

# The role and importance of information technologies in modern education

Ulug'bek Begali o'g'li Isroilov  
Sultonjon Malikovich Egamov  
Tashkent State Medical University

**Abstract:** This article explores the role and importance of information technologies in modern education. Information technologies play a crucial role in increasing the efficiency of the learning process, supporting individualized learning, enhancing interactivity, and expanding opportunities for distance education. The article also analyzes the challenges associated with the integration of modern technologies into education and suggests possible solutions to overcome these issues.

**Keywords:** education, informatics, modern technologies, digital learning, e-resources, artificial intelligence, distance learning

## Main Part

### Introduction

The 21st century, often referred to as the “information age,” has ushered in a new era of development across the globe. Information and communication technologies have penetrated nearly every sphere of human activity. Their importance in the field of education is particularly significant. Today, modern teaching and learning processes are inseparable from information technologies. Schools, colleges, and universities are striving to organize their educational systems based on innovative digital tools.

### Understanding information technologies in education

Information technologies in education refer to the use of modern technical and software tools in acquiring, transferring, and analyzing knowledge. Examples include e-textbooks, learning management systems such as Moodle and Google Classroom, multimedia resources, online testing systems, and virtual laboratories. Informatics, as a discipline, provides the scientific foundation for these processes, making the link between education and informatics inseparable.

### The role of technologies in modern education

Modern learners are no longer limited to printed textbooks. Tablets, laptops, and smartphones have become essential educational tools. Through the Internet, students can access any textbook, video lecture, or interactive exercise at any time, which speeds up and simplifies the learning process.

The integration of technologies in education provides the following opportunities:  
Enhancing the efficiency of the teaching and learning process;

- Delivering educational materials in interactive forms;
- Ensuring personalized approaches to teaching;
- Facilitating distance education;
- Promoting independent learning skills among students.

Distance education and digital platforms

In recent years, distance education has gained significant popularity. During the COVID-19 pandemic, online education became the main tool for maintaining continuity in teaching and learning. Platforms such as Zoom, Microsoft Teams, and Google Meet connected teachers and students in a unified virtual space. Digital platforms simplified not only teaching but also the processes of testing, grading, and managing assignments.

#### The impact of artificial intelligence

Artificial intelligence is increasingly influencing education. Examples include intelligent testing systems, automatic grading tools, and software capable of analyzing students' interests and abilities. AI-based systems can create adaptive learning environments, ensuring more personalized and effective education. For instance, AI can recommend learning resources tailored to each student's performance and progress.

#### Challenges and solutions

Despite the many advantages of using information technologies in education, several challenges remain:

- Low internet connectivity in some regions;
- Limited access to technical equipment in underdeveloped areas;
- Insufficient IT skills among teachers;
- Issues related to cybersecurity and data privacy.

To overcome these challenges, the following measures are essential:

- Equipping educational institutions with modern hardware and software;
- Providing regular IT training and professional development for teachers;
- Raising students' digital literacy and information culture;
- Developing national electronic educational resources.

#### Practical experiences

In Uzbekistan, significant reforms have been undertaken to modernize education through digitalization. Initiatives such as the "E-Government" system, the "Digital Education" project, and the "ZiyoNET" educational portal have enhanced access to knowledge and improved teaching quality. Electronic libraries and online platforms are becoming integral components of the national education system. At the same time, international practices are being studied and adapted to local needs, further strengthening the country's digital education landscape.

#### Conclusion

The above discussion demonstrates that informatics and information technologies play an essential role in modern education. They not only simplify the process of acquiring knowledge but also expand the opportunities available to both teachers and students. The future of education is closely tied to digital technologies and artificial intelligence, and this transformation is irreversible. To ensure success, education systems must embrace these changes and continuously innovate.

