balance between technology and traditional teaching methods. It is also important to ensure accessibility and equality of opportunity for all students, so that no one is left behind due to lack of access to technology.

Secondly, the informatization of education promotes the development of a creative approach to teaching mathematics. Using interactive whiteboards, computer programs, and math applications, teachers can create interactive lessons and assignments, including game elements, visualization, and animation that allow students to actively interact with the material and develop their math problem solving skills.

Information technology also provides the opportunity to use various mathematical programs that help solve problems, conduct research, and visualize results. This allows you to develop creative thinking, the ability to work independently and search for non-standard solutions.

Thirdly, informatization of education promotes the development of students' communication skills, allows them to actively interact with each other and with teachers, including through the use of various online platforms and tools. Through electronic learning and communication platforms such as electronic diaries, online forums, chat rooms, and video conferences, students can communicate and collaborate with each other, share information, ask questions, and discuss mathematical problems and solutions, which contributes to the development of their analytical and critical thinking, teamwork, and effective communication skills. cooperation and argumentation.

The use of interactive educational programs and applications allows you to learn in an interactive and playful way, which makes learning more interesting and motivating. Such programs often include tasks that require communication and collaboration with other students, which contributes to the development of communication skills.

Fourth, the informatization of education makes it possible to personalize the educational process. Personalization means adapting learning materials, teaching methods, and performance assessment to the individual needs and abilities of each student. Informatization of education plays an important role in the implementation of this concept.

With the help of ICT, it is possible to create personalized educational programs that take into account the level of knowledge, interests and learning rate of each student. This allows students to study the material at their own pace and according to their individual needs.

In addition, informatization of education allows teachers to collect and analyze data on student achievements, which helps them better understand the individual needs of each student and adapt the educational process accordingly.

In general, the informatization of education has a positive impact on the teaching of mathematics. It promotes the development of students' technological literacy, increases their motivation and interest in studying mathematics, and helps them develop the necessary skills and competencies for successful work in the modern information society. Research on the effectiveness of information and communication technologies (ICT) in mathematics lessons has been conducted by many scientists and teachers, including foreign ones.

An analysis of the sources of scientific literature indicates an increased interest in this problem due to the intensive introduction of information technology in the field of education.

In particular, this is evidenced by the joint research work of Spanish scientists at the University of Malaga, Julio Ruiz Palmero, Francisco David Guillen Gamez, Ernesto Colomo Magana and Elena Sanchez Vega, entitled "The effectiveness of the "inverted classroom" in teaching Mathematics in an Online Environment: Identifying Factors Influencing the Learning Process", published in the Online Learning Journal of the USA (Volume 27 No. 2 (2023) Section II) dated June 1, 2023.

The author's team analyzed the effectiveness of the "Inverted Classroom" methodology in teaching mathematics, in particular geometry, in an online environment.

As a result of the study, the positive aspects of this method were identified, differences in the level of material assimilation by school students before and after the lesson, and recommendations were given for further integration of this methodology into the subject of mathematics.

In turn, representatives of the Portuguese State University in Aveiro, Marina Andrea Gomes Pereira and Luis Francisco Mendes Gabriel Pedro, published an article in the 43rd issue of the Spanish magazine Digital Education Review dated June 30, 2023 entitled "Transmedia narratives in teaching and learning studying Mathematics: Problems in teacher's practice".

They conducted a detailed review of the literature on the use of digital technologies in teaching mathematics using transmedia storytelling.

The study found that teachers who used transmedia narratives with their students recognized their potential as a way to support mathematical learning in which students collaborate and solve problems as a team.

Another joint scientific work by a team of authors from Nepal and Kathmandu, "Research on the effectiveness of online learning in Mathematics: a Teacher's Point of View," published in the 2nd issue of the American journal MATHEMATICS TEACHING RESEARCH JOURNAL on June 30, 2023, is devoted to the study of the problems mathematics teachers face in real situations when the use of information technology.

The authors of the study, Rajendra Kunwar, Jagat Krishna Pokhrel, Baikuntha Khanal, and others, consider the effectiveness of online mathematics education during the COVID-19 pandemic in a Case Study format.

The study examines the effectiveness of online mathematics education in terms of the teacher's professionalism, technological competence, and problems related to access to information resources. The advantage of online learning for urban students over students from remote areas has been revealed, and the factors that make it effective compared to traditional learning have been identified.

In addition, the study revealed problems in the level of teachers' training and their technological competence in terms of skills and knowledge in the field of information and communication technologies. Student participation in online learning also turned out to be less active and mainly depended on the activity and instructions of the teachers. The students turned out to be more interested in individual tasks, but less involved in teamwork. There were also significant differences in access to information resources among students from the periphery.

The Social and Quizizz services allowed her to do not just simple testing, but also add an element of competition to motivate students to achieve better results. It was noted that these services are convenient because they have the ability to view response statistics and determine which questions caused the most difficulty, which made it possible to determine the level of knowledge acquisition on a topic or section. In turn, the students themselves saw the wrong answers and could draw conclusions about which topic was worth working on more.

