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The use of digital educational resources in modern physics education

Bakayeva Mekhriniso Izatovna
Asia International University

Abstract: in this article, digital educational resources, requirements for RTR, digital educational resources used in teaching physics and their advantages, the importance of using digital educational technologies in physics lessons thought about.

Keywords: information and communication technologies, digital learning resources (DRT), interactive learning programs, video tutorials, targeted learning programs, massive online open classes, software.

Annotation: in this state digital educational resources are distributed, the need for TsO R, digital educational resources, ispolzuemye pri obuchenii physike i ix preimushchestva, vajnost ispolzovaniya digitalx obrazovatelnyx tehnologiy na urokax physics.

Key words: information and communication technologies, digital educational resources (TsOR), interactive educational programs, video lessons, developed educational programs, massive open online lessons, software security.

Abstract: this article discusses digital educational resources, requirements for digital educational resources, digital educational resources used in teaching physics and their advantages, the importance of using digital educational technologies in physics lessons.

Keywords: information and communication technologies, digital educational resources (DER), interactive educational programs, video lessons, developed educational programs, massive open online lessons, software.

Enter.

Today, digital technologies have become an integral part of modern education. The use of digital technology in education has changed the way students learn and teachers teach. This has made education more accessible, fun and interactive and has created endless opportunities for students and teachers. One of the most important aspects of digital technology in education is its ability to personalize learning. With technology, teachers can create

individualized lesson plans that fit each student's unique learning style, pace, and interests. Students also have access to many online resources and tools that allow them to learn at their own pace, in their own time, and in their preferred environment.

Issues related to the automation of lessons have aroused special interest in everyone, because the method of "doing it by hand" without the use of technical tools has long exhausted its capabilities. The most convenient form of educational automation is the use of information technology, that is, the use of a computer in teaching and processing the results of a test survey of student knowledge. In the world of digital technologies, personal computers and laptops are replacing books and notebooks. The use of computers has made the work of teachers easier. One of the unique features of physics is a convenient field for using information and communication technologies.

Main part

In his work [2], the author revealed the possibilities of assessing the level of knowledge acquired by students using modern platforms in physics classes, explained the advantages of using innovative technologies in the educational process, and highlighted the important aspects of using Plickers, ClassMarker, Edbase FlexiQuiz, QuestBase, SpeedExam programs . ' tgan. He talked about the rapid assessment of the knowledge of a large number of students at the same time in a short period of time and the use of modern pedagogical technologies in classes.

this article[4], the relevance of the introduction of digital technologies in the teaching of physics today, what aspects should be given importance in the creation of the national content of virtual laboratories in this direction is researched. Considering that physics is an experimental science, the author emphasizes the need to digitize demonstration equipment, laboratory processes, and other educational equipment based on foreign experiences.

In the article [6], the importance and role of using digital technologies in the current stage of the development of society and school education, in the process of implementing updated projects and initiatives, is justified. The need and opportunity to form the necessary competencies and personal qualities required in the digital age in students is emphasized: information activity and media literacy, ability to think globally. The requirements for the teacher's ICT competence in the digital age, the problems and difficulties of the use of digital technologies in physics classes are

identified and described based on the analysis of their specific characteristics and potential risks. As a result, options for introducing digital devices, tools and technologies into the concrete experience of the teacher are offered to achieve new educational results, update the quality of education, and purposefully organize modernized forms of interaction between teachers and students.

Digital learning resources (DRT), in other words, can also be used in terms such as "virtual learning resources", "online learning resources", "online learning resources". RTR refers to the delivery or organization of teaching and learning processes through digital means. RTR is one of the modern technologies that aim to make learning and teaching, scientific research and student learning and improvement more efficient [1]

Digital technology makes learning more fun and interactive. Gone are the days of blackboards and textbooks; modern classrooms are equipped with digital devices, interactive whiteboards and online platforms that allow students to participate in virtual discussions, quizzes and games. These tools not only make learning fun, but also help students retain information better and improve their critical thinking and problem-solving skills.