### References

1. Begali o'g, I. U. B., Malikovich, E. S., & Xojiakbar o'g'li, U. X. (2025). 3D PRINTER ORQALI ISHLAB CHIQRILGAN PROTEZ VA IMPLANTLARNING TIBBIYOTDA QO'LLANILISHI. Multidisciplinary Journal of Science and Technology, 5(5), 857-862.
2. Begali o'g, I. U. B., Malikovich, E. S., & Ahrorxonov, A. (2025). Tibbiyotda robototexnika: Jarrohlik sohasida qo 'llanishi. Multidisciplinary Journal of Science and Technology, 5(5), 878-884.
3. Malikovich, E. S., & Xasan o'g'li, M. T. (2025). TIBBIYOTDA INFORMATIKA DARSLARINI QIZIQARLI TASHKIL QILISH MUAMMOLARI VA YECHIMLARI. Multidisciplinary Journal of Science and Technology, 5(5), 1030-1033.
4. Malikovich, E. S., & Shuxrat o'g'li, T. S. (2025). VIRTUAL DASTURIY TA'MINOTLARDAN FOYDALANISHNING METODIK TIZIMI VA MODELLARI. Multidisciplinary Journal of Science and Technology, 5(5), 1034-1038.
5. Malikovich, E. S., & Shuxrat o'g'li, T. S. (2025). VIRTUAL TA'LIMNI SHAKLLANTIRISHDA AXBOROT TEXNOLOGIYALARINING O 'RNI VA AHAMIYATI. Multidisciplinary Journal of Science and Technology, 5(5), 1039-1042.
6. Malikovich, E. S., & Ilxom o'g'li, B. X. (2025). TIBBIYOTDA AXBOROT TEXNOLOGIYALARINI O'QITISHDA VIRTUAL DASTURLARDAN FOYDALANISH. Multidisciplinary Journal of Science and Technology, 5(5), 1026-1029.
7. Malikovich, S. E. (2022). 3O'LCHAMLI MODELLAR YARATISH VA ULARNI O'QITISH METODIKASI. In Proceedings of International Educators Conference (Vol. 1, No. 3, pp. 46-50).
8. Begali o'g, I. U. B., & Rustamovna, I. G. (2025). Dermatologiyada AI dasturlari orqali teri kasalliklarini aniqlash. Multidisciplinary Journal of Science and Technology, 5(5), 703-709.
9. Улугбек, И. Б., & Дильрабо, А. У. (2025). Искусственный интеллект в ранней диагностике онкологических заболеваний. Multidisciplinary Journal of Science and Technology, 5(5), 993-997.

10. Begali o'g, I. U. B., & Shuhratovna, S. D. (2025). Diabetiklar uchun mobil ilovalar va ularning samaradorligi. Multidisciplinary Journal of Science and Technology, 5(5), 710-713.
11. Begali o'g, I. U. B. (2025). The Importance of Integration in General Education Schools and Theoretical Foundations for Developing Teaching-Oriented Integrative Software. Multidisciplinary Journal of Science and Technology, 5(4), 641-646.
12. Maxsudov, V. G., Ermetov, E. Y., Sobirjonov, A. Z., Abdurazzoqov, J. T., & Zuparov, I. B. (2023). Modeling the formation of an electrocardiosignal in the vissim environment. International Journal of Engineering Mathematics: Theory and Application.
13. Malikovich, S. E. (2022). 3O'LCHAMLI MODELLAR YARATISH VA ULARNI O'QITISH METODIKASI. In Proceedings of International Educators Conference (Vol. 1, No. 3, pp. 46-50).
14. Mamadaliyeva, U. P., Ermetov, E. Y., Abdullayeva, N. U., Zuparov, I. B., Bozarov, U. A., Maxsudov, V. G., & Sobirjonov, A. Z. (2023). Methods Of Modeling Biological Processes And Systems. European Scholar Journal, 4(2), 90-93.
15. Zuparov, I. B., Ibragimova, M. N., Norbutayeva, M. K., Otaxonov, P. E., Normamatov, S. F., Safarov, U. Q., & Maxsudov, V. G. (2023). Modern directions and perspectives of using medical information systems. Switzerland: Innovations in technology and science education, 1218-1233.
16. Sherimatovich, K. S., Bakhodirovich, Z. I., Karimovich, S. Y., & Bakhridinovna, M. A. B. M. A. (2025). THE IMPACT OF ARTIFICIAL INTELLIGENCE ON NEUROCOGNITIVE PROCESSES AND TRANSFORMATION OF THE STRUCTURE OF HUMAN CONSCIOUSNESS. Western European Journal of Medicine and Medical Science, 3(03), 100-104.
17. Raxmatov, A., Bo'riboyev, B., Bo'riboyev, A., Otabekov, A., & Egamov, S. (2020). HUDUDLARDA BOLALAR SPORINING RIVOJLANISHINI MATEMATIK MODELLASH MAMAMLALARI HAQIDA. Arxiv Nauchnyx Publikatsiy JSPI.
18. Зупаров, И. Б. (2025). РАЗВЕТВЛЕННЫЕ И ЦИКЛИЧЕСКИЕ АЛГОРИТМЫ. СОСТАВЛЕНИЕ АЛГОРИТМОВ ДЛЯ ЗАДАЧ, СВЯЗАННЫХ С РАЗВЕТВЛЕННЫМИ И ЦИКЛИЧЕСКИМИ МЕДИЦИНСКИМИ ПРОЦЕССАМИ. Tadqiqotlar, 61(1), 328-332.
19. Нурматова, Ф. Б., & Абдуганиева, Ш. Х. (2023). Цифровая трансформация в медицине: тенденции и перспективы. Universum: технические науки, (7-1 (112)), 26-29.
20. Rakhbarovna, D. N., Sherimatovich, K. S., Bakhodirovich, Z. I., & Jaloliddinovna, Z. S. (2025). AI TECHNOLOGIES AND MODERN ROBOTICS IN

