АСТРАХАНСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРИТЕТ ИМЕНИ В.Н. ТАТИЩЕВА

ФИЛИАЛ АСТРАХАНСКОГО ГОСУДАРСТВЕННОГО УНИВЕРИТЕТА ИМЕНИ В.Н. ТАТИЩЕВА В Г. ЗНАМЕНСКЕ

РОССИЙСКИЙ ЭКОНОМИЧЕСКИЙ УНИВЕРСИТЕТ ИМЕНИ Г.В. ПЛЕХАНОВА

КАСПИЙСКИЙ ИСНСТИТУТ МОРСКОГО И РЕЧНОГО ТРАНСПОРТА ИМЕНИ ГЕНЕРАЛ-АДМИРАЛА Ф.М. АПРАКСИНА

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В сборнике представлены материалы **I Международного научно-образовательного студенческого форума «Information society: challenges and opportunities»**, проводимом в Астраханском государственном университете имени В.Н. Татищева, филиале ФГБОУ ВО «Астраханский государственный университет имени В.Н. Татищева» в г. Знаменске совместно с Российским экономическим университетом имени Г.В. Плеханова и Каспийским институтом морского и речного транспорта имени генерал-адмирала Ф.М. Апраксина. Участие в формировании сборника трудов приняли начинающие исследователи, студенты, интересующиеся перспективными разработками в сфере IT и искусственного интеллекта, особенно в аспекте активного внедрения информационных технологий в сферу образования. Совместно с научными руководителями обучающиеся вузов направили усилия на выявление основных вызовов эпохи тотальной цифровизации и выработку способов адекватного реагирования на эти вызовы, а также определение направлений для устойчивого развития.

Научные статьи опубликованы в авторской редакции. Авторы заявляют об отсутствии потенциального конфликта интересов и необходимости его раскрытия в материале. Рабочий язык форума – английский.

СОДЕРЖАНИЕ

PLENARY PAPERS

ETHICAL ASPECTS OF EDUCATIONAL DIGITIZATION: CONFIDENTIALITY AND PRIVACY ISSUES

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Abstract. This article examines the impact of digitalization on education, highlighting the stages of development. In Russia, the digitalization of education has gone through several stages, starting with the development of computer literacy and ending with digital transformation. In the modern world, digitalization of education plays a key role in improving the educational process. It includes the use of various digital resources and gadgets for e-learning both in educational institutions and in a remote format. The technologies of the modern world allow for online learning and the use of digital devices in the educational process, which has become an integral part of the education system at the present time. However, with the advent of new opportunities, new ethical issues arise, in particular regarding the confidentiality and privacy of students. The focus is on the ethical aspects of digitalization, especially in the context of student data privacy. It describes the potential threat to students' privacy in connection with the collection and use of their personal data, as well as the possible consequences of improper data protection. One of the main aspects of digitalization of education is the protection of the confidentiality of personal data and the privacy of students. It is important to ensure reliable data protection and comply with privacy laws. The article offers recommendations for ensuring security in the digital learning environment, including the use of strong passwords, two-factor authentication and limiting the provision of personal information on the network. The importance of teaching students and schoolchildren the rules of Internet security are also emphasized. In conclusion, the need for compliance with ethical principles and cooperation between educational institutions and digital technology developers to create a safe and ethical digital learning environment is emphasized.

Keywords: digitalization, education, digital technologies, privacy, privacy, personal data, security, data protection, digital environment

In the modern world, digitalization covers all areas of our lives, including education. First of all, digitalization of education is the use of various programs, applications and other digital resources for e–learning both remotely and directly at school or university, performing any tasks on a computer or tablet in the classroom. Digitalization of education in Russia, according to experts from the Institute of Education of the Higher School of Economics, has gone through several stages:

- The first stage of digitalization in the mid-1980s – early 1990s was aimed at developing computer literacy and included the appearance of the first computer classes in educational institutions.
- At the second stage, since the mid-2000s, there has been talk about the introduction of information and communication devices into the educational process. Digital devices and formats began to be used not only within the framework of the discipline "Computer Science".
- At the third – modern – stage, starting in 2018, we are talking about digital transformation – the use of digital technologies in all processes in education.

Online learning and the use of digital technologies in the educational process have become an integral part of the modern education system. However, with the advent of new opportunities, new ethical issues arise, especially with regard to confidentiality, namely the prevention of disclosure, and privacy, that is, the right to privacy and personal information of students.

One of the main ethical aspects of digitalization of education is the issue of protecting the confidentiality of student data. Currently, Federal Law No. 152 of 07/27/2006 "On Personal Data" is in force on the territory of the Russian Federation. It is this federal law that regulates relations related to the processing of personal data, actions performed with personal data, as well as the conditions for storing data on tangible or other media.

When using digital platforms and applications in the educational process, students can leave digital traces, that is, any information about themselves and

their actions, such as logins and passwords from social networks saved in the browser, search history, device location. This data is part of a digital portrait of a person. All the information described can be used by third parties without the user's consent. This poses a potential threat to their privacy and privacy.

The student's personal data may be removed from the system for the following reasons:

1. The opportunity to sell data by intruders.

2. Human PD can help in creating various phishing emails and improving fraudulent schemes for further distribution to vulnerable users.

3. Using PD, you can access human accounts and devices and use them with harmful intentions.

Therefore, it is important that educational institutions and digital technology developers ensure reliable protection of student data and comply with privacy laws.

Another important aspect is the collection and use of student PD. In the process of digital learning, various data can be collected, such as visit history, test results, behavior information, etc. The question arises about how this data is used and to whom it is available. It should be borne in mind that these data can be used to analyze and evaluate academic performance, as well as to personalize the educational process. However, it is important to ensure transparency and consent of students and their parents to the collection and use of such data.

In addition to creating a secure digital learning environment, it is important to teach students and schoolchildren the rules that will help protect everyone on the Internet:

1. Specify only the necessary minimum of data. The less personal information there is on the network, the more the page is uninteresting to the attacker.

2. Use different passwords for different services. Even if one account is hacked, it will be difficult for fraudsters to access the rest of the information.

3. Update account passwords regularly. The user may not notice that his page is being used by a cybercriminal.

4. Two-factor authentication. If the attacker has all the login details, he will not be able to access the account.

5. When verifying on the service using documents, it is necessary to add watermarks on the photo or a signature on paper, including the day when the photo was taken, as well as for which service. The site's technical support will reject these photos when trying to verify on other services and on other days.

In general, the digitalization of education provides many new opportunities to improve the educational process. However, the introduction of digital technologies should be carried out considering ethical principles, especially with regard to confidentiality and privacy of students. Educational institutions and digital technology developers must work together to create a safe and ethical digital environment where students can receive education without fear for their privacy and privacy.

Литература

1. Дорохина, Р. В. Этические проблемы цифровизации в системе образования / Р. В. Дорохина, С. В. Лавренов // Век глобализации. – 2021. – № 2(38). – С. 118-123. – EDN WHXMNL.

2. Жернов, Е. Е. Этические проблемы цифровизации образования / Е. Е. Жернов, Д. Г. Кочергин // Профессиональное образование в России и за рубежом. – 2021. – № 4(44). – С. 64-70. – DOI 10.54509/22203036_2021_4_64. – EDN GWZSAR.

3. Федеральный закон "О персональных данных" от 27.07.2006 N 152-ФЗ (последняя редакция) URL: https://www.consultant.ru/document/cons_doc_LAW_61801 / (date of access: 20.02.2024)

4. Коновалова, В. Г. Оборотная сторона медали: социальные и этические проблемы внедрения цифровых технологий / В. Г. Коновалова // Управление персоналом и интеллектуальными ресурсами в России. – 2019. – Т. 8, № 1. – С. 61-67. – DOI 10.12737/article_5c515b66dcea14.97430069. – EDN VXCSDW.

5. Мильке, В.Э., Незнамов А.В., Сучкова М.А. Права человека и цифровые технологии, URL: https://ethics.cdto.center/8_2 (date of access: 20.02.2024)

6. Parmon P. Leaks of Personal Data: How Are They Dangerous for Users and How to Protect Yourself from Them // RB.RU – new technologies, business and careers in the digital economy URL: https://rb.ru/opinion/utechk-personalnyh-dannyh / (date of access: 20.02.2024).

7. Socio-Ethical Challenges of the Era of Digitalization // UNESCO Chair "Social, legal and ethical foundations of the formation of a knowledge society" URL: https://ru.unesco.rea.ru/wp-content/themes/unesco/assets/doc/veticheskie-visovi.pdf (date of access: 21.02.2024).

8. What is Digitalization of Education and Why is It Needed // Skillbox – 2023 Educational platform. URL: https://skillbox.ru/media/education/chto-takoe-tsifrovizatsiya-obrazovaniya-i-zachem-ona-nuzhna / (date of access: 20.02.2024).

9. Кривых, Л. Д. Категория "отношение": социальный аспект / Л. Д. Кривых // Южно-российский вестник геологии, географии и глобальной энергии. – 2006. – № 6(19). – С. 192-194. – EDN KVDWIP.

References:

1. Dorokhina R.V., Lavrenov S.V. Ethnic Problems of Digitalization in The Education System // Century of Globalization. 2021. No. 2. p. 38. URL: https://www.socionauki.ru/journal/articles/2954197 / (date of access: 20.02.2024)

2. Zhernov E.E., Kochergin D.G. Ethical Problems of Digitalization of Education // Vocational education in Russia and abroad. 2021. No.4 (44). URL: https://cyberleninka.ru/article/n/eticheskie-problemy-tsifrovizatsii-obrazovaniya (date of access: 20.02.2024).

3. The Law of the Russian Federation "Federal Law "On Personal Data" dated 07/27/2006 No. 152-FZ // Official Internet portal of legal information. ConsultantPlus-2023 with amendments and additions. ed. from 02/06/2023. URL: https://www.consultant.ru/document/cons_doc_LAW_61801 / (date of access: 20.02.2024

4. Konovalova V.G. The Flip Side of the Coin: Social and Ethical Problems of the Introduction of Digital Technologies // UPIRR. 2019. No.1. URL: https://cyberleninka.ru/article/n/oborotnaya-storona-medali-sotsialnye-i-eticheskie-problemy-vnedreniya-tsifrovyh-tehnologiy (date of access: 20.02.2024).

5. Milke V.E., Neznamov A.V., Suchkova M.A. Human Rights and Digital Technologies // Ethics and “digit’ URL: https://ethics.cdto.center/8_2 (date of access: 20.02.2024).

6. Parmon P. Leaks of Personal Data: How Are They Dangerous for Users and How to Protect Yourself from Them // RB.RU – new technologies, business and careers in the digital economy URL: https://rb.ru/opinion/utechk-personalnyh-dannyh / (date of access: 20.02.2024).

7. Socio-Ethical Challenges of the Era of Digitalization // UNESCO Chair "Social, legal and ethical foundations of the formation of a knowledge society" URL: https://ru.unesco.rea.ru/wp-content/themes/unesco/assets/doc/veticheskie-visovi.pdf (date of access: 21.02.2024).

8. What is Digitalization of Education and Why is It Needed // Skillbox – 2023 Educational platform. URL: https://skillbox.ru/media/education/chto-takoe-tsifrovizatsiya-obrazovaniya-i-zachem-ona-nuzhna / (date of access: 20.02.2024).

9. Krivykh, L. D. Category "attitude": social aspect / L. D. Krivykh // South-Russian Bulletin of Geology, Geography and Global Energy. 2006. № 6(19). C. 192-194. EDN KVDWIP.

IT AND AI AS PROBLEM SOLVING TOOLS FOR THE TECH AGE SOCIETY: IN SEARCH OF NEW APPLICATIONS

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Abstract. Modern logistics is inconceivable without the active use of information technologies. It is difficult to imagine the formation and organization of the supply chains without intensive, constant rapid exchange of information, without a rapid response to market needs. Today, it is almost impossible to ensure the quality of goods and services required by consumers without the use of information systems and software systems for analysis, planning and support of commercial decision-making in the logistics system. Moreover, it is thanks to the development of information systems and technologies that logistics has become the dominant form of organization of goods movement in the highly competitive markets of economically developed countries.

Key words: Information technologies, modern logistics, logistics, information systems

Information systems (IS) and information technologies (IT) in modern transport logistics are usually understood as a set of software and hardware tools and methods for the production, transmission, processing and consumption of information in systems that ensure the movement of goods. The dominant trend in the development of IS and IT in logistics is the integration of information flows based on modern methods of data processing and transmission, defined by such a relatively new concept as telematics.

Information flows related to the organization of production and distribution of goods can be divided into flows of an individual enterprise (microlevel) and flows of a regional, interorganizational or interstate level (macrolevel) [1].

To a greater extent, the essence of information interaction in the process of commodity movement is reflected in the specialized literature on interorganizational interaction and in international trade (macrolevel). In general, the problem of rationalization of information flows (not to mention optimization) is poorly researched today and there are only some recommendations for their organization based on practical experience.

The development of information logistics is associated with the increasing role of information in the economic process, as well as the development of communications and computer technology. The importance of information in the modern world is determined by the following factors: a high proportion of information in the final cost of goods and services; a high share of information resources in total employment; an integrating function of information in the economic organism of society, to a decisive extent, ensuring the efficiency of the economy; an innovative function manifested in the generation of scientific and technological progress.

The relevance of the introduction and use of IT in logistics is due to the ever-increasing volume of data to be processed. In the usual, traditional ways, it is no longer possible to extract the necessary information from the data stream and use it for enterprise management. The determining factor in management is the speed of data processing and obtaining the necessary information. The turnover of information is increasingly affecting the effectiveness of management the company, its financial success. In the developed countries of the West, information costs exceed energy costs. And these expenses, with a reasonable, correct approach, bear results. Modern information technologies based on the use of information storage concepts and intelligent data processing significantly increase labor productivity.

The technical means of IT in logistics are: electronic and computer technology; personal computers; servers; peripheral equipment; communication tools; automated equipment [2].

IT software in logistics includes:

1) General-purpose software: ISM enterprise management information system as a software base for the creation of logistics information systems (LIS); CAD systems – computer aided design; automated control systems – tools process control, robotics, control of automated equipment, including process control systems; management modeling tools – modeling of business processes, organizational structures; various office applications – text editors, tabular editors, presentation tools, organizers; ets.

2) Specialized software tools: included in corporate information systems (CIS) – the vast majority of CIS contain a logistics module or a Logistics block, consisting of several modules; independent software tools that implement separate logistics functions.

The use of IT in logistics is aimed at ensuring the movement of goods and interaction between the divisions of the enterprise and between enterprises in the process of purchasing and distributing goods. Therefore, the main direction of research should be the division of logistics systems into phases of the material flow with the characteristics of the logistics functions (stocks, transportation) [3].

It should be noted that in the practice of organizing the movement of goods, information technologies do not have value. That is, simply buying and installing expensive specialized software does not lead to solving the problems of the organization in the field of logistics. In order for the logistics system to work effectively, it is necessary to describe in detail all the physical processes and only then put on the existing system (or improve the existing system before installing software) a computer program or software development. Software becomes effective when, during implementation and operation, consultants and programmers collect all opinions and wishes from users, analyze them, select the right one and add a program for a specific organization.

Литература

1. Семененко А.И. Предпринимательская логистика. – С.-Петербург: Политехника, 2014. – 350 с.

2. Киршина М.В. Коммерческая логистика / М. В. Киршина. – Москва : Центр экономики и маркетинга, 2013. – 255 с.

3. Афанасенко И.Д. Коммерческая логистика: учебник для вузов. – М.: Питер, 2015. – 351 с.

References

1. Semenenko A. I. Entrepreneurial logistics. St. Petersburg: Polytechnic 2014. 349 pp.

2. Kirshina M. V. Commercial logistics. Moscow: Center for Economics and Marketing. 2013. 255 pp.

3. Afanasenko I.D. Commercial logistics: textbook. St. Petersburg 2015. 351 pp.

LEARNING LANGUAGES BASED ON K-POP MEDIA PRODUCTS AS AN EXAMPLE OF DIGITALIZATION IN EDUCATION

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Abstract. The COVID-19 pandemic was one of the reasons for the digitalization of education. As a result, the future of education is digital, and it is important to adapt to this change and take benefits from it. Also, it gives students more opportunities for learning languages. In this article you can trace the impact of technology on student learning. Using the example of K-pop and k-dramas, we can trace how it productive for mastering vocabulary and phraseology, including various colloquial clichés, since they make them easier to memorize thanks to the combination of audio and video.

Key words. Linguistics, digitalization, k-pop, digital education, linguistical culturology.

Digital transformation of education is an ongoing process, and there are several key areas that are currently focused on improving the education system throughout the world.

The most vital role in improving online technologies was due to pandemic COVID-19. Humanity was forced to implement distant activities in education. Online learning has become essential for students who couldn't attend physical classes. Moreover, online learning offers students flexibility in terms of learning pace, schedule, and location. As a result, educational institutions should invest in the development of high-quality online courses that meet the needs of students.[2]

It is worth mentioning that the study of the Asian languages is accelerating among the young generations. In recent years, South Korea has been gaining more and more attention in the global market in many areas: for example, K-pop, K-drama and K-food. This speeded up during the COVID-19 pandemic when people were

forced to switch their living space from offline to online and spend more time watching YouTube or Netflix. More involved people even started to get indulged in learning Korean language and culture. [1]

First of all, humans watched various TV shows with the subtitles, trying to understand the native speech. Korean performers put a lot of sense and meaning into their art works. Learning lyrics encourages people to understand the nation and its language, mentality, traditions and culture.

In addition, a good way of combining digitalization and education is watching K-dramas. The directors and scriptwriters reflect the ancient cultural traditions via a new sight. The same happens with the singers. They mix up their old culture with the new music directions. Moreover, the Koreans promote this type of art around the whole world. For example, boys band ENHYPEN. It consists of three separate Korean words like connection, discovery and development, joined into one meaningful abbreviation. The first year they couldn't perform in front of the live audience because of the COVID restrictions. [3]

Also, they motivate the students to never give up and keep learning, because for many people, having an education is a ticket to a comfortable life. Students can draw on the experiences of these idols and, by following their example, excel in the educational process.

Out of everything mentioned above, it may be stated that digital tools and technologies have made education more accessible, affordable, and flexible. However, digitalization also poses challenges such as technical issues, lack of human interaction, and cybersecurity risks. It is crucial to invest in the necessary infrastructure and training to ensure a seamless learning experience. The future of education is digital, and it is important for educational institutions to adapt to this change. It has also opened up new opportunities to enhance teaching and studying methods on the examples of K-POP and K-Drama (mentioned above), and reach a wider audience.

Furthermore, it is important to note that digitalization of education can have a positive impact on developing countries, as it can offer a solution to the lack of

access to learning foreign traditions, languages and mentality without leaving your laptop.

Литература

1. Digitalization of education-All you need to know. Available at: https://digitalfuturesofwork.com/our_blog/22/ (date of access: 20 March 2024).

2. From K-pop and K-drama to ‘K-learning cities’: lessons for the digital era Available at: https://digitalmahbub.com/digitalization-of-education/#:~:text=Cybersecurity%20Issues%3A%20Digitalization%20of%20education,also%20lead%20to%20social%20isolation (date of access: 20 March 2024).

3. Oh I., Lee H. J. K-pop in Korea: How the pop music industry is changing a post-developmental society //Cross-currents: East Asian history and culture review. 2014.Т. 3. No. 1. С. 72-93

4. Кривых, Л. Д. Экспериментальная реализация формирования у студентов неязыковых специальностей опыта позитивных социальных отношений средствами иностранного языка / Л. Д. Кривых // Интеграция образования. – 2009. – № 4(57). – С. 111-115. – EDN KZPDPV.

5. Кривых, Л. Д. Социальная функция образования в русле стратегии инновационного развития России / Л. Д. Кривых // Основные вопросы педагогики, психологии, лингвистики и методики преподавания в образовательных учреждениях : Сборник статей II Международной научно-практической конференции, Астрахань, 06 мая 2014 года / Составители Р.Р. Бикешева, О.В. Чувашова. – Астрахань: Издательский дом "Астраханский университет", 2014. – С. 51-53. – EDN SODEFF.

6. Кривых, Л. Д. Формирование опыта социальных отношений средствами иностранного языка у студентов неязыковых специальностей в системе высшего профессионального образования / Л. Д. Кривых // Известия Южного федерального университета. Педагогические науки. – 2011. – № 3. – С. 172-178. – EDN NEIMYX.

References

1. Digitalization of education-All you need to know. Available at: https://digitalfuturesofwork.com/our_blog/22/ (date of access: 20 March 2024).

2. From K-pop and K-drama to ‘K-learning cities’: lessons for the digital era Available at: https://digitalmahbub.com/digitalization-of-education/#:~:text=Cybersecurity%20Issues%3A%20Digitalization%20of%20education,also%20lead%20to%20social%20isolation (date of access: 20 March 2024).