Digital learning resources include:

Interactive educational programs (Learning Management Systems (LMS) platforms)

Video tutorials (online tutorials)

Targeted training programs (targeted for different subjects and skills)

Massive Online Open Courses (MOOCs): MOOCs (multiple courses that aim to provide the best learning experience through automated systems of free learning)

Modern digital learning resources require the following:

RTR requirements

compliance with textbook content, educational regulations;	focus on modern forms of teaching, providing high interactivity and multimedia teaching;	•offer types of educational activities that guide the student to gain experience in solving life problems based on knowledge and skills in a given subject ;	•to provide the opportunity to differentiate and individualize the level of education , taking into account the age characteristics of students and relevant differences in cultural experience ;	•provide access to both independent and group work;	•educational planning options that offer a modular structure

digital learning resources can be used to teach physics :

Physics.ru - Club for physics teachers. Educational materials of I. V. Krivchenko in electronic form, a guide for teachers, a CD for students.

Regelman V. I. teacher triochurovnevye test po physics - Contains a large number of tests on all branches of physics and articles explaining test-solving techniques.

Class ! naya physics is a site for independent learners with interesting information about physics for teachers, students and independent learners.

Fizichesky portal Astrophysichesky the portal contains physics questions, physics tests of different levels from simple to Olympiad, examples of solving some problems.

Place scientific c Seti - many e-books in DJVU and PDF format on various subjects of physics, mathematics and other sciences.

college.ru - Portal of natural sciences, contains models developed by Physicon for the Open Physics project, reviewed in detail by the physics course.

Electronic uchebnik physics - information on school physics is posted here, every registered user of the site has the opportunity to post their materials and discuss the ones already created.

Physics for vsex - Includes physics information and a detailed process for solving problems.

The tip . ru is an educational portal based on an interactive platform for teaching children

https://abt.uz/fizika-mavzulari- tests on topics related to physics

https://bellasviv.uz/online-test/fizika-fanindan-online-test/#google_vignette- online Olympiad assignments in physics

https://abt.uz/- a set of virtual exams, thematic tests, block tests

https://fizika-fine.uz/- a methodical supporter, certification, preparation platform for the Olympiad for physics teachers

https://bunkerschool.uz/uz/online-testing/fizika/- online tests for independent learners of physics

Using digital learning resources in physics classes provides the following advantages:

- the computer gives the teacher new opportunities
- the learning process becomes more interesting for the student ;
- increases the interest of low-achieving students in science;
- motivation and cognitive activity increase due to the variety of forms of work and the possibility of introducing a game moment.

Online teaching with the use of appropriate software allows for a subjective approach to the organization of educational interaction and the formation of an active knowledge position of students that meets the actual educational needs of the modern educational process. helps [3].

The use of computer tests and diagnostic systems in the lesson allows to get an objective idea about the level of learning of the material studied by students in a short period of time and to correct it in time . At the same time, it is possible to choose the difficulty level of the task for each student . What is important for the student is that immediately after completing the test, he receives an objective result that shows the errors.

Integrating a regular lesson with a computer allows you to transfer part of the work to a personal computer, while making the educational process more interesting, colorful and intense. The process of writing descriptions and other important parts of the material will be faster, because the text does not need to be repeated several times (it will be displayed on the screen).

Even before the emergence of new information technologies, experts conducted many experiments and found a connection between the method of mastering the material and the ability to restore the acquired knowledge after some time. If the material is audio, then the person remembered 1/4 of its volume. If the information is presented visually - about 1/3. When combining visual and audio material , memorization increased by half, and if a person participated in active activities during the learning process, then mastering the material increased to 75%. Therefore, it is often important to use multimedia presentations in classes.

Multimedia refers to combining several methods of information presentation - text, still images (drawings and photographs), moving images (animation and video), and sound (digital and MIDI) into an interactive product.

of teaching , the use of multimedia presentations saves time in the classroom, which can be used to explain new material, practice skills, test student knowledge, and review previous material. These presentations are, in fact, an extended lesson plan with a set of necessary drawings, diagrams, formulas, summaries, definitions - everything that I think I need to include in this presentation to make the lesson rich and interesting.