SURGERY. Western European Journal of Medicine and Medical Science, 3(03), 96-99.

21. Begali o'g, I. U. B., Malikovich, E. S., & Xojiakbar o'g'li, U. X. (2025). 3D PRINTER ORQALI ISHLAB CHIQARILGAN PROTEZ VA IMPLANTLARNING TIBBIYOTDA QO'LLANILISHI. Multidisciplinary Journal of Science and Technology, 5(5), 857-862.

22. Ermetov, A. Z., Maxsudov, V. G., Abdurazzoqov, J. T., Otaxonov, P. E., Ermetov, E. Y., Sobirjonov, A. Z., & Zuparov, I. B. (2023). ИССЛЕДОВАНИЕ АЧТВ С ПОМОЩЬЮ КОАГУЛОМЕТРА HUMACLOT JUNIOR Курбонова ЗЧ, Полванхонов СН 2, Имамов ЭЗ 2, Назиров КХ 2, Абсалямова ИИ 2. MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION OF THE REPUBLIC OF UZBEKISTAN MINISTRY OF HEALTHCARE TASHKENT MEDICAL ACADEMY, 13.

23. Махсудов, В., Бобажанов, Б., Зупаров, И., & Латипова, К. (2021). Морфологик операцияларни рангсизлаштириш ёрдамида матинни автоматик аниқлаш.

24. Malikovich, E. S., & Rustam o'g'li, E. J. (2025). TELEMEDICINE: THE REVOLUTIONARY ROLE OF INFORMATION TECHNOLOGIES IN MODERN HEALTHCARE SYSTEMS. Modern American Journal of Medical and Health Sciences, 1(2), 350-356.

25. Махсудов, В., Эрметов, Э., & Зупаров, И. (2021). Ёшларнинг компьютер ўйинларига тобелигини психологик жихатлари.

26. Джуманов, Ж. Х., Юсупов, Р. А., Ахралов, Ш. С., Эгамбердиев, Х. С., & Исроилов, У. Б. (2019). Сув хўжалик фаолияти ўзгарган шароитларда ер ости сувлари харақатини математик моделлаш (Зарафшон воҳасининг Дамхўжа сув олиш иншооти мисолида)/Муҳаммад Ал-Хоразмий Авлодлари илмий-амалий ва ахборот-таҳлилий журнали. Муҳаммад АлХоразмий авлодлари илмийамалий ва ахбороттаҳлилий журнали. Т.:«Fan va texnologiya» нашриёти,(4), 10.

27. Turapov, U. U., Isroilov, U. B., Raxmatov, A., Egamov, S. M., & Isabekov, B. I. (2024). Splay-Method of Model Acquisition Assessment. International Journal of Trend in Scientific Research and Development, 5(1), 934-936.

28. Turapov, U. U., Isroilov, U. B., Guliev, A. A., & Muldanov, F. R. (2020). Non invasive glucometer of automatic measurement of the glucose level in blood. Int. J. Eng. Adv. Technol, 9(3), 3331-3336.