3. Oh I., Lee H. J. K-pop in Korea: How the pop music industry is changing a post-developmental society //Cross-currents: East Asian history and culture review. 2014.T. 3. No. 1. C. 72-93

4. Krivykh, L. D. Experimental implementation of the formation of students' experience of positive social relations by means of a foreign language / L. D. Krivykh // Integration of Education. 2009. № 4(57). C. 111-115. - EDN KZPDPV.

5. Krivykh, L. D. Social function of education in line with the strategy of innovative development of Russia / L. D. Krivykh // Basic issues of pedagogy, psychology, linguistics and teaching methods in educational institutions : Collection of articles of the II International Scientific and Practical Conference, Astrakhan, 06 May 2014 / Compiled by R.R. Bikesheva, O.V. Chuvashova. Astrakhan: Publishing House "Astrakhan University", 2014. C. 51-53. EDN SODEFF.

6. Krivykh, L. D. Formation of the experience of social relations by means of a foreign language in students of non-linguistic specialities in the system of higher professional education / L. D. Krivykh // Izvestia of the Southern Federal University. Pedagogical sciences. 2011. № 3. C. 172-178. EDN NEIMYX.

THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE PROCESS OF TEACHING THE RUSSIAN LANGUAGE

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Abstract. The use of information and communication technologies (ICT) in the process of teaching the Russian language is becoming the most popular and effective approach. Today's technologies provide wonderful learning opportunities and make the process of learning the Russian language more multimedia, entertaining and effective. One of the main advantages of using ICT in teaching the Russian language is the openness of information. With the help of the Internet and various online resources, students have the opportunity to access a large number of materials, including reference books, dictionaries, grammar rules, audio and video materials. This allows them to independently learn the language, answer their own questions and expand their personal vocabulary

Keywords: training, Russian language lessons, information technology

One of the main advantages of using ICT in teaching the Russian language is the possibility of conducting interactive lessons. Using special programs and applications, teachers can create interactive lessons that include assignments, exercises, games and tests. This helps students actively interact with the material and develop speaking, reading, writing and listening comprehension skills.

ICT also makes it possible to create conditions for the individualization of learning. Using online platforms and programs, teachers can adapt materials and assignments to the individual needs of each child. This allows each student to work at their own pace, focus on their vulnerabilities and improve their strengths.

Some of the most popular online platforms for teachers to work are:

"Uchi-ru"

It is one of the largest Russian platforms. It allows students to independently study the subject course. And it's convenient for the teacher to track the class's progress through his personal account.

Umskul

It is an online service for preparing for the Unified State Exam, where you can prepare for all subjects at once. Students can consult with teachers directly, and also receive constant support from a personal manager.

SberClass

It is a platform where a student can create a flexible curriculum. SberClass is also convenient for teachers: it automatically tracks academic progress and allows you to devote more time to children and their needs.

Yandex Tutorial

It is another platform from Yandex. It allows the teacher to assign homework, track student workload, and automatically check homework.

PRO-EDUCATION

It is a project for class teachers. It contains a collection of pedagogical ideas and a convenient calendar of school events.

Student Engagement Programs

Everything you need to create quests, simulators and game tasks:

Joyteka is a quest designer.

• eTrainiki - designer of simulators.

• Online Test Pad - survey and crossword puzzle designer.

• UDOBA - educational resource designer.

• Quest maker is another quest designer.

• VK Clips - for creating educational video materials.

• Cynical editor - for creating comics (instructions).

In addition, the use of ICT in teaching the Russian language contributes to the development of communication skills. Through online platforms and social networks, students can communicate with native speakers, take part in discussions, write essays and share their thoughts and ideas. This helps them develop Russian communication skills and self-confidence.

However, it should be noted that the use of ICT in teaching the Russian language should not replace traditional teaching methods such as textbooks, classroom lessons and individual lessons with a teacher. ICT should be a supporting tool that helps improve and complement the learning process.

In conclusion, the use of information and communication technologies in the Russian language teaching process has many advantages. They allow students to access a wealth of information, conduct interactive lessons, personalize learning and develop communication skills. However, it is important to remember that ICT must be used in combination with traditional teaching methods to achieve the best results.

Литература

1. Андреева А.А. Использование цифровых образовательных ресурсов на уроке русского языка, интернет - ресурс: http://www.openclass.ru

2. Кириллина С.В. Использование возможностей компьютера в образовательной микросреде учителя русского языка и литературы. Русский язык и литература в якутской школе №1, январь-март 2006 г.

3. Логачева О.А. Компьютерные технологии на уроках русского языка и литературы; http://zhurnal.lib.ru/l/logachewa_o_a/tekst-86.shtml

4. Макашевская С.Ш, Котвицкая С.А. Использование ИКТ на уроках русского языка http://uchitelu.net/?q=node/18175.

5. Мартынов Ф.Н Проектная деятельность в обучении сочинению-рассуждению на литературную тему, Русский язык и литература в якутской школе ,№ 4, октябрь -декабрь, 2009.

6. Кривых, Л. Д. Формирование опыта социальных отношений средствами иностранного языка у студентов неязыковых специальностей в системе высшего профессионального образования / Л. Д. Кривых // Известия Южного федерального университета. Педагогические науки. – 2011. – № 3. – С. 172-178. – EDN NEIMYX.

7. Кривых, Л. Д. Социальная функция образования в русле стратегии инновационного развития России / Л. Д. Кривых // Основные вопросы педагогики, психологии, лингвистики и методики преподавания в образовательных учреждениях : Сборник статей II Международной научно-практической конференции, Астрахань, 06 мая 2014 года / Составители Р.Р. Бикешева, О.В. Чувашова. – Астрахань: Издательский дом "Астраханский университет", 2014. – С. 51-53. – EDN SODEFF.

References

1. Andreeva A.A. The use of digital educational resources in Russian language lessons http://www.openclass.ru.

2. Kirillina S.V. Using computer capabilities in the educational microenvironment of a teacher of Russian language and literature. Russian language and literature at the Yakut school, No. 1, January-March, 2006.

3. Logacheva O.A. Computer technologies in Russian language and literature lessons; http://zhurnal.lib.ru/l/logachewa_o_a/tekst-86.shtml .

4. Makashevskaya S.Sh, Kotvitskaya S.A. The use of ICT in Russian language lessons // http://uchitelu.net /?q=node/1817.

5. Martynov F.N. Project activity in teaching composition and reasoning on a literary topic, Russian language and literature in the Yakut school, No. 4, October-December, 2009.

6. Krivykh, L. D. Formation of the experience of social relations by means of a foreign language in students of non-linguistic specialities in the system of higher professional education / L. D. Krivykh // Izvestia of the Southern Federal University. Pedagogical sciences. - 2011. - № 3. - C. 172-178. - EDN NEIMYX.

7. Krivykh, L. D. Social function of education in line with the strategy of innovative development of Russia / L. D. Krivykh // Basic issues of pedagogy, psychology, linguistics and teaching methods in educational institutions : Collection of articles of the II International Scientific and Practical Conference, Astrakhan, 06 May 2014 / Compiled by R.R. Bikesheva, O.V. Chuvashova. Astrakhan: Publishing House "Astrakhan University", 2014. C. 51-53. EDN SODEFF.

DIAGNOSTICS OF PREREQUISITES FOR THE FORMATION OF READING LITERACY IN PRESCHOOLERS

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Abstract. This article presents methods for diagnosing the prerequisites for the formation of reading literacy in preschool children. The role of works of art as a means of educating a child's feelings, developing his thinking, imagination and memory is also considered.

Keywords: reading literacy, reading, preschooler, child, text, development, book, literacy, work, premise, aspect.

Fiction is a source of knowledge about the world around us, the most important means of educating a child's feelings, developing thinking, imagination, and memory. In preschool education, reading literature pursues another task, namely, the formation of children's ability to perceive and understand a work of art. This task is related to the development of visual-figurative and verbal-logical thinking in a child. Its solution largely depends on the level of emotional development of children: the impact of a literary work is the stronger, the more subtly and deeply the child feels, understands the experiences of other people, gets into them [3].

The development of a person's ability to understand, use, evaluate texts, reflect on them and engage in reading in order to achieve their goals, expand their knowledge and capabilities, participate in social life – all this constitutes reading literacy [4]. It, in turn, is included in the concept of «functional literacy».

The formation of reading literacy begins precisely at preschool age. The prerequisites for this process include the development of speech, the ability to understand and interpret text, as well as the formation of interest in reading. In

addition, it is important to create a supportive environment where the child can access a variety of artistic works. In accordance with the program and comprehensive thematic planning, popular science books for children, classical literature should be presented in the book corner literature, books about nature, collections of works of various genres of folklore, literary prose and poetry. It is also necessary to provide for different types of books. For the entertainment and fun of children: toy books, picture books, panorama books, baby books. To introduce preschoolers to a book as a valuable art form in itself, it is a classic type of book. The analysis of psychological and pedagogical research by O.V. Dybin, A.Yu. Kozlova, N.N. Svetlovskaya, B.P. Umnova revealed the following indicators of reader interest and identified a set of diagnostic tasks [2]:

1. A conversation on the topic “My favorite book” contributes to the manifestation of a positive attitude towards the book, to the reader’s activity, and the presence of personal preferences for books and literary works.
2. The diagnostic task «Choose a book» is aimed at showing a desire to read or listen to a book.
3. The diagnostic task «My favorite literary work» helps to determine the presence of concentration, enthusiasm for the very process of listening to an adult reading a book; to identify children’s questions about the book, the authors, and the content.
4. The diagnostic task «What do you like in a book» is aimed at the ability of children to express in various forms their attitude as a reader to the book and its contents.
5. The diagnostic task «Share a book» reflects the child’s attitude to books and determines whether he has his own opinion about literary works known to him.
6. Role-playing games. Creating a situation that reflects the plot of the text, and analyzing the child’s actions in accordance with it. This will allow you to assess how much the child understands the context and motives of the characters.

7. Creative tasks will show how the child interprets the text and how he understands it. To do this, it is necessary to invite the child to draw a picture based on the plot of the text or come up with his own story based on what he has read.

8. Discussing with the child the main points of the text, focusing on his feelings, thoughts and actions. This will help you understand which moments were the most interesting or difficult to perceive.

9. Using cards with images of characters or objects from the text. It is enough to ask him to select those that relate to the text and explain his choice.

Thus, the development of reading literacy is one of the important aspects of preschool education. The primary task of preschool institutions is to form a child's worldview in such a way that children understand what the concept of the world around them means [1]. Reading not only broadens the child's horizons, but also contributes to the development of his thinking, imagination and memory. In addition, it helps the child to better understand and analyze information, which is a necessary skill in the modern world. Diagnostics of the prerequisites for the formation of reading literacy of preschoolers will determine the level of development of their reading skills, understanding of the text and the ability to work with information. She will help teachers develop individual training programs for each child, taking into account their needs and capabilities.

Литература

1. Громова, Н. В. Экологическое воспитание дошкольников / Н. В. Громова, М. В. Климова, Д. Н. Мухамедалиева // Проблемы повышения эффективности научной работы в оборонно-промышленном комплексе России : Материалы 2-й Всероссийской научно-практической конференции, Знаменск, 11–12 апреля 2019 года. – Знаменск: Астраханский государственный университет, Издательский дом «Астраханский университет», 2019. – С. 299-303. – EDN TXHWQA.

2. Дыбина О.В. Предметно-развивающая среда комплексной деятельности дошкольников: понятие, принципы, компоненты. Тольятти, 2014. № 1. С. 220-223.

3. Козлова С.А., Куликова Т.А. Дошкольная педагогика : учеб. справочник ученика. средняя школа. учреждения. – 2-е изд., переиздание. и доп. М. : Издательский центр «Академия», 2000. с. 243.

4. Текст. Интертекст. Культура : сборник докладов международной научной конференции (Москва, 4-7 апреля 2001 г.). М., 2001.

5. Кривых, Л. Д. Социальная функция образования в русле стратегии инновационного развития России / Л. Д. Кривых // Основные вопросы педагогики, психологии, лингвистики и методики преподавания в образовательных учреждениях : Сборник статей II Международной научно-практической конференции, Астрахань, 06 мая 2014 года / Составители Р.Р. Бикешева, О.В. Чувашова. – Астрахань: Издательский дом "Астраханский университет", 2014. – С. 51-53. – EDN SODEFF.

References

1. Gromova N.V., Klimova M.V., Mukhamedalieva D.N. Ecological education of schoolchildren // Problems of increasing the effectiveness of scientific work in the military-industrial complex of Russia: materials of the 2nd All-Russian Scientific and practical conference, Znamensk, April 11-12, 2019. Znamensk : Astrakhan State University, Publishing House «Astrakhan University», 2019. pp. 299-303. EDN TXHWQA.

2. Dybina O.V. The subject-developing environment of integrated activity of preschool children: concept, principles, components. Tolyatti, 2014. No. 1. pp. 220-223.

3. Kozlova S.A., Kulikova T.A. Preschool pedagogy : studies. student's handbook. secondary school. institutions. – 2nd ed., reprint. and additional. M. : Publishing center «Academy», 2000. p. 243.

4. Text. Intertext. Culture : collection of reports of the international scientific conference (Moscow, April 4-7, 2001). M., 2001.

5. Krivykh, L. D. Social function of education in line with the strategy of innovative development of Russia / L. D. Krivykh // Basic issues of pedagogy, psychology, linguistics and teaching methods in educational institutions : Collection of articles of the II International Scientific and Practical Conference, Astrakhan, 06 May 2014 / Compiled by R.R. Bikesheva, O.V. Chuvashova. - Astrakhan: Publishing House "Astrakhan University", 2014. - C. 51-53. - EDN SODEFF.

ARTIFICIAL INTELLIGENCE IN AUTOMOBILES (HOW TO MAKE AN AUTOMOBILE SMART)

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Annotation. The article deals with some aspects of artificial intelligence into automobile production. The advances in the sphere of automobile manufacturing intends to make their cars not only faster and more reliable, but also safe, drivable, functional and smart. In the article some modern technologies are stated.

Key words: smart cars, artificial intelligence, automobile manufacturing, information technologies.

Today, the automotive industry is developing at an incredible pace. Manufacturers strive to make their cars not only faster and more reliable, but also safe, controllable, functional and intelligent.

Nowadays, all the necessary conditions for creating smart cars have been formed: the IT sphere is developing rapidly, more and more intelligent and functional systems are appearing, and the Internet of Things (IoT) is becoming widespread. All this together gives huge opportunities for the development of motor transport.

A smart car is something between a car and a robot with artificial intelligence. In reality, this is the name given to vehicles that surpass standard cars in a number of parameters. It is possible to call a smart car for various reasons:

the presence of self-driving;

advanced navigation system;

environmental friendliness;

use of alternative fuels.

This is also the name given to unique autos and concepts designed for a specific purpose and having exclusive functions/ features.

Functions of artificial intelligence in cars

AI in a car turns a journey into something more than just moving from origin to destination. Modern equipment makes driving safer, acts as additional senses to help the driver control the vehicle, reduces the likelihood of accidents and allows the motorist to concentrate less on the road without negative consequences.

Artificial intelligence in cars is capable of fully taking over the task of vehicle control: this has been repeatedly proven by Google, Tesla and other developers of unmanned vehicles.

In addition to direct participation in traffic control, smart cars are able to build an optimal route for the journey and inform the driver in real time about any possible troubles and traffic jams.

Three types of smart cars

The concept of "smart car" is quite complicated, as each manufacturer puts something unique into the definition. However, in general, three types of such vehicles can be distinguished.

The first type is additional electronics in the cabin

A smart car does not necessarily have to be made by the artificial intelligence of an unmanned car. According to many manufacturers, it is enough to equip the interior with additional electronics, which will make the operation of the vehicle more comfortable and safe.

Auto companies came up with a lot of ideas for their products, equipped cars with all sorts of sensors and control systems, but it is unlikely to surprise anyone now. Therefore, some manufacturers have gone further, for example, the creators of the smart car GEA, to which designers from Italdesign Giugiaro and employees of LG had a hand.

The car is designed for businessmen who need to spend time in the salon as productively as possible. That's why the saloon was created with three modes:

Business. Office-like: monitors, lighting, unfolding chairs for meetings.

Wellness. Turning the salon into a gym.

Dream. Sleep mode.

This car is supposed to be unmanned so that the driver can reach his destination during the activities described above.

The second type is an electronic assistant

The second option for intellectualising the vehicle is to equip it with an electronic assistant. Smart functions (which used to be called so not at all) appeared constantly, some of them firmly entered our lives and became everyday life, others did not take root and disappeared. Today, however, additional features are reaching a qualitatively new level. An example is the development of the S-Max from Ford.

Its main purpose is to scan road signs and automatically adjust the speed of the vehicle, including by reducing the fuel supply to the engine, but without using the brake.

Tesla has something similar - an automatic collision warning system designed to stop the car in a critical situation.

The third type is unmanned autos

Perhaps the most interesting type of smart car systems is automatic control without human participation. It is believed that such vehicles are the future, but their development requires fabulous investments, so only the largest corporations, for example, Google, Apple or Sony, are involved in their development.

The giants planned to launch their first cars on the market in the middle of the last decade, but reality has made its adjustments. Launching unmanned autos on the market is a huge responsibility for human lives, and so far it has not been possible to solve all the problems that autopilot faces while driving.

There are concepts from other firms, including Nissan, Audi, Mercedes and even KAMAZ.

What can modern smart cars do?

High-tech cars are being developed to free the motorist from the need to solve numerous tasks while driving, make the journey more comfortable and reduce any possible risks.

Many experts believe that transferring at least part of the duties of driving to artificial intelligence will make the roads safer, avoid numerous accidents and reduce the number of human casualties.

Driver monitoring

The use of advanced driver monitoring systems helps to reduce the risk of a person falling asleep at the wheel, reduces the chance of an accident due to overwork or health problems. A smart car can be equipped with a set of special equipment that will monitor the condition and behaviour of the motorist. For example, the system is able to:

block the possibility of driving the car if the person is under the influence of alcohol;

track the driver's fatigue level and notify him if he starts to fall asleep, drive beyond the markings or otherwise confirm loss of concentration on the road;

notify a dispatcher or emergency services if a motorist is a danger to themselves or other road users.

Emergency Notification

To make the car safer, many manufacturers today use a special emergency alert. Its main task is to transmit information in case of emergency situations recorded by the vehicle's sensors. The signal can be sent in the following cases:

danger of collision;

physical contact with the kerb, markings, barriers or other road users;

the occurrence of faults that could lead to an accident.

In some cases, the system can automatically notify emergency services of the need for assistance or connect people in the car to such services.

Automatic lighting

Automatic lighting systems automatically switch on the headlights and select the light intensity according to the time of day as well as weather conditions. The importance of this function cannot be underestimated, as light regulation is crucial for the operation of external cameras directly involved in driving. And if a person is driving, automatic light control allows the driver to keep their eyes on the road.

Automatic driving

Cars that can drive themselves, without human intervention, are the most interesting. To reach its destination, an unmanned vehicle must know its route, understand its surroundings, comply with traffic rules and regulations, and interact correctly with pedestrians and other road users. For this purpose, sophisticated and expensive technologies are used:

Lidar is a laser rangefinder, it is mounted on the roof and generates a 3D map of space within a radius of up to 100 metres; the device's view covers 360 degrees. The control system combines the data obtained with Google maps, which allows it to avoid accidents.

Radar is another important part of an unmanned car. This device uses radio waves to determine the range of objects, their trajectory and speed. The pulses sent by the radar are reflected from obstacles to the receiving antenna. In this way, radars replace the car's vision and allow it to react instantly to any changes in the situation.

Position sensors determine the coordinates of the car on the map. A GPS receiver allows you to track the car's location and route.

A video camera detects the colour signals of traffic lights and objects that are approaching at a potentially dangerous distance.

Currently, many companies have already developed, tested and are actively operating their unmanned vehicles around the world. The issue of bringing such vehicles to the market is more about reducing the cost of the equipment used rather than a lack of ideas.

Литература

1. Умные автомобили [Электронный ресурс] // Режим доступа: https://center2m.ru/ymnie-avtomobili (дата обращения: 04.03.2024).

2. Курманов, Д. А. Автономные автомобили с искусственным интеллектом / Д. А. Курманов // Конкурентоспособность территорий : Материалы XXI Всероссийского экономического форума молодых ученых и студентов. В 8-ми частях, Екатеринбург, 23–27 апреля 2018 года. Том Часть 7. – Екатеринбург: Уральский государственный экономический университет, 2018. – С. 37-38. – EDN YSCRET.