The experience of using information technologies by Galimullina M.R. seems useful, who, in addition to the above services, has mastered new online tools such as Microsoft Teams (a program for joint communication and work) and Kahoot as part of the advanced training courses in the Digital Literacy of a Teacher program! (an application for tests, surveys, an educational game or a marathon of knowledge), Mentimeter (an online resource for creating interactive presentations, polls, voting in real time), the Miro Board (a virtual board with many tools) and the Stepik platform for creating an online course.

An equally interesting method of applying digital technologies is the use of a special electronic platform in Uzbekistan. So, in 2018, taking into account the study of foreign experience, the Ministry of Public Education of the Republic of Uzbekistan signed a memorandum with the company Kundalik (translated from Uzbek as "diary"), which is a representative of the Russian company "Diary.<url>", on the implementation of the digital educational platform "Kundalik.com ". In April 2019, the test implementation of the platform began in selected schools in Tashkent, and from 2020, the gradual transition of all schools to the electronic platform.

This platform is both an electronic student's diary and an electronic teacher's journal. Since Kundalik is a closed system, only the administration, teachers,

students and their parents can register in it. Parents can create their own profile (account), monitor their children's academic performance, grades, homework, attendance, and keep in touch with the homeroom teacher and other teachers. The logic of the system resembles social networks and is constantly updated.

All these problems can be solved with the help of appropriate teacher training, the development of high-quality educational materials, the creation of individual assignments and materials, the use of a variety of assessment and control methods, as well as the creation of a motivating environment for students.

Therefore, a teacher should be able to use ICT as carefully as possible, measuring the benefits and harms, clearly understanding that ICT is just a tool for achieving learning goals and objectives.

Thus, the use of ICT in the educational process is an urgent problem of modern school education. The use of ICT in lessons is justified, as it allows to activate the activities of students, provides an opportunity to improve the quality of education, improve the professional level of the teacher, and diversify the forms of interpersonal communication of all participants in the educational process. The use of various ICT tools can lead to both positive and negative consequences. However, it is necessary to limit access to information resources, create conditions for creative and research activities of students, broaden their horizons, raise the level of their cultural education, and develop language and communication skills.

REFERENCES

Закон Республики Узбекистан «Об образовании». Национальная база данных законодательства, 24.09.2020 г., № 03/20/637/1313; 12.10.2021 г., № 03/21/721/0952

Садыкова А.В. Развитие информационной компетентности будущих учителей начальных классов посредством использования мультимедийного обучения. “Innovative approach to the system of teacher training: international experience and future strategies” International scientific-practical conference. April 6-7, 2022. p. 183-185.

Садыкова А.В., Садыков Р.М. Использование электронных тренажёров для закрепления вычислительных навыков. Журнал “ТДПУ илмий ахборотлари”. - 2017 г №1. 16-19 стр.

Газиева, Л. А. (2024). Методы Проектирования Педагогической Деятельности При Преподавании Математики С Использованием Информационных Технологий. American Journal of Advanced Scientific Research, 1(8), 66-68.

Nurmatova, S. I., & Gaziyeva, L. A. (2024). FORMATION OF MOTHER LANGUAGE COMPETENCES OF PRIMARY CLASS TEACHERS IN THE PROCESS OF PROFESSIONAL IMPROVEMENT. Web of Teachers: Inderscience Research, 2(10), 223-225.

Садыкова, А. В., & Газиева, Л. А. (2023, December). ТЕОРЕТИЧЕСКИЕ ОСНОВЫ ПРОЕКТИРОВАНИЯ ПЕДАГОГИЧЕСКОЙ ДЕЯТЕЛЬНОСТИ В УСЛОВИЯХ ИНФОРМАТИЗАЦИИ ОБРАЗОВАНИЯ. In E Global Congress (Vol. 12, pp. 1-4).

Газиева, Л. А. (2025). ПЕДАГОГИЧЕСКИЙ ПОТЕНЦИАЛ ИНФОРМАЦИОННОЙ СРЕДЫ ВУЗА В ФОРМИРОВАНИИ АНАЛИТИЧЕСКИХ НАВЫКОВ БУДУЩЕГО УЧИТЕЛЯ. Multidisciplinary and Multidimensional Journal, 4(2), 208-215.

Газиева, Л. А. (2025, February). СОВРЕМЕННЫЕ ПОДХОДЫ И МЕТОДЫ ФОРМИРОВАНИЯ АНАЛИТИЧЕСКИХ НАВЫКОВ У СТУДЕНТОВ ПЕДАГОГИЧЕСКИХ ВУЗОВ. In INTERDISCIPLINE INNOVATION AND SCIENTIFIC RESEARCH CONFERENCE (Vol. 3, No. 28, pp. 78-85)