29. Жумабоев, С., & Исроилов, У. (2020). СОЗДАНИЯ СРЕДСТВ ЭЛЕКТРОННОГО ОБУЧЕНИЯ В ВЫСШИМ ПЕДАГОГИЧЕСКОМ ОБРОЗОВАНИЕ. Архив Научных Публикаций JSPI.

30. Isroilov, U. (2020). Пространственный анализ в задачах мониторинга уровней грунтовых вод Ферганской долины. Архив Научных Публикаций JSPI.

31. Begali o'g, I. U. B., & Rustamovna, I. G. (2025). Dermatologiyada AI dasturlari orqali teri kasalliklarini aniqlash. Multidisciplinary Journal of Science and Technology, 5(5), 703-709.
32. Улугбек, И. Б., & Дильрабо, А. У. (2025). Искусственный интеллект в ранней диагностике онкологических заболеваний. Multidisciplinary Journal of Science and Technology, 5(5), 993-997.
33. Begali o'g, I. U. B., Malikovich, E. S., & Xojiakbar o'g'li, U. X. (2025). 3D PRINTER ORQALI ISHLAB CHIQARILGAN PROTEZ VA IMPLANTLARNING TIBBIYOTDA QO'LLANILISHI. Multidisciplinary Journal of Science and Technology, 5(5), 857-862.
34. Begali o'g, I. U. B., Malikovich, E. S., & Ahrorxonov, A. (2025). Tibbiyotda robototexnika: Jarrohlik sohasida qo 'llanishi. Multidisciplinary Journal of Science and Technology, 5(5), 878-884.
35. Begali o'g, I. U. B., Malikovich, E. S., & Olimov, A. (2025). Bolalar tibbiyotida VR o'yinlari. Multidisciplinary Journal of Science and Technology, 5(5), 714-721.
36. Begali o'g, I. U. B., & Mukarram, A. (2025). Kasalliklarning geografik tarqalishi xaritalari (GIS texnologiyalari). Multidisciplinary Journal of Science and Technology, 5(5), 644-648.
37. Begali o'g, I. U. B., & Shodmonovna, X. A. (2025). COVID-19 DAVRIDA TELEMEDITSINANING ORNI. Multidisciplinary Journal of Science and Technology, 5(5), 698-702.
38. Begali o'g, I. U. B., & Mohinur, M. (2025). Da Vinci roboti va jarrohlik amaliyotlari. Multidisciplinary Journal of Science and Technology, 5(5), 649-653.
39. Begali o'g, I. U. B. (2025). Shaxsiylashtirilgan tibbiyot (Personalized medicine). Multidisciplinary Journal of Science and Technology, 5(5), 682-688.
40. Begali o'g, I. U. B., & Bahromov, H. (2025). Nanorobotlar orqali qon tomirlarini tozalash. Multidisciplinary Journal of Science and Technology, 5(5), 657-662.
41. Begali o'g, I. U. B. (2025). The Importance of Integration in General Education Schools and Theoretical Foundations for Developing Teaching-Oriented Integrative Software. Multidisciplinary Journal of Science and Technology, 5(4), 641-646.
42. Isroilov, U. B. (2023). Automatic Determination of Blood Glucose Level by Means of A Non-invasive Glucometer. American Journal of Technology and Applied Sciences, 12, 78-84.
43. Ibragimova, N., Murodova, S., Otanazarov, D., & Khojanazarova, M. (2021). Studying the effect of potato products in extending the period of potato storage. In E3S Web of Conferences (Vol. 258, p. 04021). EDP Sciences.

44. Kenjibaeva, G. S., Bektureeva, G. U., Murodova, S. S., Sobirova, M. B., & Ibragimova, N. M. (2024). KARTOSHKANI EKOLOGIK MAHSULOT BIOPREPARAT YORDAMIDA SAQLASH TEXNOLOGIYASINI ISHLAB CHIQISH. Экономика и социум, (11-2 (126)), 238-241.

45. Murodova, S. S., Ibragimova, N. M., & Xo'Janazarova, M. Q. (2024). KARTOSHKATUGANAKLARINI SAQLASH XUSUSIYATLARI. Science and innovation, 3(Special Issue 58), 148-151.