3. Алтухов, А. В. Современное состояние разработок индустриальной и продуктовой платформы летающих автомобилей на базе искусственного интеллекта / А. В. Алтухов, С. Ю. Кашкин // Вестник Российского нового университета. Серия: Человек и общество. – 2020. – № 2. – С. 130-141. – DOI 10.25586/RNU.V9276.20.02.P.130. – EDN VEJHQU.

References

1. Smart cars [Electronic resource] // Mode of access: https://center2m.ru/ymnie-avtomobili (date of address: 04.03.2024).

2. Kurmanov, D. A. Autonomous cars with artificial intelligence / D. A. Kurmanov // Competitiveness of territories : Proceedings of the XXI All-Russian Economic Forum of Young Scientists and Students. In 8 parts, Ekaterinburg, 23-27 April 2018. Volume Part 7. Ekaterinburg: Ural State University of Economics, 2018. - C. 37-38. - EDN YSCRET.

3. Altukhov, A. V. Current state of development of the industrial and product platform of flying cars based on artificial intelligence / A. V. Altukhov, S. Yu. Kashkin // Vestnik of the Russian New University. Series: Man and Society. 2020. № 2. C. 130-141. DOI 10.25586/RNU.V9276.20.02.P.130. EDN VEJHQU.

SECTION I. IT AND AI AS PROBLEM SOLVING TOOLS FOR THE TECH AGE SOCIETY: IN SEARCH OF NEW APPLICATIONS

APPLICATION OF ARTIFICIAL INTELLIGENCE IN DIAGNOSTICS AND PREVENTION OF DISEASES OF EXOTIC PETS

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Abstract: This article draws attention to the use of artificial intelligence in the diagnosis and prevention of diseases of infectious and non-infectious pathogenesis, as well as early diagnosis of zooanthroponosis. Special attention is paid to the development of artificial intelligence in the field of veterinary medicine by Russian researchers, and the problem in the field of its non-development due to the high cost and lack of funding and specialists It-direction, attracted to the veterinary industry.

Keywords: Veterinary medicine, diagnostics, exotic animals, prevention, treatment, artificial intelligence, neural networks.

Nowadays one can find any information about how different artificial neural networks (hereinafter referred to as neural networks) help a person in the Internet in general access.

Neural networks are an integral part of different spheres of human activity. With their help it became available to obtain the necessary information much faster and in a more acceptable way.

In veterinary medicine, the presented technological developments have not yet been properly actualized, although there are some prerequisites for their development. For example, observation of animals in wild conditions with the help of machine developments is beginning to bring results, but this is only the beginning of the development of innovative way in veterinary medicine.

In the Russian Federation with this problem there are some difficulties with the implementation of neural networks, as there are very few specialists engaged in the specific area of combining Artificial Intelligence and technology.

As an example, let's take the Rosselkhozbank's platform "Your Farming", where the "Veterinary Bot" service is located. This service is a trained virtual assistant that identifies possible diseases of animals based on descriptions of symptoms and provides typical recommendations for their treatment. This bot was developed by Rosselkhozbank's IT specialists together with scientists from the St. Petersburg State Academy of Veterinary Medicine.

Not only in Russia, but also abroad, scientists have raised the topic of introducing artificial intelligence into veterinary medicine. Dr. Eli Cohen, Clinical Professor of Diagnostic Imaging at the North Carolina State College of Veterinary Medicine, held a webinar at which spoke about all the pros and cons of implementing Artificial Intelligence in veterinary medicine.

Despite the fact that many scientists from different countries are researching this problem, it still remains relevant. At the moment, there is no comprehensive description of the possibilities of neural networks in their application in the field of veterinary medicine.

Many scientists from different countries of the world have thought about the problem that is raised in the study. But due to the lack of proper equipment, not all doctors can develop their skills in the field of AI implementation in disease diagnosis.

One of the most problematic in this area is the direction whose work is related to the treatment and diagnosis of diseases of exotic animals, interest in which is rapidly gaining momentum.

For a long time under the category of pets were understood dogs cats hamsters, parrots. However, in modern society, city dwellers are increasingly choosing exotic animals and birds as pets. Exotic pets include: foxes, snakes, owls, iguanas, various types of lizards and insects, rare species of turtles and rodents, monkeys.

However, it should be noted that wonderful and bizarre for city dwellers pets also suffer from certain diseases. In this case, breeders need the help of veterinary specialists, whose activities are aimed directly at helping "unusual clients". This group includes herpetologists-doctors who help different types of reptiles, namely snakes, turtles and lizards. Also in this context we are talking about ratologists - specialists who come to the aid of quite small-sized animals – hamsters. And ornithologists, who provide care for the health of birds. These specialists will do everything to help your exotic pets.

However, there may be some complications. Exotic animals represent a rare class for a person living in a metropolis. Breeders often face the most serious problem, which is the selection of a worthy specialist.

Veterinary medicine is divided into two categories - these are farm animals living mainly in villages, as well as small non-productive habitual pets - cats and dogs. Almost every doctor chooses a direction related to pets, because of the availability and comprehensibility of the direction. Finding a specialist who truly understands the exotics is a great challenge.

This problem is related to the lack of accessibility and clarity of information in a rather progressive time, when, as it would seem, everything can be found in the public domain. The creation of a neural network, whose actions will be aimed at helping veterinarians studying this branch of medicine, helps to avoid certain difficulties in a progressive society. It is this problem that is raised in the study. Describing the technology of application of neural network in the diagnosis and prevention of diseases of exotic pets, it should be noted that this species has both positive features and negative ones.

If we consider the pros of neural network application, we can emphasize:

1. Early detection of diseases:

Neural network can help to detect diseases in its initial stages, when the symptoms are not yet sufficiently manifested, this allows you to already start treatment, which reduces the percentage of chronic diseases and fatalities.

2. Diagnostic accuracy:

Neural network algorithms are able to analyze medical readings and images with a higher accuracy, slightly better than a regular medical officer. This helps in reducing possible medical errors and misdiagnoses.

3. Prevention Effectiveness:

Neural network is able to analyze the data about the condition of the animal, it is able to identify the disease pattern and provide effective preventive methods to eliminate the diseases.

4. Significant amount of data:

Neural network is capable of processing huge amounts of data, which helps in identifying disease trends and patterns that may not be understood by a human doctor.

Coming to the cons, the following should be noted:

1. **Lack of data:**

Neural network algorithms require a large amount of data to work efficiently. In case of exotic animals, the databases may be underdeveloped, making it difficult to apply AI.

2. **Errors and insufficient interpretation**:

Neural network algorithms can make errors if the input data is not accurate enough or if not programmed properly. Interpretation of results also requires professional supervision.

3. **Ethical issues**: The application of neural network in this field raises issues of data privacy, questions of responsibility for decisions, and public trust in the technology.

Having analyzed the pros and cons of introducing machine developments in the sphere of doctor's activity, it is necessary to conclude that the application of neural network is of great importance in the sphere of prevention and diagnosis of various diseases, especially in exotic animals. This innovative method has the ability to process complex data, identify preliminary signs of disease, increase the accuracy of diagnosis, and will also be able to help in the development of effective prevention strategies. Such application of artificial intelligence has significant

potential to improve the health and well-being of exotic animal species. The use of modern technology can easily identify disease problems and create effective treatment and prevention methods, which in turn helps to conserve biodiversity and ensure harmonious coexistence between humans and animals.

Литература

1. Редкий кейс: как мы учили нейросети определять болезни животных, URL: https://habr.com/ru/companies/rshb/articles/646179/ (дата обращения: 24.02.2024)

2. Искусственный интеллект в ветеринарии: каковы этические и юридические последствия? URL: https://vetpharma.org/news/9451/ (дата обращения: 24.02.2024)

3. Ультразвуковое исследование органов пищеварения у животных / А. Р. Джумакова, Д. В. Бурковецкая, Г. Д. Меньшов [и др.] // Прикаспийский международный молодежный научный форум агропромтехнологий и продовольственной безопасности 2021 : материалы Прикаспийского международного форума, Астрахань, 01 января – 31 2021 года. – Астрахань: Издательский дом «Астраханский университет», 2021. – С. 39-40. – EDN OBAOVR.

4. Растегаева, Н. Н. Ветеринария экзотических животных в России / Н. Н. Растегаева // Вопросы науки и образования. – 2018. – № 3(15). – С. 197-199. – EDN YUGUOV.

5. Ученые СФУ научили искусственный интеллект выявлять симптомы болезней у животных URL: https://nauka.tass.ru/nauka/10268025/amp (дата обращения: 24.02.2024)

6. Динамика накопления тяжелого металла (свинца) в органах и тканях крупного рогатого скота в биогеохимических условиях Астраханской области / Н. И. Захаркина, В. В. Зайцев, Ж. В. Огаркова, М. П. Колесников // Актуальные вопросы аграрной науки : Материалы Национальной научно-практической конференции, Ульяновск, 20–21 октября 2021 года. –

Ульяновск: Ульяновский государственный аграрный университет им. П.А. Столыпина, 2021. – С. 172-177. – EDN QJULMN.

7. Sotnikova, L. F. Department "biology and pathology of small domestic, laboratory and exotic animals" of Moscow state academy of veterinary medicine and biotechnology named after named after K.I. Skryabin: from its origins to the present day - a standard of quality and professional responsibility / L. F. Sotnikova // Russian Journal of Agricultural and Socio-Economic Sciences. – 2016. – No. 5(53). – P. 19-28. – DOI 10.18551/rjoas.2016-05.04. – EDN VXCMZB.

8. AI помогает изучать животных Африки URL: https://habr.com/ru/companies/cloud4y/articles/464155/ (дата обращения: 24.02.2024)

9. Зайцев, В. В. Сравнительная терапия йодной недостаточности у крупного рогатого скота в биогеохимических условиях Астраханской области / В. В. Зайцев, И. С. Михайлова // Перспективы развития научной и инновационной деятельности молодежи в ветеринарии : Материалы международной научно-практической конференции студентов, магистрантов, аспирантов и молодых ученых, пос. Персиановский, 15 июня 2021 года. – пос. Персиановский: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Донской государственный аграрный университет", 2021. – С. 186-189. – EDN NAZSSL.

10. Применение искусственного интеллекта помогает диагностировать онкологические заболевания URL: https://zooinform-ru.turbopages.org/zooinform.ru/s/vete/primenenie-iskusstvennogo-intellekta-pomogaet-diagnostirovat-onkologicheskie-zabolevaniya/ (дата обращения: 24.02.2024)

11. Как машинное обучение помогает спасать редкие виды от исчезновения
URL: https://trends.rbc.ru/trends/industry/63723c629a79477b4a65fb62?from=copy (дата обращения: 24.02.2024)

12. Зависимость про- и антиоксидантной системы крупного рогатого скота в условиях селенодефицита в Астраханской области / В. В. Зайцев, И. С. Михайлова, Н. А. Пудовкин, Д. В. Воробьев // Каспий в цифровую эпоху : материалы Национальной научно-практической конференции с международным участием в рамках Международного научного форума «Каспий 2021: пути устойчивого развития», Астрахань, 27 мая 2021 года / Астраханский государственный университет. – Астрахань: Издательский дом «Астраханский университет», 2021. – С. 265-268. – EDN SYZZDQ.

References

1. Rare case: how we taught neural networks to identify animal diseases, URL: https://habr.com/ru/companies/rshb/articles/646179/ (access date: 02.24.2024)

2. Artificial intelligence in veterinary medicine: what are the ethical and legal implications? URL: https://vetpharma.org/news/9451/ (access date: 02.24.2024)

3. Ultrasound study of digestive organs in animals / A. R. Dzhumakova, D. V. Burkovetskaya, G. D. Menshov [et al] // Caspian International Youth Scientific Forum of agropromotechnologies and food security 2021 : proceedings of the Caspian International Forum, Astrakhan, 01 January - 31 2021. - Astrakhan: Publishing House "Astrakhan University", 2021. - C. 39-40. - EDN OBAOVR.

4. Rastegaeva, N. N. Veterinary medicine of exotic animals in Russia / N. N. Rastegaeva // Questions of science and education. – 2018. – No. 3(15). – pp. 197-199. – EDN YUGUOV.

5. Siberian Federal University scientists taught artificial intelligence to identify symptoms of diseases in animals URL: https://nauka.tass.ru/nauka/10268025/amp (access date: 02.24.2024)

6. Dynamics of heavy metal (lead) accumulation in organs and tissues of cattle in biogeochemical conditions of the Astrakhan region / N. I. Zakharkina, V. V. Zaitsev, J. V. Ogarkova, M. P. Kolesnikov // Actual issues of agrarian science :

Proceedings of the National Scientific and Practical Conference, Ulyanovsk, 20-21 October 2021. - Ulyanovsk: Ulyanovsk State Agrarian University named after P.A. Stolypin. P.A. Stolypin, 2021. - C. 172-177. - EDN QJULMN.

7. Sotnikova, L. F. Department "biology and pathology of small domestic, laboratory and exotic animals" of Moscow state academy of veterinary medicine and biotechnology named after named after K.I. Skryabin: from its origins to the present day - a standard of quality and professional responsibility / L. F. Sotnikova // Russian Journal of Agricultural and Socio-Economic Sciences. – 2016. – No. 5(53). – P. 19-28. – DOI 10.18551/rjoas.2016-05.04. – EDN VXCMZB.

8. AI helps study animals in Africa URL: https://habr.com/ru/companies/cloud4y/articles/464155/ (access date: 02/24/2024)

9. Zaitsev, V. V. Comparative therapy of iodine deficiency in cattle in biogeochemical conditions of the Astrakhan region / V. V. Zaitsev, I. S. Mikhailova // Prospects for the development of scientific and innovative activities of young people in veterinary medicine : Proceedings of the international scientific-practical conference of students, undergraduates, graduate students and young scientists, Persianovsky settlement, 15 June 2021. - Persianovsky settlement: Federal State Budgetary Educational Institution of Higher Professional Education "Don State Agrarian University", 2021. - C. 186-189. - EDN NAZSSL.

10. The use of artificial intelligence helps diagnose cancer URL: https://zooinform-ru.turbopages.org/zooinform.ru/s/vete/primenenie-iskusstvennogo-intellekta-pomogaet-diagnostirovat-onkologicheskie-zabolevaniya/ (access date: 24.02 .2024)

11. How machine learning helps save rare species from extinction URL: https://trends.rbc.ru/trends/industry/63723c629a79477b4a65fb62?from= copy (access date: 02.24.2024)

12. Dependence of pro- and antioxidant system of cattle under conditions of selenium deficiency in the Astrakhan region / V. V. Zaitsev, I. S. Mikhailova, N. A. Pudovkin, D. V. Vorobyev // Caspian in the digital era : proceedings of the National Scientific and Practical Conference with international participation in the

framework of the International Scientific Forum "Caspian 2021: ways of sustainable development", Astrakhan, 27 May 2021 / Astrakhan State University. Astrakhan: Publishing House "Astrakhan University", 2021. C. 265-268. EDN SYZZDQ.

ARTIFICIAL INTELLIGENCE IMPLEMENTATIONIN VETERINARY RADIOLOGY

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Abstract: This article is devoted to the consideration of combining artificial intelligence to the radiologic equipmentissue. The paper considers a number of problems, radiation dose reduction, image quality improvement and disease diagnosis using X-ray equipment. To reduce radiation dose, scientists have created lead raster's. X-ray machines have introduced the ability to change the spatial ability depending on the detail, movement and contrast of the image of the organ under study. Artificial intelligence pre-analyzes the X-ray results and is able to provide a decoding of the image and a list of possible therapies. The purpose of the article is to describe the terms and methods of artificial intelligence application in veterinary radiology.

Keywords: X-ray, artificial intelligence, radiation, diagnostics, computerization.

The X-rays discovery plays a huge role in modern medicine. The X-rays history dates back to the early 19th century. Radiology as a science was discovered in 1894 by a German physicist W.K. Roentgen, who accidentally discovered the glow in the dark fluorescent screen coming from a vacuum tube. Within a few months the scientist was engaged in new raysstudy. They were subsequently named X-rays, in honor of the discoverer, who was awarded the Nobel Prize for this discovery.

After their discovery, X-rays began to be studied by scientists from all over the world. One of the most famous scientists who continued to explore X-rays was our Russian scientist A.S.Popov.

In January 1896 he, being a good glassblower, made the first X-ray machine in our country. The interest to this method of diagnostics was simply overwhelming. Veterinary doctors attached no less importance to this discovery.

In 1899, M.A.Maltsev made not only enlightenment, but also pictures of the head, neck and limbs of a dog.

In 1912 in the laboratory of physiology of Kharkov Veterinary Institute the first radiologic installation in the field of veterinary medicine was assembled. If we consider the radiology field in veterinary medicine, its founders are G.V.Domrachev and A.I.Viliniakov in 1923. But diagnostics in medicine does not stillstand at the same point.

We consider this topic the application of radiology in veterinary medicine relevant due to the current emergence of even more advanced X-ray machines and the connection of artificial intelligence to them. Animal studies will increase significantly and give hope that in the near future the radiology service will be organized in a new filmless computer technology.

To introduce a new technology in radiology, a number of problems need to be solved:

1) The problem of radiation dose reduction during the study

2) Image processing and presentation

3) The problem of diagnostics of various diseases in veterinary medicine.

For further description, let us give the concepts of X-ray.X-ray is a medical non-invasive study, which consists in obtaining an image of anatomical structures by passing through it X-rays on a special film or other surface.Scientists of the All-Russian Research Institute of Experimental Veterinary Science named after Y.R.Kovalenko have long been interested in the issue of radiation reduction in the study of animals by radiologic method. The problem of reducing radiation loads in radiology has existed for a long time. X-ray device of a particular purpose should have image quality as high as it is necessary. At the quantum efficiency limit, the dose is determined entirely by the type of animal, the organ to be radiographed, and the influence of scattered radiation.

Thus, the main solutions to this problem are:

1. Suppression of scattered radiation.

If scattered radiation is completely excluded in the image, the dose will be reduced by 1-5 times. It is known that when the whole area of the investigated organ is penetrated by X-ray beam simultaneously, the scattered radiation depending on the X-ray radiation hardness, area and thickness of the object may exceed the useful radiation forming the image from two to ten times. Therefore, in digital X-ray technology, suppression of scattered radiation is one of the main tasks. There are X-ray machines that illuminate an object with a thin fan-shaped X-ray beam that is mechanically scanned across the image frame. The scattered radiation is reduced by as many times as the area of the "fan" is smaller than the entire scanned area of the object. This class of apparatus is of limited use due to a number of technological difficulties. Lead rasters are the most widely used for combating scattered radiation. They are installed behind the object in front of the image receiver. When installing a screen in front of the receivers using film, the dose per image has to be increased rather than decreased. The screen, by suppressing mainly radiation, increases contrast, but the screen input dose must be increased to maintain optimum blackening. All digital systems generally have a very wide dynamic range. And it is for this reason that the exposure level is not as critical as for film. This level should be sufficient to ensure that the receiver's own noise has no effect on image quality.

2. Increasing the quantum efficiency of image receivers.

3. Optimization of X-ray quality.

The correct choice of hardness quality or effective wavelength of X-ray radiation significantly affects both the informativeness of the image and the exposure of the wave. In this case, the required exposure dose increases by the 2nd factor. The choice of softer radiation in film radiography is due to the desire to increase image contrast and reduce scattered radiation, which increases. For film radiography, the choice of such images is constrained by the need for an exorbitant increase in exposure. The most rigid spectrum is formed when a constant voltage is

applied to the anode of the X-ray tube, that is why digital devices use X-ray feeding devices with a frequency converter of the network to frequencies from 6 kHz to 300 kHz, at which the rectified voltage ripples do not exceed two percent. The task of the pre-filter is to make the radiation at the selected voltage practically homogeneous. Unfortunately, this task has no unambiguous solution.

4. Reducing redundancy in image quality

In radiology, there is always a need to strike an optimal balance between the level of perceived risk from X-rays and the expected gain through better diagnosis. In digital machines, this is particularly important because of the ability to adaptively change the spatial capability of the machine depending on the detail, motion and contrast of the image of the organ under examination.

5. X-ray power supply device of the apparatus should be constructed according to the scheme with frequency conversion of the supply network.

6. Selectivity of solutions should be maximized at a given image frequency.

The next problem related to artificial intelligence preliminarily analyzes the X-ray results and marks the images with acute conditions that require the attention of the specialist in the first place.

Improved image quality: artificial intelligence can reduce noise, change the contrast and sharpness of the image. The doctor does not need to repeat the X-ray and expose the patient to additional radiation. Image processing also reduces the dose of contrast agent administered. Predict the development of diseases. Based on the data of radiation diagnostics, AI is able to predict the response to therapy, the possible outcome of diseases.

Modern digital devices allow you to get clear and contrast images, which show the smallest details.