If the lesson is a lecture, in the presentation it is necessary to illustrate each stage of the lecture with drawings, confirm it with graphs, diagrams, write important definitions, formulas, facts, names of scientists, new terms, etc. Such a lecture is more easily perceived by students, arouses interest and is remembered, because all types of memory are involved. If the lesson consists of stages of repetition, explanation and reinforcement of a new topic, then the presentation will enliven it, allow quick, interesting work at all stages of the lesson and help to change the types of activities. A video experiment is also interesting for students when learning new material. If the phenomenon or physical process takes place over a long period of time, it is not possible to conduct and observe a natural experiment, then it is especially necessary to use this type of experiment. In most cases, traditional experience is more effective [5].

Among the sources of information, it is worth noting the Internet, where many photos and video clips of various physical phenomena are freely available. Students actively participate in project work in physics. They prepare creative works, projects. The work requires a good knowledge of computer technology, that is, a quick search

for information in various sources, including Internet sites, preparation of material for a presentation, creation of a presentation in Microsoft Power Point.

Summary.

Internet resources play a big role in preparing teachers and students for lessons. The Internet is used to find the necessary information in the preparation of the teacher for the lesson, in the educational and scientific activities of the students. There are a number of educational websites on the subject that provide comprehensive, reliable information resources on every educational topic. A teacher can easily plan and conduct a virtual remote experience in the classroom. Using the information resources of electronic encyclopedias in the lesson, students can quickly learn different interpretations of physical terms (for example, work, friction, pressure, etc.)[7].

In conclusion, it can be said that the full implementation of digital educational resources integrated into the educational process allows to complement and harmonize traditional teaching methods with the help of information technologies. Practice shows that the use of digital resources in lessons increases visibility , makes the lesson interesting, arouses students' interest in the subject being studied, and allows connecting several channels of information perception at the same time.

List of references:

1. Muxtaram Boboqulova Xamroyevna. (2024). GEYZENBERG NOANIQLIK PRINTSIPINING UMUMIY TUZILISHI . TADQIQOTLAR.UZ, 34(3), 3–12.

2. Muxtaram Boboqulova Xamroyevna. (2024). THERMODYNAMICS OF LIVING SYSTEMS. Multidisciplinary Journal of Science and Technology, 4(3), 303–308.

3. Muxtaram Boboqulova Xamroyevna. (2024). QUYOSH ENERGIYASIDAN FOYDALANISH . TADQIQOTLAR.UZ, 34(2), 213–220.

4. Xamroyevna, M. B. (2024). Klassik fizika rivojlanishida kvant fizikasining orni. Ta'limning zamonaviy transformatsiyasi, 6(1), 9-19.

5. Xamroyevna, M. B. (2024). ELEKTRON MIKROSKOPIYA USULLARINI TIBBIYOTDA AHAMIYATI. *PEDAGOG*, *7*(4), 273-280.

6. Boboqulova, M. X. (2024). FIZIKANING ISTIQBOLLI TADQIQOTLARI. *PEDAGOG*, *7*(5), 277-283.

7. Xamroyevna, M. B. (2024). RADIATSION NURLARNING INSON ORGANIZMIGA TASIRI. *PEDAGOG*, *7*(6), 114-125.

8. Jalilov, R., Latipov, S., Aslonov, Q., Choriyev, A., & Maxbuba, C. (2021, January). To the question of the development of servers of real-time management systems of electrical engineering complexes on the basis of modern automation systems. In CEUR Workshop Proceedings (Vol. 2843).

9. To'raqulovich, M. O. (2024). OLIY TA'LIM MUASSASALARIDA AXBOROT KOMMUNIKASIYA TEXNOLOGIYALARI DARSLARINI TASHKIL ETISHDA ZAMONAVIY USULLARDAN FOYDALANISH. *PEDAGOG*, *7*(6), 63-74.

10. Muradov, O. (2024, January). IN TEACHING INFORMATICS AND INFORMATION TECHNOLOGIES REQUIREMENTS. In *Международная конференция академических наук* (Vol. 3, No. 1, pp. 97-102).

11. To'raqulovich, M. O. (2024). OLIY TA'LIM MUASSASALARIDA TA'LIMNING INNOVASION TEXNOLOGIYALARDAN FOYDALANISH. *PEDAGOG*, *7*(5), 627-635.