46. Sobirovna, M. S., Muminovna, I. N., Xudaynazarovich, O. D., & Baxtiyorovna, Y. S. (2023). RIZOBAKTERIYALARDAN AJRATIB OLINGAN EKZOPOLISAXARIDLARNING KARTOSHKANI SAQLASH DAVRIGATASIRINI ORGANISH. Science and innovation, 2(Special Issue 8), 451-459.

47. Ibragimova, N., Muradova, S., & Khojanazarova, M. (2023). Storage of potatoes with the help of biopreparations. In E3S Web of Conferences (Vol. 389, p. 03095). EDP Sciences.

48. Жуманиязов, М. Ж., Курамбаев, Ш. Р., Жуманиязова, Д. М., Сапарбаева, Н. К., & Ибрагимова, Н. М. (2018). Композиционный модификатор ржавчины на основе местного сырья и техногенных ресурсов. Химия и химическая технология, (1), 53-54.

49. Курамбаев, Ш. Р., Ибрагимова, Н. М., Худайберганов, С., & Камилов, М. И. (2017). Композиционный модификатор ржавчины на основе местного сырья и техногенных ресурсов. Молодой ученый, (12), 66-69.

50. Шарипов, П. Р., Ибрагимова, Н. М., Матчанова, Д. Ш., & Аитова, Ш. К. (2017). Программа, определяющая количество добавляемых ингредиентов в блюдо. Интерактивная наука, (12), 161-163.

51. Muminovna, I. N., & Sultanbayevna, B. K. UDK. 631.53. 026 IMPACTS OF ZAMIN-M BIOPREPARATE ON INCREASING THE STORABILITY OF POTATO STORES.

52. Jumaniyazov, J., Tukhtayev, B., Abdullaev, I., Khudayberganov, N., & Iskandarov, A. (2021, December). Assimilation dynamics of saline soil areas by cultivating biomeliorant herbal plant in the lower Amudarya region. In IOP Conference Series: Earth and Environmental Science (Vol. 939, No. 1, p. 012092). IOP Publishing.

53. Розимова, Ё. Ю. (2021). СОВРЕМЕННЫЕ ТРЕБОВАНИЯ К ВОЕННО-ПАТРИОТИЧЕСКОМУ ВОСПИТАНИЮ МОЛОДЕЖИ В УЗБЕКИСТАНЕ. Россия и мусульманский мир, (1 (319)), 79-83.

54. Розимова, Ё. Ю. (2013). Об истории возникновения армии и военного образования в республике Бухара. SCIENCE AND WORLD, 18.

55. Rozimova, Y. (2025, April). THE HEROISM OF UZBEK WOMEN DURING WORLD WAR II. In CONFERENCE ON THE ROLE AND

IMPORTANCE OF SCIENCE IN THE MODERN WORLD (Vol. 2, No. 4, pp. 120-124).

56. Rozimova, Y. (2025). O 'ZBEKISTON MUDOFAA ISLOHOTI VA PROFESSIONAL HARBIY TA'LIM TIZIMIGA BIR NAZAR. TAMADDUN NURI JURNALI, 4(67), 346-349.

57. Yu, R. Y. (2023). MILITARY PATRIOTISM PROBLEMS OF EMOTION FORMATION. IN THE EXAM-PLE OF CADETS OF THE ARMED FORCES ACADEMY. BBC, 4, 29.

58. Yu, R. Y. (2022). Independent uzbekistan the past, present and future of the armed forces.

59. Ахмедов, Д. Ў., & Ахмедова, С. А. (2022). AMIR TEMUR DAVRIDA ILM-MA'RIFATGA E'TIBOR MASALALARI. O 'ZBEKISTON RESPUBLIKASI JAMOAT XAVFSIZLIGI UNIVERSITETI IJTIMOYIY-GUMANITAR FANLAR VA JINOIY HUQUQIY FANLAR, 577.

60. O'gli, K. M. M. (2021). Issues of organization of pre-service military training.

61. Snuminska, N. V. (2016). Galitcka Army infantry units training features and specifics.

62. Розимова, Ё. Ю. (2015). ПРОТИВОДЕЙСТВИЕ ПРОПАГАНДЕ ИГИЛ В СРЕДНЕЙ АЗИИ НА ПРИМЕРЕ УЗБЕКИСТАНА. Наука и мир, (9-1), 158-160.