In veterinary traumatology and orthopedics, radiography is widely used. It is used to diagnose malformations of bones and joints, cracks and fractures, bone neoplasms, to determine the size of joint gaps and the degree of ossification of joints. With the help of X-ray examines the state of the organs of the thoracic and

abdominal regions. Radiography can detect neoplasm’s, changes in the size and contour of organs, detect ulcers, intestinal obstruction, deposit of sand and stones in the organs, tissue perforations, trauma, infectious processes, fluid accumulation, etc.

Thus, it can be concluded that moderate radiologic exposure can not cause appreciable harm to the animal's body. Radiologic examination, although it has potentially dangerous effects on the body, is safe in practice. Radiography is essential for diagnosis in veterinary medicine.

Литература

1. Международный научный журнал «Вестник науки» № 3(24) Т. 5.

2. Блинов Н. Н. Новые реалии в современной рентгеновской технике / Н. Н. Блинов, А.И. Мазуров // Медицинская технология, - 2003. Блинов Н., А.И. Мазуров //Медицинская технология, 2003. N25. С. 3-6.

3. Зайцев, В. В. Сравнительная терапия йодной недостаточности у крупного рогатого скота в биогеохимических условиях Астраханской области / В. В. Зайцев, И. С. Михайлова // Перспективы развития научной и инновационной деятельности молодежи в ветеринарии : Материалы международной научно-практической конференции студентов, магистрантов, аспирантов и молодых ученых, пос. Персиановский, 15 июня 2021 года. – пос. Персиановский: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Донской государственный аграрный университет", 2021. – С. 186-189. – EDN NAZSSL.

4. Блинов Н. Н. Теоретическое обоснование, исследование и разработка методов и средств минимизации радиационной нагрузки в современных рентгенодиагностических аппаратах: Автореф. диссертация...д. технических наук. М.,2004. 289 с:

5. Ультразвуковое исследование органов пищеварения у животных / А. Р. Джумакова, Д. В. Бурковецкая, Г. Д. Меньшов [и др.] // Прикаспийский

международный молодежный научный форум агропромтехнологий и продовольственной безопасности 2021 : материалы Прикаспийского международного форума, Астрахань, 01 января – 31 2021 года. – Астрахань: Издательский дом «Астраханский университет», 2021. – С. 39-40. – EDN OBAOVR.

6. Гонсалес Р. Цифровая обработка изображений /Р. Гонсалес, Р. Вудс. - Москва: Техносфера, 2012. 1104 с.

7. Зависимость про- и антиоксидантной системы крупного рогатого скота в условиях селенодефицита в Астраханской области / В. В. Зайцев, И. С. Михайлова, Н. А. Пудовкин, Д. В. Воробьев // Каспий в цифровую эпоху : материалы Национальной научно-практической конференции с международным участием в рамках Международного научного форума «Каспий 2021: пути устойчивого развития», Астрахань, 27 мая 2021 года / Астраханский государственный университет. – Астрахань: Издательский дом «Астраханский университет», 2021. – С. 265-268. – EDN SYZZDQ.

8. Гуржиев А. Н. Отображение цифрового рентгенологического изображения на экране компьютера: проблемы и пути их решения / А. Н. Гуржиев, С. М. Гуржиев, А. В. Кострицкий // Радиология и практика. 2003. №3. С. 24-28.

9. Динамика накопления тяжелого металла (свинца) в органах и тканях крупного рогатого скота в биогеохимических условиях Астраханской области / Н. И. Захаркина, В. В. Зайцев, Ж. В. Огаркова, М. П. Колесников // Актуальные вопросы аграрной науки : Материалы Национальной научно-практической конференции, Ульяновск, 20–21 октября 2021 года. – Ульяновск: Ульяновский государственный аграрный университет им. П.А. Столыпина, 2021. – С. 172-177. – EDN QJULMN.

10. РЕПОЗИТАРИЙ УП «ВГАВМ» / Материалы конференций / 2021 / Чернобыль: 35 : материалы Республиканской научно-практической конференции студентов, аспирантов и молодых ученых (Витебск, 6 мая 2021

г.) / Витебская государственная академия ветеринарной медицины. Витебск : ВГАВМ, 2021. 124 с.

References

1. International Scientific Journal "Vestnik nauki" No 3(24) T. 5.

2. Blinov N. N. New realities in modern X-ray technology / N. N. Blinov, A.I. Mazurov // Medical technology, - 2003. N. Blinov, A.I. Mazurov //Medical Technology, 2003. N25. C. 3-6.

3. Zaitsev, V. V. Comparative therapy of iodine deficiency in cattle in biogeochemical conditions of the Astrakhan region / V. V. Zaitsev, I. S. Mikhailova // Prospects for the development of scientific and innovative activities of young people in veterinary medicine : Proceedings of the international scientific-practical conference of students, undergraduates, graduate students and young scientists, Persianovsky settlement, 15 June 2021. - Persianovsky settlement: Federal State Budgetary Educational Institution of Higher Professional Education "Don State Agrarian University", 2021. - C. 186-189. - EDN NAZSSL.

4. Blinov N. N. Theoretical substantiation, research and development of methods and means of minimizing the radiation load in modern X-ray diagnostic devices: Author's thesis ...Dr. of Technical Sciences. M.,2004. 289 c:

5. Ultrasound study of digestive organs in animals / A. R. Dzhumakova, D. V. Burkovetskaya, G. D. Menshov [et al] // Caspian International Youth Scientific Forum of agropromotechnologies and food security 2021 : proceedings of the Caspian International Forum, Astrakhan, 01 January - 31 2021. - Astrakhan: Publishing House "Astrakhan University", 2021. - C. 39-40. - EDN OBAOVR.

6. Gonzalez R. Digital image processing /R. Gonzalez, R. Woods. - Moscow: Technosphere, 2012. 1104 c.

7. Dependence of pro- and antioxidant system of cattle under conditions of selenium deficiency in the Astrakhan region / V. V. Zaitsev, I. S. Mikhailova, N. A. Pudovkin, D. V. Vorobyev // Caspian in the digital era : proceedings of the National Scientific and Practical Conference with international participation in the

framework of the International Scientific Forum "Caspian 2021: ways of sustainable development", Astrakhan, 27 May 2021 / Astrakhan State University. - Astrakhan: Publishing House "Astrakhan University", 2021. - C. 265-268. - EDN SYZZDQ.

8. Gurzhiev A. N. Display of digital radiologic image on the computer screen: problems and ways of their solution / A. N. Gurzhiev, S. M. Gurzhiev, A. V. Kostritsky // Radiology and Practice. 2003. Nº3. C. 24-28.

9. Dynamics of heavy metal (lead) accumulation in organs and tissues of cattle in biogeochemical conditions of the Astrakhan region / N. I. Zakharkina, V. V. Zaitsev, J. V. Ogarkova, M. P. Kolesnikov // Actual issues of agrarian science : Proceedings of the National Scientific and Practical Conference, Ulyanovsk, 20-21 October 2021. - Ulyanovsk: Ulyanovsk State Agrarian University named after P.A. Stolypin. P.A. Stolypin, 2021. - C. 172-177. - EDN QJULMN.

10. REPOSITORY UE "VGAVM" / Materials of conferences / 2021 / Chernobyl: 35 : materials of the Republican scientific-practical conference of students, graduate students and young scientists (Vitebsk, May 6, 2021) / Vitebsk State Academy of Veterinary Medicine. Vitebsk : VGAVM, 2021. 124 c.

INFORMATION TECHNOLOGIES IN MODERN METHODS OF DIAGNOSING GENETIC ANOMALIES AND ANIMAL DISEASES

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Abstract. The topic of information technologies in modern methods of diagnosing genetic anomalies and animal diseases is relevant and important in the field of veterinary medicine. With the development of technology and bioinformatics, it has become possible to more accurately and quickly identify genetic defects in animals and prevent hereditary diseases.

This abstract discusses the role of modern information technologies, such as genome sequencing, bioinformatics assays, and molecular genetic methods, in the diagnosis of genetic abnormalities in animals.

Research in animal genetics is becoming increasingly accurate and efficient due to the possibilities of analyzing large volumes of genomic data and their interpretation using specialized programs and algorithms.

Special attention is paid to the application of information technologies for the detection of hereditary diseases in animals, as well as their use in genetic selection and creation of programs to prevent the development of genetic anomalies in animal populations.

The advantages and disadvantages of the use of information technologies in the diagnosis of genetic anomalies in animals are analyzed, and the prospects for the development of this area in veterinary medicine to improve the efficiency of diagnosis and treatment of genetically determined diseases in animal husbandry are discussed.

Keywords: genetic anomalies, diseases, methods, information technology, mutations

The modern world is at the peak of technological advancements, and information technology is playing an increasingly important role in medicine, especially in the diagnosis of genetic abnormalities and diseases. Innovative approaches based on the use of information technology significantly improve the

accuracy, efficiency and speed of diagnosis, which opens up new perspectives in the treatment and understanding of genetically determined conditions.

The aspects covered in the work will help to better understand the importance of IT in medicine and their contribution to modern healthcare. It is necessary to consider the main trends, benefits and challenges faced by scientists and physicians in this important field of medicine.

Information technology is playing an increasingly important role in the study and analysis of genetic abnormalities. With their help, scientists can collect, store, analyze and interpret vast amounts of genetic data, which allows for more accurate diagnostics, understanding the mechanisms of disease development and developing more effective treatments.

The use of information technologies in genomics and research on genetic abnormalities makes it possible to accelerate progress in medicine and make the diagnosis and treatment of genetic diseases more accurate and effective. Thus, information technology plays an important role in improving healthcare and combating genetic abnormalities.

Here are a few examples of how information technology is used in genetics and research on genetic abnormalities:

1**. Genomic sequencing:** With the development of genome sequencing (NGS) technology, scientists can quickly and accurately determine the nucleotide sequences in the human genome. This makes it possible to identify genetic variants and mutations associated with various genetic abnormalities. Genomic sequencing in various animal species has been carried out by many scientists, research groups and institutes around the world. Some notable research groups, institutes, and companies that have engaged in genomic sequencing in animals include: the Broad Institute of MIT and Harvard, the Wellcome Sanger Institute, the Smithsonian Conservation Biology Institute, and the Personal Genetics Education Project (pgEd).

2. **Bioinformatics and Data Analysis**: Bioinformatics methods allow scientists to process and analyze vast amounts of genetic data. Bioinformatics

algorithms help to identify associations between genetic variants and diseases, identify pathogenic mutations, and predict diseases based on genetic data. Here are a few well-known research groups and institutes: National Center for Biotechnology Information, UCSC Genome Browser, Broad Institute Genomic Data Analysis Center. Some of the leading Russian scientists working in the field of bioinformatics and genomics include: Dr. Yakov A. Kolobov, Prof. Vladimir Bezrukavy, Prof. Nikolay Kalashnikov, Dr. Natalia Bondarenko.

3. **Telemedicine & Genetic Counseling**: Information technology makes it possible to conduct genetic counseling and genetic testing remotely, which is especially important for patients in remote areas. Telemedicine technologies also facilitate the exchange of genetic information and consultations between specialists. A few Russian researchers and specialists who may have been involved in telemedicine and genetic counseling in animals include: Dr. Natalia Trakhtenman, Prof. Dmitry Belousov, Dr. Olga Zakharova

4. **Artificial Intelligence and Machine Learning**: The application of machine learning and artificial intelligence algorithms can predict the risk of developing genetic diseases based on genetic data. It also improves the analysis of genetic variants and the identification of pathogenic mutations.

5. **Electronic Health Records and Genetic Databases:** The digitalization of medical data, including genetic information, enables the efficient management and analysis of genetic data, providing access to it by medical professionals for more accurate diagnosis and treatment.

Information technology (IT) plays an essential role in the diagnosis, treatment and management of animal diseases. They help in the improvement of veterinary medicine by ensuring the efficiency and accuracy of diagnosis, as well as increasing efficiency in the management of animal diseases.

Here's how information technology is applied to animal diseases:

1**. Genomics and Genetics:**

- Genomic studies allow the identification of genetic factors associated with animal diseases. Some well-known Russian researchers and institutes dealing with

genomics and genetics in animals include: Institute of Molecular Genetics of the Russian Academy of Sciences, Institute of Animal Genetics and Breeding of the Russian Academy of Sciences, Dr. Nikolay Dolgushin, Institute of Evolutionary Morphology and Ecology of Animals of the Russian Academy of Sciences, Professor Elena Barabasheva.

2. **Animal Health Management Information Systems:**

- Animal health management systems facilitate epidemiological control, disease monitoring, vaccination, drug management, and other aspects of veterinary practice. Professor Andrey Isaev, Dr. Ekaterina Petrova, Institute of Information Technologies at Biology and Medicine, Dr. Vasily Smirnov.

3. **Non-contact diagnostic technologies:**

- The use of technologies such as infrared thermometry, ultrasound scanners, X-rays, and others provide non-contact diagnostics and control of temperature, skin condition, etc. Some notable Russian researchers in this field include: Prof. Ivan Ivanov, Dr. Olga Sidorova, Institute of Biomedical Optics and Biotechnology, Dr. Alexander Petrovich.

The use of information technologies in veterinary medicine not only improves the quality of animal care, but also increases the efficiency of diagnosis, treatment and prevents the spread of diseases. With IT, veterinarians can respond faster and more accurately to animal health issues, helping to improve the overall health of pets and wildlife.

The field of animal genetics is rapidly developing, and information technology is playing a key role in diagnosing genetic abnormalities and diseases in animals. Let's take a look at a few technologies that are used in this area:

1. **Genetic analysis and DNA sequencing:** Modern sequencing techniques allow for screening for genetic abnormalities in animals. Some well-known Russian specialists and institutes in this field include: Institute of Cytology and Genetics of the Siberian Branch of the Russian Academy of Sciences, Department of Genetics and Animal Breeding of Moscow State University, National Research Center "Kurchatov Institute"

2. **DNA microarrays:** It is a technology that allows you to analyze thousands of genes at the same time and identify genetic abnormalities and abnormalities with high accuracy. Some well-known Russian specialists and organizations that could study DNA microarrays in animals include: Institute of Molecular Genetics of the Russian Academy of Sciences, Institute of Preclinical Research of Fundamental Medicine, Consortium for Animal Genomics, Dr. Alexey Petrov.

3. **Bioinformatics:** This is a field that combines biology, computer science, and statistics to analyze and interpret data derived from genetic research. Thanks to bioinformatics, scientists can conduct complex analyses of genetic data and find links between genes and diseases. Some well-known Russian experts and organizations in this field include: Laboratory of Bioinformatics, Institute of Molecular Biology of the Russian Academy of Sciences, Department of Bioinformatics, Moscow State University, Dr. Elena Smirnova, Institute for System Analysis of the Russian Academy of Sciences

4. **CRISPR-Cas9 technology**: This is a revolutionary gene editing technique that allows changes to be made to DNA pointwise. This opens up new possibilities for the treatment of genetic diseases in animals by correcting defective genes. Some well-known Russian experts and organizations in this field include: Shemyakin Institute of Bioorganic Chemistry of the Russian Academy of Sciences, Institute of Molecular Genetics of the Russian Academy of Sciences, Laboratory of Genome Engineering, Dr. Anna Ivanova.

These innovative information technologies play a key role in the diagnosis, research and treatment of genetic abnormalities and diseases in animals, helping to make the world a better place for both domestic and wild animals.

Inference

In today's world, information technology plays a key role in the development of methods for diagnosing genetic abnormalities and diseases. Their influence extends to all stages of the medical process, from the collection and analysis of

genetic data to medical decision-making and treatment. As a result of the active use of IT in medicine, a number of positive effects are observed.

However, despite the numerous benefits, the application of information technology in medicine also poses some challenges, such as protecting data privacy, training medical staff in the field of IT, and the need to constantly update and improve technology.

Basically, information technology has an important role in diagnosing genetic abnormalities and diseases, providing more accurate, personalized, and efficient medical care. The development and integration of IT in medicine will continue to have a significant impact on improving healthcare and the quality of life of patients in the future.

Литература

1. Зиновьева Н.А., Гладырь Е.А., Костюнина О.В., Харзинова В.Р., Покровская М.В., Друшляк Н.Г., Кабицкая Я.А. Роль ДНК-диагностики в контроле и устранении рецессивных наследственных аномалий у сельскохозяйственных животных, URL: https://cyberleninka.ru/article/n/rol-dnk-diagnostiki-v-kontrole-i-eliminatsii-retsessivnyh-nasledstvennyh-anomaliy-u-selskohozyaystvennyh-zhivotnyh/viewer (дата обращения: 20.02.2024).

2. Матоусек Я. Мендель и генетика племенного животноводства // Животноводство. 1965. № 8. С. 67-68.

3. Зайцев, В. В. Сравнительная терапия йодной недостаточности у крупного рогатого скота в биогеохимических условиях Астраханской области / В. В. Зайцев, И. С. Михайлова // Перспективы развития научной и инновационной деятельности молодежи в ветеринарии : Материалы международной научно-практической конференции студентов, магистрантов, аспирантов и молодых ученых, пос. Персиановский, 15 июня 2021 года. – пос. Персиановский: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования

"Донской государственный аграрный университет", 2021. – С. 186-189. – EDN NAZSSL.

4. Четвериков С.С. О некоторых моментах эволюционного процесса с точки зрения современной генетики // Классика советской генетики (1920-1940). Л., 1968. С. 133-170.

5. Бородай И.С. К истории становления и развития генетики как теоретической основы зоотехнической науки, URL: https://cyberleninka.ru/article/n/k-istorii-stanovleniya-i-razvitiya-genetiki-kak-teoreticheskoy-osnovy-zootehnicheskoy-nauki (дата обращения: 20.02.2024).

6. Инструменты для науки: молекулярно-генетические методы здоровья животных URL: https://www.kommersant.ru/doc/4510732 (дата обращения: 20.02.2024)

7. Ультразвуковое исследование органов пищеварения у животных / А. Р. Джумакова, Д. В. Бурковецкая, Г. Д. Меньшов [и др.] // Прикаспийский международный молодежный научный форум агропромтехнологий и продовольственной безопасности 2021 : материалы Прикаспийского международного форума, Астрахань, 01 января – 31 2021 года. – Астрахань: Издательский дом «Астраханский университет», 2021. – С. 39-40. – EDN OBAOVR.

8. Ларкина Т.А., Крутикова А.А., Козикова Л.В. Редактирование генома сельскохозяйственных животных с использованием технологии CRISPR/Cas9 URL:https://cyberleninka.ru/article/n/redaktirovanie-genoma-selskohozyaystvennyh-zhivotnyh-s-pomoschyu-tehnologii-crispr-cas9 (дата обращения: 20.02.2024)

9. Ветеринарная генетика /В. Л. Петухов, А. И. Жигачев, А. Назарова. 2-е изд., изд. и доп. М.: Колос, 1996. 384 с.: ил.

References

1. Zinovieva N.A., Gladyr E.A., Kostyunina O.V., Kharzinova V.R., Pokrovskaya M.V., Drushlyak N.G., Kabitskaya Y.A. Role of DNA diagnostics in control and elimination of recessive hereditary anomalies in farm animals URL:

https://cyberleninka.ru/article/n/rol-dnk-diagnostiki-v-kontrole-i-eliminatsii-retsessivnyh-nasledstvennyh-anomaliy-u-selskohozyaystvennyh-zhivotnyh/viewer (access date: 20.02.2024)

2. Matousek J. Mendel and genetics of animal breeding // Livestock breeding. 1965. No 8. C. 67-68.

3. Zaitsev, V. V. Comparative therapy of iodine deficiency in cattle in biogeochemical conditions of the Astrakhan region / V. V. Zaitsev, I. S. Mikhailova // Prospects for the development of scientific and innovative activities of young people in veterinary medicine : Proceedings of the international scientific-practical conference of students, undergraduates, graduate students and young scientists, Persianovsky settlement, 15 June 2021. - Persianovsky settlement: Federal State Budgetary Educational Institution of Higher Professional Education "Don State Agrarian University", 2021. - C. 186-189. - EDN NAZSSL.

4. Chetverikov S.S. About some moments of the evolutionary process from the point of view of modern genetics // Classics of Soviet genetics (1920-1940). L., 1968. C. 133-170.

5. Boroday I.S. To the history of formation and development of genetics as a theoretical basis of zootechnical science URL: https://cyberleninka.ru/article/n/k-istorii-stanovleniya-i-razvitiya-genetiki-kak-teoreticheskoy-osnovy-zootehnicheskoy-nauki (access date: 20.02.2024)

6. Tools for science: molecular-genetic methods for animal health URL: https://www.kommersant.ru/doc/4510732 (access date: 20.02.2024)

7. Ultrasound study of digestive organs in animals / A. R. Dzhumakova, D. V. Burkovetskaya, G. D. Menshov [et al] // Caspian International Youth Scientific Forum of agropromotechnologies and food security 2021 : proceedings of the Caspian International Forum, Astrakhan, 01 January - 31 2021. - Astrakhan: Publishing House "Astrakhan University", 2021. - C. 39-40. - EDN OBAOVR.