12. To'raqulovich, M. O. (2024). IMPROVING THE TEACHING PROCESS OF IT AND INFORMATION TECHNOLOGIES BASED ON AN INNOVATIVE APPROACH. *Multidisciplinary Journal of Science and Technology*, *4*(3), 851-859.

13. Murodov, O. (2024). DEVELOPMENT AND INSTALLATION OF AN AUTOMATIC TEMPERATURE CONTROL SYSTEM IN ROOMS. *Solution of social problems in management and economy*, *3*(2), 91-94.

14. Tursunov, B. J., & Allanazarov, G. O. (2019). Perspektivnye tehnologii proizvodstva po uluchsheniyu kachestva benzina. *Theory and practice of contemporary science*, *3*(45), 305-308.

15. Турсунов, Б. Ж., & Алланазаров, Г. О. (2019). Перспективные технологии производства по улучшению качества бензина. *Теория и практика современной науки*, (3 (45)), 305-308.

16. Tursunov, B. Z. (2023). Analysis of Concepts About the Effect of an Explosion in Solid Wednesday. *American Journal of Public Diplomacy and International Studies (2993-2157)*, *1*(10), 296-304.

17. Tursunov, B. Z. (2023). Methods of Control of Explosion Energy Distribution in Rocks. *Intersections of Faith and Culture: American Journal of Religious and Cultural Studies (2993-2599)*, *1*(10), 108-117.

18. Tursunov, B. Z. (2023). WASTE-FREE TECHNOLOGY FOR ENRICHMENT OF PURIFIC COPPER-ZINC ORE. *American Journal of Public Diplomacy and International Studies (2993-2157)*, *1*(9), 288-293.

19. Tursunov, B. Z. (2023). ANALYSIS OF MODERN METHODS FOR OIL SLUDGE PROCESSING. *American Journal of Public Diplomacy and International Studies (2993-2157)*, *1*(9), 280-287.

20. Jumaev, K., & Tursunov, B. (2022, December). Environmentally friendly technology for obtaining fuel briquettes from oil waste. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1112, No. 1, p. 012005). IOP Publishing.

21. Ахмедова, О. Б., Турсунов, Б. Ж., & угли Худойбердиев, Н. Н. (2022). Анализ физико-химических свойств нефтешламов Бухарского НПЗ и рациональные способы их утилизации. *Science and Education*, *3*(6), 495-507.

22. Турсунов, Б. Д. (2016). Анализ и выявление путей совершенствования процессов горного дела. *Молодой ученый*, (23), 105-106.

23. Djuraevich, A. J. (2021). Zamonaviy ta'lim muhitida raqamli pedagogikaning o'rni va ahamiyati. *Евразийский журнал академических исследований*, *1*(9), 103-107.

24. Ashurov, J. D. R. (2023). OLIY O 'QUV YURTLARI TALABALARIGA YADRO TIBBIYOTINI O 'QITISHDA INNOVATSION TA'LIM TEXNOLOGIYALAR VA METODLARINI QO 'LLASHNING AHAMIYATI. *Results of National Scientific Research International Journal*, *2*(6), 137-144.

25. Ashurov, J. D. (2024). TA'LIM JARAYONIDA SUN'IY INTELEKTNI QO'LLASHNING AHAMIYATI. *PEDAGOG*, *7*(5), 698-704.

26. Djurayevich, A. J. (2021). Education and pedagogy. *Journal of Pedagogical Inventions and Practices*, *3*, 179-180.

27. Ashurov, J. (2023). THE IMPORTANCE OF USING INNOVATIVE EDUCATIONAL TECHNOLOGIES IN TEACHING THE SCIENCE OF INFORMATION TECHNOLOGY AND MATHEMATICAL MODELING OF PROCESSES. *Development and innovations in science*, *2*(12), 80-86.

28. Ashurov, J. D. (2022). Nuclear medicine in higher education institutions of the republic of uzbekistan: Current status and prospects.

29. Umarov, S. K., Nuritdinov, I., Ashurov, Z. D., & Khallokov, F. K. (2017). Single crystals of TlIn 1–x Co x Se 2 (0≤ x≤ 0.5) solid solutions as effective materials for semiconductor tensometry. *Technical Physics Letters*, *43*, 730-732.