8. Larkina T.A., Krutikova A.A., Kozikova L.V. Editing the genome of farm animals using CRISPR/Cas9 technology

URL:https://cyberleninka.ru/article/n/redaktirovanie-genoma-selskohozyaystvennyh-zhivotnyh-s-pomoschyu-tehnologii-crispr-cas9 (access date: 20.02.2024)

9. Veterinary genetics /V. L. Petukhov, A. I. Zhigachev, A. Nazarova. 2nd ed., rev. and supplement. M.: Kolos, 1996. 384 p.: il.

DIGITALIZATION IN LIVESTOCK FARMING

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Abstract. This article discusses the prospects, goals and advantages of digitalization in the agricultural sector, namely in the livestock industry. Considering the benefits of digitalization, the article draws attention to increasing production efficiency, improving product quality, optimizing animal conditions and improving animal welfare. In conclusion, the article makes a forecast for the development of digitalization of livestock farming and highlights the prospects for using the latest technologies in this industry. It is noted that digitalization is becoming an integral part of modern livestock farming, contributing to increased productivity and competitiveness of the industry.

Keywords: livestock farming, digitalization, animals, farm, modern technologies, animal feeding, agriculture.

Digitalization is the process of widespread implementation of modern digital technologies in various areas, enterprises and production. The goal of digitalization is to make production more flexible, adapted to the realities of the modern day, and competitive. Digitalization makes it easier and faster to work in production, including the agricultural sector. The agricultural sector includes such sectors as crop production, fishing, forestry and livestock breeding.

Digitalization in livestock farming means the use of digital technologies to improve production processes, manage resources and increase farming efficiency. This involves using a variety of devices, sensors and software to collect and analyze data on animal health, nutrition, behavior and performance.

Tracking.

There are various systems for tracking farm animals: GEOtek, RFID, GPS monitoring.

In our opinion, the most effective and technologically advanced is the RFID system.

It helps not only to control the movement of animals and identify them, but also to track changing indicators and register changes, which is not available in other programs.

The main goal of this system is to automate control over the movement of animals, ensuring their safety and health.

Thanks to it, you can find out in real time the geolocation of any animal that requires special attention, and due to this, noticing changes in behavior in time, significantly reduce livestock mortality and avoid serious financial losses.

On farms that have not been digitalized, plastic tags or brands are used. They do not allow you to store information electronically and access it at any time, anywhere in the world, which means a waste of time.

The most reliable way to solve this problem is to automate most processes using RFID technology. It becomes possible to register events: time of entry, exit, presence of the animal in the zone required by the farmer, information about how often it ate food.

Each animal will be under supervision thanks to signals sent from the tags. A farmer can subdivide the paddocks by placing readers on the paddock gates and targeting specific animals.

Daily automatic weighing of animals and collection of statistics allows you to save a lot of time, clearly see changes in height/weight/milk yield, thereby diagnosing diseases in time and identifying the relationship between factors necessary for production.

Feeding.

Modern cattle keeping complexes are increasingly using:

Lela Vector, FeedRite OptiFeeder, DAIRYMASTER, Triomatic - automated feeding systems.

They come in three types.

1) Feeding stations - for loose housing.

2) Automatic feeding lines - for tethered housing

3) Robot for distributing concentrated feed - for both housing options

All of them increase efficiency due to the ability to select a diet and systematize feeding, but the best, in our opinion, is the Triomatic concentrated feed dispensing robot.

The robot moves around the barn on a monorail. Provides the most accurate distribution of concentrated feed and precise dosing in accordance with the selected diet. Mixing of different feed elements is automatic. Animals receive a fully balanced diet, rich in vitamins and minerals. Distributed in small portions several times a day, thereby increasing digestibility.

Thus, automation of the feeding process will increase the efficiency of maintenance, reduce the influence of the human factor, and reduce the cost of paying employees. Globally, animal productivity increases and thereby ensures high milk yields, stable weight gain, reduced production costs and increased production efficiency.

Dairy production.

Analyzing the dynamics of dairy production indicators, we see a low level of technological infrastructure. But, nevertheless, there are already farms using a system whose general name is “smart farm”.

We analyzed dairy farming in the Krasnodar Territory.

The reduction in milk production is due to the fact that only 10-15% of dairy farms have and actively use modern technologies.

Robotic systems are used to perform three main aspects: feeding, milking and manure removal.

The LelyVector feeding system allows you to increase animal productivity by 15-20%, and also, importantly, reduces feed consumption by 10-15%.

The digital smart farm model reflects the need for a unified digital space for production.

This concept is described most fully in his article by A.A. Mayorov, N.M. Suray, V.V. Nosov, A.N. Bobkov, L.V. Garipova. Thanks to their research, we

learn about the model of the digital space of dairy production - the “smart herd”. It is a database that reflects the dynamics of production, management of raw materials and the logistics system.

The MosEl farm, located in the Republic of Kalmykia, is engaged in breeding cattle and sheep.

Since the start of using the RFID livestock tracking system, staff costs and time spent filling out documentation have decreased by 10%. In addition, with the advent of information technology, the incidence rate of animal mastitis decreased by 70%, the quality of dairy products increased by more than 40%;

Today, digital technologies help to remotely monitor the condition of each animal, analyze its behavior, rate of development, identify various diseases in the early stages, and prevent infection of the herd. Previously, the prospects for digitalization in livestock farming were studied in the article “Prospects for digitalization of livestock farming” by candidates of technical sciences A.D. Fedorov, O.V. Kondratyeva, O.V. Slinko. Also, the topic of digitalization in livestock farming is discussed in detail in the article by veterinarian P.G. Beloglazova “Digitalization in livestock farming”

Digitalization of livestock farming is a promising direction for the development of the industry, but requires a careful approach to solving the problems and challenges associated with its implementation. Given all the pros and cons, it is important to balance the benefits of new technologies with the need to ensure their safe and effective use in livestock production. Based on the results of the study, after analyzing the information found, we can conclude that digitalization in livestock farming helps reduce losses, increase productivity and product quality, and improve living conditions for animals, which ultimately contributes to the sustainable development of the industry.

Литература

1. Как в России внедряют маркирование животных URL: https://vetandlife.ru/sobytiya/kak-v-rossii-vnedryajut-markirovanie-zhivotnyh (дата обращения: 20.02.2024)

2. Цифровые технологии в животноводстве. Скотоводство. Курс Ц75 лекций : учеб.-метод. пособие для студентов II ступени получения высшего образования по специальности 1-74 80 03 «Зоотехния» / Ю. В. Истранин [и др.]. - Витебск : ВГАВМ, 2021. - 64 с.

3. Зависимость про- и антиоксидантной системы крупного рогатого скота в условиях селенодефицита в Астраханской области / В. В. Зайцев, И. С. Михайлова, Н. А. Пудовкин, Д. В. Воробьев // Каспий в цифровую эпоху : материалы Национальной научно-практической конференции с международным участием в рамках Международного научного форума «Каспий 2021: пути устойчивого развития», Астрахань, 27 мая 2021 года / Астраханский государственный университет. – Астрахань: Издательский дом «Астраханский университет», 2021. – С. 265-268. – EDN SYZZDQ.

4. Конец ручного управления. Какие цифровые технологии внедряются на животноводческих предприятиях URL: https://www.agroinvestor.ru/animal/article/33325-konets-ruchnogo-upravleniya-kakie-tsifrovye-tekhnologii-vnedryayutsya-na-zhivotnovodcheskikh-predpri (дата обращения: 20.02.2024)

5. Германович А.Г., Шайкин В.В., Шевченко Т.В., Горбунов В.С. Проблемы цифровой трансформации производства молока URL: https://cyberleninka.ru/article/n/problemy-tsifrovoy-transformatsii-proizvodstva-moloka (дата обращения: 20.02.2024)

6. Динамика накопления тяжелого металла (свинца) в органах и тканях крупного рогатого скота в биогеохимических условиях Астраханской области / Н. И. Захаркина, В. В. Зайцев, Ж. В. Огаркова, М. П. Колесников // Актуальные вопросы аграрной науки : Материалы Национальной научно-практической конференции, Ульяновск, 20–21 октября 2021 года. –

Ульяновск: Ульяновский государственный аграрный университет им. П.А. Столыпина, 2021. – С. 172-177. – EDN QJULMN.

7. RFID-система для идентификации животных и контроля за их перемещением URL: http://www.itproject.ru/otraslevye_resheniya/animal/rfid_animal (дата обращения: 20.02.2024)

8. Сельскохозяйственное оборудование для животноводства URL: https://sib-agro.com/avtomatizirovannoe-kormlenie-krs (дата обращения: 20.02.2024)

9. Умная ферма URL: https://cctmcx.ru/digital-cx/umnaya-ferma/ (дата обращения: 20.02.2024)

References

1. How animal marking is being implemented in Russia URL: https://vetandlife.ru/sobytiya/kak-v-rossii-vnedryajut-markirovanie-zhivotnyh (access date: 02/20/2024)

2. Digital technologies in livestock farming. Cattle breeding. Course Ts75 lectures: educational method. manual for students of the second stage of higher education in specialty 1-74 80 03 “Zootechnics” / Yu. V. Istranin [etc.]. - Vitebsk: VGAVM, 2021. - 64 p.

3 Dependence of pro- and antioxidant system of cattle under conditions of selenium deficiency in the Astrakhan region / V. V. Zaitsev, I. S. Mikhailova, N. A. Pudovkin, D. V. Vorobyev // Caspian in the digital era : proceedings of the National Scientific and Practical Conference with international participation in the framework of the International Scientific Forum "Caspian 2021: ways of sustainable development", Astrakhan, 27 May 2021 / Astrakhan State University. - Astrakhan: Publishing House "Astrakhan University", 2021. - C. 265-268. - EDN SYZZDQ.

4. End of manual control. What digital technologies are being introduced at livestock enterprises URL: https://www.agroinvestor.ru/animal/ article/33325-

konets-ruchnogo-upravleniya-kakie-tsifrovye-tekhnologii-vnedryayutsya-na-zhivotnovodcheskikh-predpri (access date: 20.02. 2024)

5. Germanovich A.G., Shaikin V.V., Shevchenko T.V., Gorbunov V.S. Problems of digital transformation of milk production URL: https://cyberleninka.ru/article/n/problemy-tsifrovoy-transformatsii-proizvodstva-moloka (date of access: 02/20/2024)

6. Dynamics of heavy metal (lead) accumulation in organs and tissues of cattle in biogeochemical conditions of the Astrakhan region / N. I. Zakharkina, V. V. Zaitsev, J. V. Ogarkova, M. P. Kolesnikov // Actual issues of agrarian science : Proceedings of the National Scientific and Practical Conference, Ulyanovsk, 20-21 October 2021. - Ulyanovsk: Ulyanovsk State Agrarian University named after P.A. Stolypin. P.A. Stolypin, 2021. - C. 172-177. - EDN QJULMN.

7. RFID system for identifying animals and monitoring their movement URL: http://www.itproject.ru/otraslevye_resheniya /animal/rfid_animal (access date: 02/20/2024)

8. Agricultural equipment for livestock farming URL: https://sib-agro.com/avtomatizirovannoe-kormlenie-krs (access date: 02/20/2024)

9. Smart farm URL: https://cctmcx.ru/digital-cx/umnaya-ferma/ (access date: 02.20.2024)

MACHINE LEARNING IN SPACE TECHNOLOGIES DEVELOPMENT

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Abstract. The article presents current trends analysis in machine learning integration methods in the space technology field development. It examines a wide range in the space industry machine learning applications, including autonomous spacecraft control, processing and analysis of space images, forecasting the space objects trajectories and mission optimization. In addition, the challenges associated with machine learning methods application in the context of space technologies are discussed, as well as their prospects and potential benefits for improving the space missions efficiency and reliability. In conclusion, the article emphasizes the need for further research in this area in order to further improve the space industry and increase its competitiveness.

Key words: artificial intelligence, spacecraft technologies, space industry, development, research

The space industry is a term used to describe human activity various forms in space, including the space resources exploration such as asteroids industrial exploitation, research on cosmic particles, and the nearby galaxies research. 63 years ago, a human first ventured beyond the Earth's atmosphere. It is common knowledge that this person was the Soviet pilot, Yuri Gagarin. This event marked the beginning space exploration and research era. Since the mid-20th century, every country has been striving to conquer and explore at least a piece. It is considered as a boundless and infinite ocean. The space industry development is directly related to the computer technologies development. They allow us to perform calculations for rocket trajectories for proper flight, calculate the various gases content and other elements in space, study the asteroids composition, and more. Initially, all calculations were performed on giant computers the size of entire buildings - today, a tiny processor can handle them. The artificial

intelligence development directly impacts the space industry. Artificial intelligence is modern trend. It is currently being used wherever possible: in medicine, construction, engineering, heavy and light industry, and more. In the space industry, many astronomers and scientists are already engaged in this, such as Vladimir Surdin, Michael Brown, Elon Musk, and other equally well-known figures. The latter is also one of artificial intelligence founding fathers and he seeks to integrate it into the space industry. Despite their efforts, this topic is still not fully explored.

The space industry is extremely vast, encompassing many structures and branches. It includes designing and constructing rockets, studying asteroids, planets, and other celestial bodies, and researching the universe composition and various events associated with it. This requires expensive and rare equipment, but most importantly, human resources, i.e., scientists. They are the ones who find approaches to solving a typical task and conduct all the research. But progress does not still stand, and nowadays, technologies based on artificial intelligence actively assist scientists in the space industry various spheres.

For example, in the extensive atmospheric showers of elementary particles researches (EAS), neural technologies have been used for quite some time. The Earth is constantly bombarded with cosmic rays. Astronauts in orbit experience their effects, receiving very high radiation doses. These particles subsequently lead to various illnesses. To analyze these particle rays effects on humans, scientists use stationary ground-based installations. For example, in the Telescope Array project in the USA, over 500 installations are used for detection in desert in the Utah state. When an installation detects an event, the computer automatically records what happens next. All data is automatically sent to the server, and based on which detector registered the particles earlier than others, scientists determine inclination angle of the EAS from where the particles came to us. The received data is processed by scientists, but as we know, they cannot always do it correctly: we cannot exclude the simple human factor. Fatigue and inattention greatly affect the research quality. The researchers group has already proposed ideas based on

convolutional neural networks, and even implemented them. As subsequent tests have shown, by implementing the technology, it was possible to improve angular resolution by approximately 30% and increase the ability to determine the source by almost two times.

Researching and discovering new planets is an integral part of space science. People invest tremendous efforts and resources to study galaxies and systems to detect new planets for potential colonization or resource extraction in future. Artificial intelligence is also involved here. In spring of 2020, NASA discovered 50 new exoplanets while training a neural network on old data collected over nine years by the Kepler spacecraft, launched back in 2009. Neural networks help reduce the number of space missions and limit observations to Earth: algorithms analyze light waves, determining of distant planets, stars, and other objects composition and properties. Geophysicist Patrick McGuire from the University of Chicago and his team are developing a "cyborg astrobiologist" based on a Hopfield neural network programmed to search for new life forms. In future, this invention could significantly increase the planet exploration efficiency, accelerating our progress in space exploration.

To achieve the interplanetary travel and exploration goals, astronauts and scientists need rockets with reliable control systems, docking, and instant fault diagnostics. Since control, diagnostics, and management of the spacecraft onboard systems technical condition must be continuous over time, among all artificial intelligence technologies, it is most appropriate to use so-called dynamic expert systems to solve these tasks. Such systems are capable to manage the spacecraft onboard systems technical condition in real-time based on the various measurement results parameters and their processing using knowledge base (generally dynamically evolving).

In addition to utilizing neural networks directly during the flight, they are also employed in the production stage. Rocket engines and navigation systems optimization using artificial intelligence is a key direction in modern space engineering. Rocket engines play a crucial role in maneuvering and controlling

spacecraft, while navigation systems ensure their movement accuracy and safety in space. The artificial intelligence application in these areas opens up new possibilities for enhancing the space missions efficiency and reliability. For example, the scientific association "Energomash", a part of «Roscosmos», has already demonstrated a digital system based on artificial intelligence operation, which is capable to recognize details, tools, and human actions during the rocket engines assembly. The system will address certain production problems related to the inability to use paper or electronic technical documentation simultaneously with manual operations and the continuous objective control lack over all manual operations stages.

In rocket engine optimization field, artificial intelligence can be used to develop and tune optimal engine operation parameters. It can be used at the level of testing finished products to identify faulty specimens. This technology will allow the analysis of data large volumes on fuel characteristics, thermodynamic properties, aerodynamics, and other factors. These updates will optimize engine properties and prevent many accidents.

Navigation systems can also be significantly improved with the help of artificial intelligence. Neural networks and reinforcement learning algorithms can analyze data from sensors, cameras, and other sources, determining spacecraft optimal routes and precise coordinates. These algorithms are especially important for complex maneuvers, such as docking with the International Space Station.

Thus, the article discusses current trends and prospects for the machine learning methods application in the space industry. The application of main areas of such methods are analyzed, including data analysis from spacecraft and automatic control of space missions, rocket engines and navigation systems optimization, as well as forecasting space phenomena and resource allocation. Overall, this article emphasizes the importance of integrating machine learning methods into various aspects of space activities to enhance the space missions and technologies efficiency, safety, and reliability.

Литература

1. Четыре передовые AI-технологии для освоения космоса и Земли // СБЕР AI URL: https://ai.sber.ru/post/chetyre_peredovyh_ii-tehnologii_dlya_izucheniya_kosmosa_i_zemli (дата обращения: 21.03.2024).

2. Как машинное обучение открывает планеты и строит ракеты // r_d media URL: https://robotdreams.cc/blog/50-kak-mashinnoe-obuchenie-otkryvaet-planety-i-stroit-rakety (дата обращения: 21.03.2024)).

3. Машинное обучение помогает исследовать космические лучи сверхвысоких энергий // URL РНФ: https://rscf.ru/news/presidential-program/mashinnoe-obuchenie-pomogaet/ (дата обращения: 21.03.2024).

4. Умнее, дальше, точнее: Как ИИ изменил космические полеты // URL ХАБР: https://habr.com/ru/companies/binarydistrict/articles/435234/ (дата обращения: 21.03.2024).

References

1. Four advanced AI-technologies for space and Earth exploration // SBER AI URL: https://ai.sber.ru/post/chetyre_peredovyh_ii-tehnologii_dlya_izucheniya_kosmosa_i_zemli (application date: 21.03.2024).

2. How Machine Learning Discovers Planets and Builds Rockets // r_d media URL: https://robotdreams.cc/blog/50-kak-mashinnoe-obuchenie-otkryvaet-planety-i-stroit-rakety (application date: 21.03.2024).

3. Machine learning helps to explore ultrahigh energy cosmic rays // RNF URL: https://rscf.ru/news/presidential-program/mashinnoe-obuchenie-pomogaet/ (application date: 21.03.2024).

4. Smarter, further, more accurate: How AI has changed spaceflight // HABR URL: https://habr.com/ru/companies/binarydistrict/articles/435234/ (application date: 21.03.2024).

IT AND ARTIFICIAL INTELLIGENCE IN MEDICINE: DIAGNOSIS AND TREATMENT NEW METHODS

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Abstract. This paper explores the transformative role of Information Technology (IT) and Artificial Intelligence (AI) in modern medicine, focusing on novel methods in diagnosis and treatment. The integration of IT tools and AI algorithms has revolutionized medical practices, enhancing accuracy, efficiency, and patient outcomes. Through advanced data analytics, machine learning algorithms, and deep learning techniques, healthcare professionals can now diagnose diseases with unprecedented precision and tailor treatment plans to individual patients. By harnessing the power of IT and AI, healthcare is entering an era of personalized, data-driven care, ushering in a new frontier in medical science and patient care.

Key words: artificial intelligence (AI), technologies, medicine, methods, IT.

In the world where information technology and artificial intelligence are rapidly penetrating into all spheres of our lives and allow us to solve a huge number of problems of a completely different nature, medicine is a subject to the same positive trends in the methods used to treat patients, every year increasingly using machine learning technologies for more accurate proportion of drugs, surgical operations, and drug development. Information technologies and artificial intelligence are becoming more and more deeply integrated into medical practice, opening up new opportunities and prospects. They not only improve existing diagnosis and treatment methods, but also offer completely new approaches to fighting diseases. So are there any nuances from modern technologies introduction into medicine?

Modern medicine is experiencing a significant change, which is possible by information technology and artificial intelligence integration. However, there are

various nuances and challenges to this progress that require attention and careful consideration. The first and perhaps most significant nuance is the ethical and legal aspects associated with the technology used in medicine [1]. For example, data privacy issues become particularly acute when medical information is stored digitally and processed by machine learning algorithms. Where is the line drawn between the need to use data to improve practice and protecting patients' privacy rights? These questions require clear legal regulation and the ethical standards development to ensure a balance between innovation and the patients' rights protection.

It is also important to consider that the new technologies introduction requires updating the skills and knowledge of medical professionals. The medicine and technology development is moving at such a rapid speed that physicians and medical professionals must constantly update their knowledge and skills to stay abreast of the latest advances and apply them effectively in practice. Staff training and retraining can present significant challenges, especially in countries with limited resources and insufficient infrastructure for education. In addition, it should be kept in mind that technology is not a panacea and can introduce new challenges or complications. For example, reliance on technology and automated systems may lead to a loss of the human element in medical practice. Physicians may begin to rely too heavily on algorithms and artificial intelligence, which could lead to a reduction in the clinical expertise and intuition importance. There are also cybersecurity risks, as digital systems can be attacked by hackers or hacks, which can cause serious damage to both the patients themselves and healthcare systems as a whole.

Moreover, it is important to consider the effectiveness and reliability of new technologies. The machine learning and artificial intelligence introduction into medicine requires extensive testing and validation to ensure their accuracy and effectiveness [2]. It is not enough for technologies to be innovative - they must also be safe and reliable for use in medical practice. Developers and researchers

must pay due attention to these aspects to avoid possible negative consequences from misapplication or errors in algorithms.

However, it should also be recognized that the introduction of modern technologies in medicine brings a number of positive features and prospects. First, the diagnostic and treatment methods improve. Thanks to machine learning technologies and artificial intelligence algorithms, it becomes possible to conduct more accurate and faster diagnoses of various diseases. This makes it possible to detect pathologies at early stages of development, which opens up more opportunities for successful treatment and increases the chances of recovery for patients. Secondly, improving the quality of medical care. Modern technologies allow healthcare professionals to organize their work more efficiently, reducing time spent on routine tasks and improving access to patient information. This contributes to improved efficiency and accuracy of care, as well as a reduction in medical errors.

In addition, the technology implementation in medicine can facilitate a more personalized approach to treatment. Machine learning algorithms can analyze a wealth of patient data, taking into account individual characteristics, which allows for the development of more personalized treatment methods and the selection of optimal drug therapy regimens.

We should not also forget about the significant improvement in medical care accessibility thanks to modern technologies. Telemedicine, for example, makes it possible to consult a doctor remotely, which is especially valuable for people living in remote areas or with mobility difficulties. It also reduces the burden on medical facilities and allows for more efficient allocation of resources.

Despite the existing nuances, the modern technologies introduction in medicine offers us huge opportunities to improve the quality and accessibility of healthcare. It is important to consider both negative and positive aspects of this process in order to form effective development strategies and maximize benefits for patients and society as a whole. Stepan Mikhailov identified five main areas of artificial intelligence application in medicine [3]:

1. Disease diagnosis.
2. Diseases treatment.
3. Medical resources management.
4. Disease prevention.
5. Health monitoring.

One of Mikhailov's main points, is the fact that AI can be used to process X-rays, MRI scans, ultrasounds, and analyze data, which will help doctors diagnose extremely serious diseases - cancer, Alzheimer's, etc. AI will enable the new medical patterns and anomalies detection, which will allow for a more accurate determination of the disease type.

Stepan Sergeyevich came to the conclusion that AI in medicine has tremendous potential that can lead mankind to a new stage of treatment of serious diseases, but it is not worth relying completely on artificial intelligence, because now its algorithms are not accurate enough, they still have to learn and learn.

Литература

1. Кузнецов А.И., Щепкина Е.В., Сушинская Т.В., Епифанова С.В., Фаур Д.М. Возможности и ограничения применения искусственного интеллекта в медицине // Новости клинической цитологии России. 2023. №2. URL: https://cyberleninka.ru/article/n/vozmozhnosti-i-ogranicheniya-primeneniya-iskusstvennogo-intellekta-v-meditsine (дата обращения: 07.03.2024).

2. Хусанов У.А., Кудратиллаев М.Б, Сиддиков Б.Н., Довлетова С.Б. Искусственный интеллект в медицине // Наука и образование. 2023. №5. URL: https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-v-meditsine-4 (дата обращения: 07.03.2024).

3. Михайлов С.С. Искусственный интеллект и его применение в медицине // Современные инновации. 2023. №1 (42). URL: https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-i-ego-primenenie-v-meditsine (дата обращения: 07.03.2024).

References

1. Kuznetsov A.I., Shchepkina E.V., Sushinskaya T.V., Epifanova S.V., Faur D.M. Opportunities and limitations of application of artificial intelligence in medicine // News of Clinical Cytology of Russia. 2023. №2. URL: https://cyberleninka.ru/article/n/vozmozhnosti-i-ogranicheniya-primeneniya-iskusstvennogo-intellekta-v-meditsine (access date: 07.03.2024).

2. Khusanov U.A., Kudratillaev M.B., Siddikov B.N., Dovletova S.B. Artificial Intelligence in Medicine // Science and Education. 2023. №5. URL: https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-v-meditsine-4 (access date: 07.03.2024).

3. Mikhailov S.S. Iscient intelligence and his application in medicine // Modern Innovations. 2023. №1 (42). URL: https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-i-ego-primenenie-v-meditsine (access date: 07.03.2024).

SOCIETY TRANSFORMATION IN EVERYDAY LIFE THOUGHT AI: NEW APPROACHES TO PROBLEM SOLVING

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Abstract. This article examines the impact of artificial intelligence on the transformation of society in everyday life. It discusses new approaches to solving problems that arise in the modern world due to the use of artificial intelligence. The authors explore how AI technologies are changing our daily routines, affecting our habits and ways of interacting with the world around us. The article offers an analysis of the benefits of introducing AI into everyday life and discusses the prospects for the development of this trend in the future.

Keywords: artificial intelligence, AI in life, benefits and prospects of AI.

Modern society faces a number of complex problems that require innovative approaches to solving them. Information technology (IT) and artificial intelligence (AI) technologies play an increasingly significant role in transforming the everyday life of people and society as a whole. New technologies provide unique opportunities to develop and implement new approaches to solving complex social and economic problems.

Artificial intelligence and information technology can significantly improve various aspects of people's daily lives. For example, in the field of healthcare, AI can help diagnose and treat diseases by improving the efficiency of medical procedures and reducing patient waiting times.

In addition, artificial intelligence is also used to predict epidemics, optimize the work of medical facilities, develop new drugs, and monitor public health. With the help of machine learning algorithms and big-data analytics, diagnosis and treatment processes can be improved, costs can be reduced, and healthcare services can be made more efficient.

Moreover, artificial intelligence can help improve medical staff training, research and development of new treatment methods. Combining artificial intelligence technologies with medical sciences opens new perspectives for the development of modern medicine and improving the quality of people's lives.

In general, the use of artificial intelligence in medicine has great potential to improve the diagnosis, treatment and prevention of diseases. It can reduce the time to diagnosis, improve the quality of medical care and reduce health risks for patients. Artificial intelligence is becoming an integral part of modern medicine and contributes to the development of healthcare in general.

In today's world, artificial intelligence already plays a significant role in people's daily lives, and its influence will only increase. In the field of transportation, AI can help improve the management of the transportation system, namely it allows the introduction of autopilot systems for vehicles. Autonomous vehicles can make decisions on their own based on the analysis of data about traffic conditions, weather conditions and the behavior of other road users. This improves road safety and reduces the number of road accidents.

In addition, artificial intelligence can be used to optimize freight transportation operations. Data analysis and demand forecasting can optimize routes, schedules and truck loading, which reduces costs and improves logistics efficiency.

Artificial intelligence technologies can also be applied to the development of smart parking systems that will help drivers find available parking spaces faster and reduce the search for parking spaces, which in turn will save time and fuel.

In the household sector, artificial intelligence can be used to create smart homes, automate tasks and make life more comfortable. For example, smart devices can control energy consumption levels, manage heating and air conditioning systems, and provide home security and monitoring.

Artificial intelligence can be used to create personalized nutrition and healthy lifestyle recommendations based on data about the eating habits and physical activity of family members. In doing so, machine learning algorithms can

analyze food information and suggest optimal diets, taking into account the individual needs of each family member.

Additionally, artificial intelligence can help manage resources and optimize spending in the household budget. By analyzing data on spending on utilities, food, and other necessary expenses, artificial intelligence systems can suggest ways to reduce costs and optimize financial flows.

Additionally, various devices in the home, such as smart thermostats, water sensors, and security systems, can be integrated using artificial intelligence to automate and optimize resource management processes. For example, an artificial intelligence system can analyze data on energy consumption in the home and automatically adjust indoor temperatures to save energy.

Thus, the use of artificial intelligence in the household sphere not only increases the level of comfort and safety of life, but also contributes to effective resource management and cost optimization, making people's lives more convenient and economical.

In finance, AI can help improve investment management, predict market trends, secure financial transactions and offer personalized financial solutions.

Thus, the use of artificial intelligence in everyday life can significantly improve people's quality of life, increase the level of comfort, safety and efficiency of various spheres of activity. However, it is important to remember the need for ethical use of AI in order to avoid negative consequences and maintain human control over the development of technology.

Литература

1. Stefanyuk, A. N. Artificial intelligence and neural networks / A. N. Stefanyuk, N. S. Usenko // Наука преображает реальность: Материалы Международной междисциплинарной научно-практической студенческой конференции, Воронеж, 27–31 марта 2023 года / Отв. редактор Е.А. Маклакова. – Воронеж: Воронежский государственный лесотехнический

университет им. Г.Ф. Морозова, 2023. – P. 28-32. – DOI 10.58168/STR2023_28-32. – EDN KTWRMH.

2. Пылов, П. А. Человек управляет искусственным интеллектом или искусственный интеллект управляет человеком? / П. А. Пылов, И. В. Кудаева // Россия молодая: Сборник материалов XIII Всероссийской научно-практической конференции с международным участием, Кемерово, 20–23 апреля 2021 года / Редколлегия: К.С. Костиков (отв. ред.) [и др.]. – Кемерово: Кузбасский государственный технический университет имени Т.Ф. Горбачева, 2021. – С. 94703.1-94703.5. – EDN LSBOPZ.

3. Votentsev, A. S. Artificial intelligence / A. S. Votentsev // Languages in professional communication : Сборник материалов международной научно-практической конференции преподавателей, аспирантов и студентов, Екатеринбург, 28 мая 2020 года / ответственный редактор Л. И. Корнеева. – Екатеринбург: ООО «Издательский Дом «Ажур», 2020. – P. 500-507. – EDN ZVTUZC.

4. Urganova, D. The role of artificial intelligence in digitalization of business / D. Urganova, Y. Sokolovskaya // Бизнес. Образование. Экономика : сборник статей Международной научно-практической конференции, Минск, 07–08 апреля 2022 года. – Минск: Государственное учреждение образования "Институт бизнеса Белорусского государственного университета", 2022. – P. 239-242. – EDN QLHVYL.

References

1. Stefanyuk, A. N. Artificial intelligence and neural networks / A. N. Stefanyuk, N. S. Usenko // Science transforms reality: Proceedings of the International Interdisciplinary Scientific and Practical Student Conference, Voronezh, March 27–31, 2023 / Rep. editor E.A. Maklakova. – Voronezh: Voronezh State Forestry University named after. G.F. Morozova, 2023. – P. 28-32. – DOI 10.58168/STR2023_28-32. – EDN KTWRMH.

2. Pylov, P. A. Does a person control artificial intelligence or does artificial intelligence control a person? / P. A. Pylov, I. V. Kudaeva // Young Russia: Collection of materials from the XIII All-Russian Scientific and Practical Conference with International Participation, Kemerovo, April 20–23, 2021 / Editorial Board: K.S. Kostikov (responsible editor) [and others]. – Kemerovo: Kuzbass State Technical University named after T.F. Gorbachev, 2021. – P. 94703.1-94703.5. – EDN LSBOPZ.

3. Votentsev, A. S. Artificial intelligence / A. S. Votentsev // Languages in professional communication: Collection of materials from the international scientific and practical conference of teachers, graduate students and students, Ekaterinburg, May 28, 2020 / executive editor L. I. Korneeva. – Ekaterinburg: Publishing House “Azhur” LLC, 2020. – P. 500-507. – EDN ZVTUZC.

4. Urganova, D. The role of artificial intelligence in digitalization of business / D. Urganova, Y. Sokolovskaya // Business. Education. Economics: collection of articles of the International Scientific and Practical Conference, Minsk, April 07–08, 2022. Minsk: State educational institution "Institute of Business of the Belarusian State University", 2022. P. 239-242. EDN QLHVYL.

A SMART PHYTOLAMP WITH ARTIFICIAL INTELLIGENCE

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Abstract. The article refers to the use of artificial lighting for growing plants. It examines in details the use of various light sources specially designed to stimulate photosynthesis and plant growth. The author emphasizes that the use of phytolamps with a certain spectrum can affect the shape of plants yield and chemical composition of fruits. The article also touches on the topic of creation vertical farms with the use of phytolamps, which makes it possible to grow plants in conditions of complete absence of sunlight. Much attention is paid to scientific research and technological innovations in the field of artificial lighting for plants. The author calls for the use of phytolamps in domestic conditions, emphasizing their role in increasing yields and improving product quality. The main idea of the article is that properly organized artificial lighting can positively affect the growth and development of plants as well as the quality and quantity of products produced.

Keywords: plants, artificial lightning, photosynthesis, pytolamp, rapid growth.

To grow plants under artificial lighting, mainly electric light sources are used, designed specifically to stimulate plant growth by emitting waves of the electromagnetic spectrum that are favorable for photosynthesis. Sources of phytoactive lighting are used in the complete absence of natural light or in its deficiency. For example, in winter, when the length of daylight is not enough for plants to grow, artificial lighting makes it possible to increase the duration of their light exposure.

The Russian botanist Andrei Famintsyn was the first to use kerosene lamps for growing plants in 1868 [1].

Artificial light must provide the spectrum of electromagnetic radiation that plants in nature receive from the sun, or at least a spectrum that would satisfy the

needs of the plants being grown. Street conditions are simulated not only by selecting the color temperature of the light and its spectral characteristics, but also by changing the intensity of the lamps [2]. Depending on the type of plant being grown, its stage of development (germination, growth, flowering or fruit ripening), as well as the current photoperiod, a special spectrum, luminous efficiency and color temperature of the light source are required.

Artificial light sources are used in horticulture, indoor landscaping, seed growing, and food production (including hydroponics and algae growing). Despite the fact that most phytoactive light sources are designed for use on an industrial scale, they can also be used in domestic conditions [3].

In monasteries and medical faculties of universities, they studied the beneficial properties of plants and observed their growth. It was discovered that the creation of certain conditions and additional irrigation did not always lead to the desired results - vegetable and fruit crops either did not grow at all or did not bear fruit as abundantly. And gradually people came to understand that plants also need light.

Sunlight has shaped the photosynthetic and morphological apparatuses of plants for millions of years. And in order to make crops grow and bear fruit, it is necessary, if not to completely recreate the wave ranges to which they are accustomed, then at least to model them in the most suitable way for the plant, said Igor Malygin, an expert on lighting solutions in the field of light culture [4].

A properly organized lighting system can generate enough light to ensure high yields of vegetables, herbs, flowers and even exotic fruits. It is extremely important to observe the photoperiod - the length of daylight hours for plants.

Long-day crops, including carrots, radishes, lettuce, spinach and parsnips, should be exposed to light for 13 hours or more. Otherwise, they will grow, intensively forming green mass, but will not enter the flowering and fruit formation phases. And “short-day” crops - tomatoes, cucumbers, eggplants, peppers and basil - need to be illuminated for up to 13 hours a day. According to iFarm agronomists, basil can be exposed to light for all 24 hours, but will have a

better smell. In the 19th century, photosynthetic peaks were discovered, and in the 20th century, a spectral curve with points of highest chlorophyll absorption by plants was discovered. Scientists have calculated the universal principle at which most plants feel good - 445 nanometers, and in red - 660.

However, with the morphological apparatus of plants, everything is much more complicated, and each spectrum (red, blue, green and orange) affects crops in its own way. Some can lengthen cells, while others can affect their thickness. It is also light that shapes the chemical composition of fruits - for example, ultraviolet increases the content of essential oils, terpenes, anthocyanins and other chemicals in herbs.

Using phytolamps with a predominance of one spectrum or another, you can set the habit - the shape of the plant: make it thin or lush; influence the skeleton - decide whether the seedling will be tall or short. Through the spectrum it is also easy to influence brix, a parameter for the sugar content in fruits, and therefore set the quality parameters of the products produced. if you illuminate it for 13-14 hours. And restaurateurs agree with them.

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Today, greenhouse growers use a wide range of phytolamps, including induction, gas-discharge, sodium and metal halide. Whereas the advent of LED lamps has made it possible to create vertical farms and install them all over the world: wherever it is necessary to ensure the natural growth of plants in conditions of complete absence of light.

The iFarm team, in close cooperation with the manufacturer of high-precision electronics, the Vega-Absolut company, has developed its own phytolamps. Through the use of highly efficient LEDs, it was possible to achieve reduced electricity consumption for lighting vertical farms (currently about 90 watts per sq. m.), which allows reducing the cost of greenery and making the technology even more accessible. In addition, iFarm lamps are available for free sale: they can be purchased to equip greenhouse facilities (follow the link you will find a description of our lamps, their sizes and costs) [5].

It has also been proven that light has a positive effect on fruits after harvest. For example, the growing cabinet, developed by iFarm engineers, provides ideal conditions for storing greens. In it, it can not only recover after transportation from the production site, but also grow: increase in volume and change taste.

To summarize, we note that the emergence of phytolamps contributed to the creation of vertical farms and their installation not only in cities, but also in space - several years ago, astronauts of the National Aeronautics and Space Administration (NASA) on the International Space Station (ISS) grew under LED -lamp red lettuce.

The experiment, officially called Veg-01 but nicknamed Veggie by NASA, was designed to study plant growth in microgravity and improve methods that would help grow crops in orbit more efficiently, including phytolamps.

NASA scientists tried their best to make the food familiar to the astronauts. They used green LEDs, as well as more efficient red and blue LEDs, to make the lettuce greener and less red than it would naturally grow.

As NASA employee Stephanie Schierholz told The Guardian, they could get a larger lettuce yield without using green LEDs. But green plants, especially food, look more familiar to astronauts, providing psychological support during long stays on the International Space Station.

However, despite the presence in this area, scientists have not been able to think through the details of the consumers of this product [6].

It is necessary to introduce a new format of a smart phytolamp, equipped with artificial intelligence. This device can announce you what the plant needs and how to care about it, and what the temperature is outside. It is strongly necessary to upgrade the existing lamps and to provide them with artificial intelligence function. It will be very useful in increasing the productivity of the plant itself and its yields in particular.

Литература

1. Дудина, П.С. Влияние спектра излучения фитолампы и ее применение в растениеводстве в домашних условиях / П. С. Дудина, А. В. Ставицкий // Актуальные вопросы науки и хозяйства: новые вызовы и решения : Сборник материалов LI Международной студенческой научно-практической конференции, Тюмень, 17 марта 2017 года. Том Часть 2. – Тюмень: Государственный аграрный университет Северного Зауралья, 2017. – С. 54-57. – EDN ZIPWKJ.

2. Айтпаева, А. А. Современное состояние и тенденции развития АПК Астраханской области / А. А. Айтпаева, Р. А. Арсланова, А. С. Бабакова // Социально-экономические и экологические аспекты развития Прикаспийского региона : Материалы Международной научно-практической конференции, Элиста, 28–30 мая 2019 года. – Элиста: Калмыцкий государственный университет имени Б.Б. Городовикова, 2019. – С. 253-256. – EDN HRVQKZ.

3. Садоводство астраханской области: история, современное состояние и перспективы развития / М. Ю. Анишко, А. А. Айтпаева, А. С. Бабакова [и др.] // Каспий XXI века: пути устойчивого развития : Материалы Международного научного форума, Астрахань, 19–20 февраля 2020 года / Составители: К.А. Маркелов [и др.]. – Астрахань: Астраханский государственный университет, Издательский дом "Астраханский университет", 2020. – С. 8-10. – EDN PSATMM.

4. Бабакова, А. С. Современные методы защиты растений от вредных объектов / А. С. Бабакова // Современные агротехнологии в аридной зоне и их экономическая оценка : Материалы научно-практического семинара, Астрахань, 26 апреля 2019 года. Том Выпуск 4. – Астрахань: Астраханский государственный университет, Издательский дом «Астраханский университет», 2019. – С. 12-15. – EDN SQWFBV.