30. Умаров, С. Х., Нуритдинов, И., Ашуров, Ж. Ж., & Халлоков, Ф. К. (2019). Удельные сопротивления и тензорезистивные характеристики кристаллов твердых растворов системы TlInSe _2–CuInSe _2. *Журнал технической физики*, *89*(2), 214-217.

31. Umarov, S. K., Nuritdinov, I., Ashurov, Z. Z., & Khallokov, F. K. (2019). Resistivity and Tensoresistive Characteristics of TlInSe 2–CuInSe 2 Solid Solutions. *Technical Physics*, *64*, 183-186.

32. Ашуров, Ж. Д., Нуритдинов, И., & Умаров, С. Х. (2011). Влияние температуры и примесей элементов I и IV групп на тензорезистивные свойства монокристаллов TlInSe2. *Перспективные материалы*, (1), 11-.

33. Ashurov, J. (2023). TA'LIMDA AXBOROT TEXNOLOGIYALARI FANI O 'QITISHDA INNOVATSION TA'LIM TEXNOLOGIYALARINING AHAMIYATI. *Theoretical aspects in the formation of pedagogical sciences*, *3*(4), 105-109.

34. Djo'rayevich, A. J. (2024). THE IMPORTANCE OF USING THE PEDAGOGICAL METHOD OF THE" INSERT" STRATEGY IN INFORMATION TECHNOLOGY PRACTICAL EXERCISES. *Multidisciplinary Journal of Science and Technology*, *4*(3), 425-432.

35. Ashurov, J. D. (2024). AXBOROT TEXNOLOGIYALARI VA JARAYONLARNI MATEMATIK MODELLASHTIRISH FANINI O 'QITISHDA INNOVATSION YONDASHUVGA ASOSLANGAN METODLARNING AHAMIYATI. *Zamonaviy fan va ta'lim yangiliklari xalqaro ilmiy jurnal*, *2*(1), 72-78.

36. Ashurov, J. (2023). OLIY TA'LIM MUASSASALARIDA "RADIOFARMATSEVTIK PREPARATLARNING GAMMA TERAPIYADA QO 'LLANILISHI" MAVZUSINI "FIKR, SABAB, MISOL, UMUMLASHTIRISH (FSMU)" METODI YORDAMIDA YORITISH. *Центральноазиатский журнал образования и инноваций*, *2*(6 Part 4), 175-181.

37. Djorayevich, A. J. (2022). EXPLANATION OF THE TOPIC" USE OF RADIOPHARMACEUTICALS IN GAMMA THERAPY" IN HIGHER EDUCATION INSTITUTIONS USING THE" THOUGHT, REASON, EXAMPLE, GENERALIZATION (THREG)" METHOD.

38. Ашуров, Ж. Д. (2023). ИННОВАЦИОННЫЕ ТЕХНОЛОГИИ И МЕТОДЫ ОБУЧЕНИЯ В ПРЕПОДАВАНИИ ЯДЕРНОЙ МЕДИЦИНЫ СТУДЕНТАМ ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЙ. *Modern Scientific Research International Scientific Journal*, *1*(4), 29-37.

39. Djo‘rayevich, A. J., & Xojiyevich, B. E. (2022). OLIY TA’LIM MUASSASALARIDA “YADRO TIBBIYOTIDA RADIATSION XAVFSIZLIK” MAVZUSINI O ‘QITISHDA MUAMMOLI VAZIYAT METODINI QO ‘LLASH. *Farg'ona davlat universiteti*, (5), 69-69.

40. Behruz Ulugbek og, Q. (2024). ADOBE PHOTOSHOP CC DASTURIDA ISHLASH. *PEDAGOG*, *7*(4), 390-396.

41. Behruz Ulugbek og, Q. (2024). FUNDAMENTALS OF ALGORITHM AND PROGRAMMING IN MATHCAD SOFTWARE. *Multidisciplinary Journal of Science and Technology*, *4*(3), 410-418.

42. Babaev, S., Olimov, N., Imomova, S., & Kuvvatov, B. (2024, March). Construction of natural L spline in W2, σ (2, 1) space. In *AIP Conference Proceedings* (Vol. 3004, No. 1). AIP Publishing.