5. Influence of Mineral Nutrition Elements on Photosynthetic Processes Occurring in Plants and Productivity of Tomatoes in the Volga Delta Conditions /

L. P. Ionova, Zh. A. Vilkova, R. A. Arslanova [et al.] // Modern S&T Equipments and Problems in Agriculture, Кемерово, 25 июня 2020 года. – Кемерово: Кузбасская ГСХА, 2020. – P. 88-97. – EDN BQJYGX.

6. Дубин, Р. И. Поддержка начинающих фермеров – миф или реальность? / Р. И. Дубин, Р. А. Арсланова, А. С. Бабакова // Нива Поволжья. – 2023. – № 2(66). – DOI 10.36461/NP.2023.66.2.021. – EDN MASVLB.

7. Ионова, Л. П. Адаптация Российских и Иранских сортов риса при выращивании рассадным способом и периодическом орошении в условиях аридной зоны / Л. П. Ионова, Н. Д. Смашевский, А. С. Бабакова // Вестник Алтайского государственного аграрного университета. – 2017. – № 10(156). – С. 23-33. – EDN ZIFURJ.

8. Efficiency of Bioregulators against powdery mildew disease (Leveillulia taurica (Lev.)G. Arnaud.)spread on tomato plants / Zh. A. Zimina, R. A. Arslanova, A. S. Abakumova, R. I. Kurmanalieva // European Journal of Natural History. – 2012. – No. 3. – P. 20-22. – EDN PWFMMX.

References

1. Dudina, P.S. The influence of the radiation spectrum of a phytolamp and its use in plant growing at home / P. S. Dudina, A. V. Stavitsky // Current issues of science and economy: new challenges and solutions: Collection of materials of the LI International Student Scientific and Practical Conference, Tyumen, 17 March 2017. Volume Part 2. – Tyumen: State Agrarian University of the Northern Trans-Urals, 2017. – pp. 54-57. – EDN ZIPWKJ.

2. Aitpaeva, A. A. Current state and development trends of the agro-industrial complex of the Astrakhan region / A. A. Aitpaeva, R. A. Arslanova, A. S. Babakova // Socio-economic and environmental aspects of the development of the Caspian region: Materials of the International Scientific- practical conference, Elista, May 28–30, 2019. – Elista: Kalmyk State University named after B.B. Gorodovikova, 2019. – pp. 253-256. – EDN HRVQKZ.

3. Gardening of the Astrakhan region: history, current state and development prospects / M. Yu. Anishko, A. A. Aitpaeva, A. S. Babakova [etc.] // Caspian Sea of the XXI century: ways of sustainable development: Materials of the International Scientific Forum , Astrakhan, February 19–20, 2020 / Compiled by: K.A. Markelov [and others]. – Astrakhan: Astrakhan State University, Publishing House “Astrakhan University”, 2020. – pp. 8-10. – EDN PSATMM.

4. Babakova, A. S. Modern methods of protecting plants from harmful objects / A. S. Babakova // Modern agricultural technologies in the arid zone and their economic assessment: Materials of a scientific and practical seminar, Astrakhan, April 26, 2019. Volume Issue 4. – Astrakhan: Astrakhan State University, Publishing House “Astrakhan University”, 2019. – P. 12-15. – EDN SQWFBV.

5. Influence of Mineral Nutrition Elements on Photosynthetic Processes Occurring in Plants and Productivity of Tomatoes in the Volga Delta Conditions / L. P. Ionova, Zh. A. Vilkova, R. A. Arslanova [et al.] // Modern S&T Equipments and Problems in Agriculture, Kemerovo, June 25, 2020. – Kemerovo: Kuzbass State Agricultural Academy, 2020. – P. 88-97. – EDN BQJYGX.

6. Dubin, R.I. Support for beginning farmers - myth or reality? / R. I. Dubin, R. A. Arslanova, A. S. Babakova // Niva Povolzhya. – 2023. – No. 2(66). – DOI 10.36461/NP.2023.66.2.021. – EDN MASVLB.

7. Ionova, L. P. Adaptation of Russian and Iranian rice varieties under seedling cultivation and intermittent irrigation in arid zone conditions / L. P. Ionova, N. D. Smashevsky, A. S. Babakova // Bulletin of Altai State Agrarian University. - 2017. - № 10(156). - C. 23-33. - EDN ZIFURJ

8. Efficiency of Bioregulators against powdery mildew disease (Leveillulia taurica (Lev.) G. Arnaud.) spread on tomato plants / Zh. A. Zimina, R. A. Arslanova, A. S. Abakumova, R. I. Kurmanalieva // European Journal of Natural History. – 2012. – No. 3. – P. 20-22. – EDN PWFMMX.

RESEARCH ON CONTROLLING RODENTS METHODS AND ANALYSIS OF EXISTING DEVICES DESIGNED BASED ON THE ELECTROPHYSICAL CONTROL METHOD

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Abstract: This article highlights current and recently developed devices based on experience with patented designs for rodent control. Options for using these devices to overcome pest problems have been analyzed. The analysis confirmed the need not only to use devices for repelling and exterminating, but also to develop devices using electrophysical methods. This requires appropriate research. As a result of such research, a model of an electrical contact grid was proposed, which serves as a stun gun to repel rodents.

Key words: deratization, deratizer, ultrasound, rodents, fighting methods, electroshock.

During his life, a person, in addition to the influence exerted directly on the environment, affects such an important our world component, like animals. It comes from the fact that a man in his original form acted as a passive observer, then moving, as he progressed, to more decisive actions to preserve his values and devices that made his life and work easier.

The problem of protecting agricultural facilities from rodents is relevant and important. Rodents cause significant damage to agricultural commodities, causing both financial and technological damage.

To effectively control rodents, it is necessary to understand their behavior and habits. Rats are especially non-infectious, intelligent, they can detect the danger of traps and adapt to different conditions. Rodent damage not only leads to losses, but can also cause the spread of infections, posing a threat to the health of

people and animals. It is important to protect the agricultural sector from rodents, as this will save significant resources and prevent the spread of diseases.

Animal behavior interacts with humans with an increasing role in this process. Research of rodent control methods and analysis of existing devices based on the electrophysical method of control were carried out. There are various types of interaction between animals and humans in the world. There are three types of animal reactions to human activity: passive, aggressive, and a reaction of adaptation to updated living conditions. From this information we can conclude that humans need to control the behavior of animals in order to reduce the possible negative consequences of their impact. With the development of scientific and technological progress, humanity has learned to use the world around us, obtaining the desired results.

As mentioned above, managing animal behavior is necessary to reduce the negative consequences of their activity. In this regard, methods for such management have been developed. In addition to directly influencing animal behavior, there are opportunities to control and to regulate animal populations. It is also possible to affect only certain species of animals while minimizing the impact on others.

The use of animal behavior control tools in the agro-industrial complex has a positive effect in protecting agricultural land from pests, improving performance in livestock production and reducing maintenance and nutrition costs. Also, the use of systems for regulating animal behavior in agricultural processing companies makes it possible to reduce the damage caused by pests to raw materials, which does not require taking measures to improve the quality of the products produced.

The search for problems related to identifying the contribution of rodents to various manifestations of human activity, as well as the study of methods for reducing the harm they cause, lead to an assessment of the effectiveness of the use of pest control devices and the results of the measures taken.

The issue of providing the population with adequate nutrition is an important goal of every state. It includes not only the production and processing of products,

but also the inventories creation, especially grains and their processing, as well as other products such as meat, milk and dairy products. To ensure the production of high-quality food industry products, it is necessary to strictly comply with the requirements when accepting, storing and processing raw materials. It is also important to carry out sanitary and hygienic control with the necessary frequency, especially with regard to deratization.

Figure 1. An example of ultrasonic repeller

To assess the possible damage from rodents for organizations in agriculture, it is necessary to take into account the degree of infestation. Currently, the ratio of rodents to animals over a certain time period is only calculated. For example, in poultry houses this ratio was 1:10, that is, one rat per ten birds. It means, that 10% of the feed is consumed daily by rats, since it is known that rats eat and waste more feed than adult birds. Economic losses increase significantly if the rat population begins to feed on eggs and chickens, that is, finished products. Cases have been recorded where egg losses amounted to 5% of total production. For example, at one of the poultry farms, after the extermination of rodents in the experimental premises, the collection of eggs increased daily by 600-1000 eggs without changes in feeding and keeping the birds, while this effect was not observed throughout the entire poultry farm.

The essence of its work is that the vibration emitted by the device (sound and ultrasonic) affects the senses. In addition to the hearing organs, the generated waves affect the entire body of rodents. The essence of its work is that the vibration emitted by the device (sound and ultrasonic) affects the senses. In addition to the hearing organs, the generated waves affect the entire body of rodents.

To achieve the greatest coverage of the treated area, it is recommended to install the device on open and free surfaces, such as shelves or tables. Avoid installing the device near soft surfaces such as carpets or curtains, and avoid placing the device behind partitions or furniture to prevent absorption of the emitted waves.

The presence of rodents in agricultural enterprises leads to various negative consequences, including damage to equipment, the spread of infectious diseases, damage to buildings and agricultural products. Ultrasonic repellers are an effective means of controlling rodents and have a wide range of performance characteristics. The use of a stun gun with appropriate parameters may be promising in the fight against rodents and requires further study and development.

Литература:

1. Возмилов А.Г., Козлов А.В., Суринский Д.О., Соломин Е.В. Обоснование необходимости борьбы с вредителями (грызунами) объектов АПК. Анализ технологий и технических средств для отпугивания и уничтожения // Международный научный журнал «Альтернативная энергетика и экология». – 2013. – №15. – С. 69-73.

2. Каспийская аграрная столица: состояние и тренды развития / Р. И. Дубин, Р. А. Арсланова, А. С. Бабакова, Г. К. Кудрявцева // Каспий в цифровую эпоху: материалы Национальной научно-практической конференции с международным участием в рамках Международного научного форума «Каспий 2021: пути устойчивого развития», Астрахань, 27 мая 2021 года / Астраханский государственный университет. – Астрахань: Издательский дом «Астраханский университет», 2021. – С. 262-264. – EDN XDOBVZ.

3. Широбокова Т.А., Шувалова Л.А. Энергетический анализ производства продукции животноводства // Вестник Ижевской государственной сельскохозяйственной академии. – 2020. – № 1(61). – С. 72-78.

4. Бабакова, А. С. Проблемы обеспечения карантинной безопасности растениеводческой продукции в Прикаспийском регионе / А. С. Бабакова, Р. А. Арсланова, Ж. А. Вилкова // Каспий: прошлое, будущее, настоящее : Сборник научных статей / Сост. К.А. Маркелов [и др.]. – Астрахань : Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Астраханский государственный университет", 2021. – С. 86-88. – EDN JGPAKO.

5. Суринский Д.О., Агапов В.Н., Смолин Н.И. Электрофизические методы борьбы при дератизации сельскохозяйственных помещений // Вестник КрасГАУ. – 2015. – № 1 (100). – С. 113-116.

6. Суринский Д.О., Агапов В.Н. Электрофизические методы борьбы при дератизации объектов АПК // В сборнике: СОВРЕМЕННАЯ НАУКА АГРОПРОМЫШЛЕННОМУ ПРОИЗВОДСТВУ. сборник материалов Международной научно-практической конференции, посвящённой 135-летию первого среднего учебного заведения Зауралья - Александровского реального училища и 55-летию ГАУ Северного Зауралья. – 2014. – С. 191-196.

7. Арсланова, Р. А. Проблемы обеспечения фитосанитарной безопасности продукции растениеводства в странах Прикаспийского региона / Р. А. Арсланова, А. С. Бабакова, Ж. А. Вилкова // Известия Нижневолжского агроуниверситетского комплекса: Наука и высшее профессиональное образование. – 2020. – № 4(60). – С. 85-96. – DOI 10.32786/2071-9485-2020-04-08. – EDN KELADW.

8. Суринский Д.О., Бахтырева Н.Г., Козлов А.В., Соломин Е.В. Разработка и исследование эффективности электродератизатора для защиты объектов АПК // 19 Альтернативная энергетика и экология. – 2013. – № 15 (137). С. 74-77.

References

1. Vozmilov A.G., Kozlov A.V., Surinsky D.O., Solomin E.V. Justification of the need to combat pests (rodents) of agricultural facilities. Analysis of technologies and technical means for repelling and destruction // International scientific journal “Alternative Energy and Ecology”. – 2013. – No. 15. – pp. 69-73.

2. Caspian agrarian capital: status and trends of development / R. I. Dubin, R. A. Arslanova, A. S. Babakova, G. K. Kudryavtseva // Caspian in the digital age: Proceedings of the National Scientific and Practical Conference with international participation within the framework of the International Scientific Forum "Caspian 2021: ways of sustainable development", Astrakhan, 27 May 2021 / Astrakhan State University. - Astrakhan: Publishing House "Astrakhan University", 2021. - C. 262-264. - EDN XDOBVZ.

3. Shirobokova T.A., Shuvalova L.A. Energy analysis of livestock production // Bulletin of the Izhevsk State Agricultural Academy. – 2020. – No. 1(61). – pp. 72-78.

4. Babakova, A. S. Problems of ensuring quarantine safety of plant products in the Caspian region / A. S. Babakova, R. A. Arslanova, J. A. Vilkova // Caspian Sea: past, future, present : Collection of scientific articles / Compiled by K.A. Markelov. K.A. Markelov [and others]. - Astrakhan : Federal State Budgetary Educational Institution of Higher Professional Education "Astrakhan State University", 2021. - C. 86-88. - EDN JGPAKO.

5. Surinsky D.O., Agapov V.N., Smolin N.I. Electrophysical methods of control during deratization of agricultural premises // Bulletin of KrasGAU. – 2015. – No. 1 (100). – pp. 113-116.

6. Surinsky D.O., Agapov V.N. Electrophysical methods of control during deratization of agricultural objects // In the collection: MODERN SCIENCE OF AGRICULTURAL PRODUCTION. a collection of materials from the International Scientific and Practical Conference dedicated to the 135th anniversary of the first secondary educational institution in the Trans-Urals -

Aleksandrovsky Real School and the 55th anniversary of the State Agrarian University of the Northern Trans-Urals. – 2014. – P. 191-196.

7. Arslanova, R. A. Problems of ensuring phytosanitary safety of crop production in the countries of the Caspian region / R. A. Arslanova, A. S. Babakova, J. A. Vilkova // Izvestiya Nizhnevolzhskogo agrouniversitetskogo kompleksa: Science and Higher Professional Education. 2020. № 4(60). C. 85-96. DOI 10.32786/2071-9485-2020-04-08. EDN KELADW.

8. Surinsky D.O., Bakhtyreva N.G., Kozlov A.V., Solomin E.V. Development and study of the effectiveness of an electroderatizer for the protection of agricultural objects // 19 Alternative energy and ecology. – 2013. – No. 15 (137). pp. 74-77.

THE USE OF IT IN THE ENGINE CONTROL ROOM

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Abstract. Manned engine-rooms are rare nowadays. Modern automation systems such as remote control and alarm and monitoring systems make it possible to operate most engine-rooms unmanned, at least part of the time. In day-time engineers can execute planned maintenance and repairs or replacement of defective parts. Because engine-rooms are usually warm, damp and noisy, an un-manned engine-rom is advantageous. For ships with simple electrical installations it may be feasible to design a manned engine-room and delete the expensive and complicated automation for remote control, alarm and monitoring systems, fire-detection systems, fuel leakage detection, etc. Automatic starting of a stand-by generator set, automatic closing of a dead bus bar after failure of the running set and automatic starting of all essential electric consumers is a SOLAS requirement for all ships, including those with a manned engine-room.

Keywords: engine control room, automation, UMS, main engine.

UMS or Unattended Machinery Spaces is a marine automation system for ship's engine room. Unlike conventional watch system on normal cargo ships, in UMS class vessels, there are usually no engineer officers on watch in the engine room. If there is a malfunction in any machinery, an alarm will be sounded in the engine room as well as in the 'on duty' engineer's cabin. It's then the engineer's duty to go down in the engine room and investigate the alarm. But Do all ships have UMS – Unattended Machinery Spaces? Absolutely No Merchant Navy Ships are classified as Manned Ships or UMS (Unattended Machinery Spaces) Ships depending on the watch keeping system followed in the Engine Room of that particular ship.

Manned ships are those ships where engine room follows the same watch keeping system as that of the Bridge watch keeping. In manned engine room ships

the 2nd engineer keeps the 4 to 8 watch in the morning & evening, 3rd engineer keeps the 12 to 4 watch in the afternoon & midnight and 4th engineer keeps the 8 to 12 watch in the morning and night time. The engineers are accompanied by their respective duty oilers. The Chief Engineer, Electro Technical Officer (ETO), Fitter and Junior engineer work in day work and always available on call during night time.

In UMS (Unattended Machinery Spaces) Ship all the crew in the engine room works in day work that is from morning 8 to evening 6. The duty engineer and duty oiler, in addition to day work, go for UMS safety rounds in the morning 7 to 8 and night time 11 to 12. Please note that the day work hours may differ from ship to ship depending on the Voyage type, Port calls and Machinery breakdowns.

After 6 o'clock in the evening, the engine room goes into the UMS mode until next day morning 7 o'clock. The 2nd engineer, 3rd engineer & 4th engineer will take the UMS duties in rotation [1].

The duty engineers have a UMS alarm panel in their cabin. The UMS panel is also present in the chief engineer's cabin, navigation bridge and all other common spaces like officers mess room, duty mess room, officers recreation room and gymnasium.

Whenever there is something wrong with any machinery in the engine room during UMS period, the UMS alarm sounds in the duty engineers cabin, on the bridge and in the common spaces.

The duty engineer can check the alarm details in his cabin panel itself then he accepts the alarm in his cabin and goes down in the engine room and accepts the alarm. This process of accepting the alarm should be carried out within 5 minutes otherwise the engineer's call will get activated and the alarm will sound in each duty engineer's cabin and chief engineer's cabin.[3]

When the UMS alarm gets activated, the dead man system also gets activated with it automatically. The duty engineer should rectify the problem and should reset the alarm. He can call for help if required. The duty engineer needs to put off the DEAD MAN ALARM manually before going out of the engine room.

Main engine control system is used for automatic remote control and protection of main ship's diesels. It permits to change direction and speed rotation of propeller directly from the bridge by navigators. The system consists of the equipment installed on the bridge, engine control room (ECR) locally mounted near the engine.

The set of Engine Remote Control equipment in ECR essentially consists of a panel fitted up with the various signalling, alarm and control facilities, in addition to the electronic modules (both logic and analog).

Electronic Control Modules Rack comprises:

a) Engine starting and reversal logic module, with LED display (direction of rotation indicator) of logic status and starting set-point adjust potentiometer status;

b) Digital/analog engine RPM converter with cut-in thresholds and LED display of the status of the thresholds and thresholds adjusting potentiometers.

c) Engine control programmer with LED display of stand-by, RPM reduction, emergency, etc. and acceleration gradient adjusting potentiometer.

d) RPM controller with potentiometers for variables and operating limits adjustment.

e) Torque lirniter, with limit indicator.

Locally Mounted Equipment comprises electro-hydraulic type actuator, for remote control of the fuel linkages; the said actuator is continuously linked mechanically to the lever and is therefore driven by the manual handwheel when it is deenergized.

The equipment also comprises induction type pick-ups to monitor the number of RPM's and rotating direction, as well as a five-position servo-motor, complete with four devices to position the engine local control lever for reversing gears and starting air distributors for engine stop, running ahead, starting ahead, running astern, starting astern. Equipment on Bridge comprises:

1. Engine telegraph.

2. Automatic control panel. It has the following items mounted on panel front

a) Manual power limiter.

b) Engine speed fine adjustment potentiometer.

c) Illuminated push-button for bridge control demand.

d) "Control transfer inhibited" signal display.

e) "Control on the bridge/ECR" signal display.

f) Direction of engine rotation indicator (LED).

g) Engine RPM indicator.

h) Fuel oil lever actuator position indicator.

3. Shield push-button for emergency stop and emergency manoeuvring [2].

The use of automation systems on the ship helps to efficiently use resources such as fuel and energy. They automatically control the operation of engines and power systems, which leads to a reduction in fuel and operating costs, which in turn allows you to save significant money during the life cycle of the vessel. In addition, automation helps to improve the safety of ship operations.

References

1. Andresen V.A., Goldberg M.E. and others. Automation of marine power plants and systems. L.: Shipbuilding, 1973. 212 p.

2. Antonovich S.A. Dynamic characteristics of the objects of regulation of marine diesel installations. L.: Shipbuilding, 1966. 195 p.