43. Behruz Ulugbek og, Q. (2023). TECHNOLOGY AND MEDICINE: A DYNAMIC PARTNERSHIP. *International Multidisciplinary Journal for Research & Development*, *10*(11).

44. Behruz Ulug‘bek o‘g, Q. (2023). USE OF ARTIFICIAL NERVOUS SYSTEMS IN MODELING. *Multidisciplinary Journal of Science and Technology*, *3*(5), 269-273.

45. Quvvatov, B. (2024). ALGEBRAIK ANIQLIGI YUQORI BOLGAN KVADRATUR FORMULALAR. KLASSIK GAUSS KVADRATURALARI. *Инновационные исследования в науке*, *3*(2), 94-103.

46. Quvvatov, B. (2024). ALGEBRAIK ANIQLIGI YUQORI BOLGAN KVADRATUR FORMULALAR. SIMPSON FORMULASI. *Models and methods in modern science*, *3*(2), 223-228.

47. Quvvatov, B. (2024). ALGEBRAIK ANIQLIGI YUQORI BOLGAN KVADRATUR FORMULALAR. ROMBERG INTEGRALLASH FORMULASI. *Центральноазиатский журнал образования и инноваций*, *3*(2 Part 2), 107-112.

48. Quvvatov, B. (2024, February). TORTBURCHAK ELEMENT USTIDA GAUSS–LEJANDR FORMULASI. In *Международная конференция академических наук* (Vol. 3, No. 2, pp. 101-108).

49. Behruz Ulug‘bek o‘g, Q. li.(2023). Mobil ilovalar yaratish va ularni bajarish jarayoni. *International journal of scientific researchers*, *2*(2).

50. Quvvatov, B. (2024, February). ALGEBRAIK ANIQLIGI YUQORI BOLGAN KVADRATUR FORMULALAR. REKURSIV TRAPETSIYALAR QOIDASI. In *Международная конференция академических наук* (Vol. 3, No. 2, pp. 41-51).

51. Quvvatov, B. (2024). ALGEBRAIK ANIQLIGI YUQORI BOLGAN KVADRATUR FORMULALAR. ORTOGONAL KOPHADLAR. *Инновационные исследования в науке*, *3*(2), 47-59.

52. Quvvatov, B. (2024). ALGEBRAIK ANIQLIGI YUQORI BOLGAN KVADRATUR FORMULALAR. GAUSS KVADRATUR FORMULALARI. *Models and methods in modern science*, *3*(2), 114-125.

53. Quvvatov, B. (2024). GLOBAL IN VIRTUAL LEARNING MOBILE APP CREATION INFORMATION SYSTEMS AND TECHNOLOGIES. *Science and innovation in the education system*, *3*(1), 95-104.

54. Quvvatov, B. (2024). WEB FRONT-END AND BACK-END TECHNOLOGIES IN PROGRAMMING. *Theoretical aspects in the formation of pedagogical sciences*, *3*(1), 208-215.

55. Quvvatov, B. (2024). FINDING SOLUTIONS OF SPECIAL MODELS BY INTEGRATING INTEGRAL EQUATIONS AND MODELS. *Current approaches and new research in modern sciences*, *3*(1), 122-130.

56. Quvvatov, B. (2024). CONSTRUCTION OF SPECIAL MODELS THROUGH DIFFERENTIAL EQUATIONS AND PRACTICAL SOLUTIONS. *Solution of social problems in management and economy*, *3*(1), 108-115.

57. Karimov, F. (2022). ANIQ INTEGRALNI TAQRIBIY HISOBLASH. *ЦЕНТР НАУЧНЫХ ПУБЛИКАЦИЙ (buxdu. uz)*, *14*(14).

58. Quvvatov, B. (2024). SQL DATABASES AND BIG DATA ANALYTICS: NAVIGATING THE DATA MANAGEMENT LANDSCAPE. *Development of pedagogical technologies in modern sciences*, *3*(1), 117-124.

59. Quvvatov, B. (2023). ALGEBRAIK ANIQLIGI YUQORI BOLGAN KVADRATUR FORMULALAR. UMUMLASHGAN TRAPETSIYALAR QOIDASI. *Академические исследования в современной науке*, *3*(7), 137-