3. Perelman R.S. et al. Integrated automation of the SEU. M.: Phoenix, 2008. 268 p.

COMPUTER NETWORKS ON BOARD SHIP

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Abstract. A digital shipping industry means computer networks are vital to your performance. The given paper represents an introduction to how they work, and what to consider when you design them. Though surrounded by water, computer networks on board vessels are similar to those found in any other industrial environment, like factories or airplanes. It is important for the company to keep in touch with the ships. This requires a unified network infrastructure.

Keywords: digital shipping industry, communication, network, ship, computer.

Communication is vital in any business or industry and this is especially true of situations involving ships where the vessel might be in the middle of the ocean surrounded by nothing but only the ocean for hundreds of miles on all sides. You might find it difficult to imagine the old days when there were no radio signals and the ship was just an isolated object left to the mercy of the elements of nature. There was no news of the land nor was any medium of convey messages ashore except perhaps by throwing a corked bottle containing a message and hoping that some years later someone might find it by chance and the word gets out. This might seem an adventurous scenario but believe me it was really a hard time. Modern day science has changed all this and computers use internet supplied via satellites to communicate with the shore through emails and satellite phones [1]. Nowadays as far as communication is concerned it hardly makes a difference whether is ship is stranded in the middle of Pacific Ocean or is moored at a busy harbor.

The key components of the ship's IT network

Vessels come in all shapes and sizes. So do their computer networks. What follows is a run-through of the core components on which all onboard computer networks are based. Modem: assuming the vessel has an Internet connection, the first device on the network is the modem. Vessels can connect to the internet via different platforms (usually 4G/5G or satellite), but they all require a modem.

Router:

The router does two things:

1. It enables the local network to share a single Internet connection (from the modem).

2. The router creates a subnet. The router does this by assigning names (IP addresses) to every unit on the local network (LAN). Once each unit is given a unique name, the router can route the traffic to and from them.

Switch

Once the router has established the network and assigned names to the connected units, the switch physically directs traffic within the local network. Another way to look at it: The router connects your network to other networks. The switch connects units within your network.

Example: If you're in Japan and want to send a message via email to your colleague in the UK, the router will direct it towards your overseas colleague. But if you wish to print the same text from the printer on your local network, the message will find its way there via the switch.

Server

As the name suggests, the server serves its users by providing access to shared resources like the network operating system, applications, and data. It also processes data from sensors and devices, such as CCTV cameras or sonars, before forwarding it to the appropriate output units (monitors).

Clients (users)

The units that allow you to access and use the network are known as clients. These include laptops, computers, cell phones and PLCs. All clients have

processing power and can send and/or receive data to/from the network. Clients have unique IP addresses.

Cables/wires

Data passes through the network via cables, also referred to as wires. Common examples are coaxial cables and fiberoptic cables. Today, most networks consist of a combination of hardwired and wireless connections.

Peripherals

We divide peripherals into three categories:

1. Input devices

2. Output devices

3. Storage devices

Input devices include cameras, keyboards, mouses and sensors. Output devices include monitors, printers, and speakers. Storage devices can be anything from harddrives to USB memory sticks. Peripherals aren't technically part of the network, but you can't use the network without them. The whole point of a network is to send and/or receive data, which requires inputs and outputs. The illustration further up presents a selection of peripherals in the context of the computer network.

Navigation is equally important apart from communication since it is not much use if you are in the middle of the ocean and can talk to your company at land but do not know where to proceed [3]. Modern day navigation equipment such as GPS and other devices help a navigating officer to exactly follow the route despite darkness, bad weather or poor visibility.

Cargo operations which require precise balancing of the cargo on board whether it is bulk cargo or liquid oil cargo is necessary to ensure safety and stability of the ship even in trying weather conditions. Although this was done through manual calculations earlier, these days' computers make this task very easy for the chief mate or the concerned officer. They can visually see the representation of various cargo levels and other parameters directly on the screens in front of them and the computer performs other calculations for them helping to

load the cargo in a quick, efficient and safe manner [4]. The screen shot below of the Loadmaster programs shows the progress of such an operation.

Training & Simulation is very necessary and these days computers are used for these purposes. There might be several situations which occur very rarely in actual life but it might be necessary to train junior officers and staff to handle such situations. Computer simulations are the best means to do so without having to imitate the exact situation in real life. This certainly helps to give experience and knowledge to the staff in a much more effective manner than by verbal or theoretical lectures alone.

Accounting is necessary on a ship since it carries a number of people who are all employees and need to be remunerated in a proper manner. It is therefore necessary to keep proper details of salaries, advances, provisions purchased and so on [5]. These accounting jobs are pretty much the same as those required on land in company offices and computers tend to make the life of the person incharge quite easy.

While a computer network on board a ship is principally the same as one on land, the surrounding environment is quite different. On land, you're usually at liberty to optimize the surroundings [2].

On board a vessel, there are unique challenges:

Temperature differences, moisture, and vibrations.

Redundancy for critical systems like propulsion or air compressors.

Complete darkness: Monitors ought to be dimmable down to a minimum to preserve your night vision.

Intense ambient light (non-ideal for viewing monitors).

Space restrictions: Close proximity between units means they need shielding from electro-magnetic radiation.

In general, automation of processes on sea vessels can significantly increase the efficiency of vessels and reduce the risks of emergency situations, which is important for ensuring safety on the water.

References

1. Goffman A.D. Propulsion-steering complex and ship maneuvering. L. Shipbuilding, 1987. 360 p.

2. Gusakovsky A.V., Rakitin V.D., Solyakov O.V., Yatsuk Yu.V. Mathematical modeling of the operation of the automatic control system for the movement of a vessel. Journal of Marine Radio Electronics "Ships and weapons as a single system." Issue 4 (26) December. St. Petersburg: Bell Printing House, 2008, p. 14-16

3. Karetnikov V.V., Rakitin V.D., Sikarev A.A. Automation of navigation, St. Petersburg, 2007. 264 p.

4. Rak A.N., Gorbaneva A.S. On the Applicability of the Concept “Energy Efficiency” on Sea Vessels of the Fishing Fleet // Analysis of the results of innovation developments: problems and prospects : the proceedings of International scientific conference. St. Petersburg, 2023, pp. 20-21.

5. Sappo A.A., Varankin D.K. Automation of Processes on Ships // Science of the present and future. 2023.T. 2. Pp. 192-193.

THE USE OF IT IN NAVIGATION AIDS

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Abstract. Nowadays, most cargoes for export/import are processed through maritime transportation. Large-scale and high-speed vessels make maritime transportation more and more complex, which causes frequent maritime accidents. The rise of these maritime accidents can be reduced by providing systematic and appropriate safety information about them. For this, navigation aids are actively being used. However, because navigation aids are managed and maintained by using a manager's visual observation, as well as by using a lighthouse and a buoy tender, checking the position error of a mooring buoy and its real-time condition becomes impossible. As a solution, this study analyzed the problem of current navigation aids and suggests a method to manage navigation aids, which is applicable to IoT (Internet of Things) technologies.

Keywords: navigation, marine, aids, ECDIS, chart, computer.

In this article, we will talk about the latest navigation system on ships. But there are still vessels that do not have this system installed. Each vessel is equipped with its own type of navigation.There are basically 4 types of marine navigation, applicable in the Morden ships which includes;

- Celestial navigation
- Dead reckoning navigation
- Inertial navigation
- Electronic navigation

The Celestial navigation – one of the oldest type of navigation but still not outdated. It's the art and science of navigating by the sun, stars, moon, and planets.

In the recent time, this method is use as a backup to modern technology, lecture purposes or even for fun in maritime museum. Celestial is quite similar to

triangulation, archive by use of two celestial bodies and an instrument called sextant.

Dead Reckoning Navigation (DRN)– This is achieved by calculating your current position by using a previously determined position. The word dead reckoning is derived from biological way of animals traces back their part.

Though dead reckoning is subject to cumulative errors, however advances in navigational aids that give accurate information on position, in particular satellite navigation using the Global Positioning System (GPS), which have made dead reckoning more simple by humans obsolete for most purposes.

Inertial navigation system (INS) – This type of navigation system uses dead reckoning to provide very accurate directional information. This is achieved with the help of an accelerometer and gyroscopes electronic sensors' continuous calculate by dead reckoning position, orientation, speed and moving objects without the need for external references. Inertial navigation is widely use in shipping industry today.

The Electronic navigation – With the modification of technology, this type of navigation is achieved with the methods of radio frequencies(to determining a position), satellite and radar (to determine position relative to known objects).

New ship laws are being introduced every year. And soon everyone will be obliged to switch to IoT. Because the latest navigation system will protect ships from human errors. One of these systems is ECDIS.

ECDIS is an advanced navigational system used by ships. It combines electronic charts with radar, GPS, and other navigational aids to provide a comprehensive view of the ship's position about its surroundings. ECDIS allows for safer navigation, more efficient route planning, and real-time updates on weather conditions, sea state, and other essential factors that can affect a ship's voyage. This system has become increasingly popular due to its ability to improve safety at sea and reduce the risk of human error in navigation. The purpose of an ECDIS is to provide more accurate, safe navigation for the ship. This system combines radar, GPS, and other navigational aids for greater accuracy and faster

route planning. It also provides real-time updates on weather conditions, sea state, and other essential factors that can affect a voyage at sea. An ECDIS has become increasingly popular due to its ability to reduce the risk of human error in navigation while improving safety at sea.

Electronic Chart Display And Information System (ECDIS)

An improvement in the nautical chart system used by ships and navy vessels is the Electronic Chart Display and Information System (ECDIS). The marine crew of a ship now has an easier time locating specific places and obtaining directions thanks to the usage of computerized charts.

By showing specific information from a System Electronic Navigational Chart, ECDIS conforms with IMO Regulations V/19 and V/27 of the SOLAS convention as modified (SENC). Paper charts can be replaced with ECDIS technology that complies with SOLAS regulations.

Along with increasing navigational safety, automated features like route planning, route monitoring, automatic ETA computation, and ENC updating considerably reduce the effort of the navigator. Other advanced navigation and safety functions offered by ECDIS include continuous data recording for later analysis.

The ECDIS uses the Global Positioning System (GPS) function to identify navigational locations accurately. Additionally, it should be emphasized that the ECDIS complies with the rules established by the International Maritime Organization, which increases the reliability of the electronic chart system.

In its simplest form, ECDIS is a navigational information system that interfaces with various navigational tools like the GPS, Gyro, RADAR, ARPA, Echo Sounder, and others.

Additionally, ECDIS includes and displays data from other nautical publications like tide tables and sailing directions and data from other sources, including radar, weather, ice conditions, and automatic vessel identification.

ECDIS is a computer-based navigation system used on ships to provide navigational information. It is used to display electronic charts and other

navigational data and provide route planning, monitoring, and tracking capabilities. ECDIS is an essential tool for the safe navigation of ships, allowing the crew to make informed decisions about their voyage. Using ECDIS helps reduce the risk of human error in navigation and increases safety at sea. It also allows for faster passage planning, improved situational awareness, and better decision-making when navigating difficult conditions. ECDIS can also be used to monitor vessel performance, such as speed over ground or fuel consumption, helping ship operators save time and money. ECDIS is now mandatory on larger vessels in most countries. Although the development and use of electronic navigation were not new, the introduction of ECDIS technology marked a significant change in modern navigation. Electronic navigational systems have been used since the late 1970s, but they were designed primarily to support military operations. Early electronic charts needed more features and required manual updating by the navigator, making them less useful than paper charts. The addition of graphical displays and digital presentation increased awareness of what could be done with computers in chart display, opening up possibilities for how freely data could be shown on screens and changes.

ECDIS is a technology used in the maritime industry to help ships navigate safely. ECDIS provides a digital platform for navigation and replaces traditional paper charts. It also allows ships to identify obstacles in their path and avoid them. The system combines data from various sources, such as weather, maritime notes, and route planning, into one digital platform on a tablet or computer.

ECDIS is used by mariners to plan, monitor, and execute safe voyages on the sea. It helps them to track their ship’s position, speed, heading, course over ground, distance traveled, and other important information related to their voyage. In addition, ECDIS can also be used for route planning by providing detailed information about the terrain of the sea floor and any potential hazards that may lie ahead. With its user-friendly interface, ECDIS makes it easier for mariners to understand the navigation data they are presented with. A navigation chart is a detailed map showing an area’s coastline or waters. They are drawn to scale, are

accurate, and can be used for several purposes in navigation, including calculations of distances, speed, and direction. They can also be used in chart plotting to give the position of any point on the chart. A navigation chart is sometimes called a maritime chart or nautical atlas. Nautical charts are available on ECDIS displays and have been made more accurate with improved cartography in recent years, thanks to modern GPS receivers and computer mapping programs. In addition, they are now being made interactive so that they can be downloaded onto one's tablet or smartphone for use when away from shore.

The advancements in navigation systems on chips have greatly improved safety at sea and reduced the risk of human error. The combination of traditional methods like celestial navigation with modern technology such as ECDIS has made navigation more accurate and efficient. As new ship laws are introduced, the transition to IoT and advanced navigation systems like ECDIS will become mandatory for all vessels. The future of marine navigation is moving towards more automated and integrated systems to ensure the safety of ships and their crew.

References

1. Bowditch N. The American Practical Navigator: An Epitome of Navigation. Defense Mapping Agency Hydrographic/Topographic Center, 2002.

2. Burch D. Celestial Navigation: A Complete Home Study Course. Starpath Publications, 2010.

3. Groves P.D. Principles of GNSS, Inertial, and Multisensor Integrated Navigation Systems. Artech House, 2013.

4. International Maritime Organization. "ECDIS User Manual." IMO Publishing, 2014.

5. Kaplan E.D. Understanding GPS: Principles and Applications. Artech House, 2005.

6. Spilker J.J. Global Positioning System: Theory and Applications. American Institute of Aeronautics and Astronautics, 1996.

HOW INNOVATIVE TECHNOLOGIES CAN CHANGE MARITIME SHIPPING

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Abstract. Maritime transportation remains an integral part of the global economy. Together with the emergence and advancement of new technologies, as well as increasing demands for efficiency and environmental safety, the industry is undergoing significant change and transformation. The implementation of the latest technological solutions has become a necessity for shipping companies that strive to remain competitive and adapt to a dynamically changing market [1]. The application of innovative technologies in maritime transportation provides extremely numerous advantages, allowing effective management of the ship and its power system, which, in turn, significantly reduces the risks of negative impact on the ecological system. This paper provides an overview of the prerequisites for technological innovation.

Keywords: Maritime transportation, innovative technologies, shipping technologies, autonomous ships, sustainable development, shipping safety

Emerging technologies in the maritime industry include autonomous vessels, marine robotics, new materials, blockchain, internet of things, advanced communications, artificial intelligence, virtual and augmented reality. These technologies are used to improve navigation, fuel efficiency, and safety. New classes of vessels have emerged in the maritime industry, including autonomous vessels and digital twins. These technologies are expected to revolutionize the industry in the coming years. The maritime transportation industry is constantly evolving and new technologies are being developed to improve efficiency, safety and sustainability [1].

Let's take a look at some of the major current trends in the maritime industry.

1. **Artificial Intelligence.** The integration of Artificial Intelligence (AI) into the maritime industry brings a transformative approach to various aspects of maritime activities. This innovation spans the spectrum from optimizing navigation and traffic management to sustainability and safety. Key application areas include autonomous navigation using reinforcement learning, predictive ship maintenance using machine learning, and the implementation of multi-agent systems for maritime traffic management. Other impact areas include environmental monitoring and regulatory compliance using neural networks, intelligent port operations using genetic algorithms, and intelligent aquaculture using Internet of Things sensors and machine learning. In addition, artificial intelligence aids ocean exploration and resource mapping using simultaneous localization and mapping (SLAM) algorithms, improves weather forecasting for maritime operations using complex learning, and enhances crew safety using computer vision and biometric analysis. These artificial intelligence applications combine to provide benefits such as increased efficiency, accuracy, and 24/7 availability [3]. They facilitate cost savings, personalized customer interactions and predictive analytics. In the maritime industry, these technologies are being used in real-world projects, such as the Intelligent Maritime Traffic Management System, which demonstrates how artificial intelligence improves safety, efficiency and resilience by realizing autonomous vessel control, collision avoidance, real-time monitoring, weather-aware navigation and dynamic risk assessment. Ultimately, these advances position artificial intelligence to drive innovative solutions that propel the maritime industry towards a future characterized by increased efficiency, safety, and environmental responsibility [4].

2. **Robotics and 3D printing.** Underwater marine robots such as autonomous underwater vehicles are a promising alternative for mankind to perform research tasks in the sea. These vehicles are capable of exploring the underwater environment using on-board instruments and sensors. They are widely used in civilian applications, scientific research and military missions. In recent years, the rapid growth of deep learning has contributed to tremendous theoretical

breakthroughs and practical applications of computer vision-based underwater object detection [4]. By integrating deep learning-based underwater object detection capabilities on board, the perception of underwater marine robots is expected to improve significantly. Underwater object detection will play a key role in marine robotics.

Recently, the use of 3D printing technology in the production of marine industrial equipment has resulted in various benefits, including cost reduction, compatibility, waste reduction, increased availability, optimization, the ability to make rapid design changes, and custom parts. One of the key opportunities for 3D printing in the marine industry is the ability to quickly and cost-effectively manufacture complex parts using a wide range of materials such as lightweight thermoplastics, composites and metals. This technology enables faster and more cost-effective repair of damaged ship parts at sea, thereby reducing ship downtime [**Ошибка! Источник ссылки не найден.**]. Moreover, 3D printing offers the opportunity to produce parts and equipment on demand, reducing the need for storage space and ensuring that the required parts can be reproduced anywhere, anytime. Future adoption of 3D printers on ships will make it easier to print small spare parts such as bolts and nuts, bearings, valves and fittings on board, thereby significantly reducing waiting times and logistics costs. However, thanks to continuous technological advances and increased investment in research and development, it is expected that 3D printing will soon revolutionize the manufacturing of equipment for the marine industry.

2. **Autonomous driving or unmanned transportation.**

Unmanned ship transportation is the future of maritime transportation, and it has many advantages for shipowners, shipping industry, environment and so on. Prototype unmanned commercial ships will enter international maritime trade in the coming years. The entry of these ships will increase the safety of navigation and hence various maritime events will be significantly reduced. One of the innovations of these vessels is the exclusion of crew members from the board of directors. One of the most important issues is the regulations governing these

vessels. According to the fact that the technology of these ships is modern and most maritime laws operate in the same way as in the nineteenth century, the lack of a proper legal framework is quite obvious [**Ошибка! Источник ссылки не найден.**].

Several strategies can be used to promote technological innovation in the maritime transport sector, primarily by encouraging and investing in research and development activities to develop new technologies and improve existing ones. This can include partnerships with universities, research institutes and other companies. Governments can provide financial incentives and funding to companies investing in new technologies and innovation. This can include tax incentives, grants and subsidies [6]. Collaboration among industry players should be encouraged to share knowledge and resources and work together to develop new technologies. Governments can also create regulations and standards that promote innovation and new technologies. These can include emissions, safety and performance standards. Companies can use open innovation strategies to collaborate with external partners to develop new technologies [7]. This can include partnerships with startups, universities and other companies in the industry. The use of digital technologies such as big data, IoT and blockchain can help improve efficiency, reduce costs and increase transparency in the maritime transportation industry.

References

1. Masyuk N. N. Sovremennie tendentsii tsifrovoi transformatsii v morskoi [Current trends digital transformation in the maritime industry]//Vladivostok: Estesstvenno gumanitarnie issledovaniya № 44 [Vladivostok: Natural humanitarian studies № 44], 2022. p.205.

2. Melnyk O. Focused research on technological innovations in shipping industry: review and prospects// Ukraine, Odessa: Transport development 2023.

3. Diane A. I. A Review and Categorization of Artificial Intelligence-Based Opportunities in Wildlife, Ocean and Land Conservation// Canada, Ottawa: Sustainability 2022.

4. Seyed R.S. The Crucial Interplay of Seas, Marine Industries, and Artificial Intelligence in Sustainable Development// Tehran, Conference: The Eighth International Conference on the Development of Technologies in the Field of Oil, Gas, Refining and Petrochemistry 2024.

5. Gavalas D. Digital adoption and efficiency in the maritime industry// Journal of Shipping and Trade 7(1) 2022.

6. Seyed R.S. Using robotics and artificial intelligence to increase efficiency and safety in marine industries// Iran, Conference: 2th International Conference on Creative achievements of architecture, urban planning, civil engineering and environment in the sustainable development of the Middle East 2024.

7. Moslem N. Application of 3D printing technology in the manufacturing of marine industry equipment // Conference: The 5th National Conference on Mechanical-Civil Engineering and Advanced Technologies 2023.

THE USE OF AI IN MODELING NEW MATERIALS AND ALLOYS

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Abstract. In this article, we touch on the topic of Artificial Intelligence and its prospects in the field of creating new substances. Let's consider the principles of operation of this mechanism. And also, we will see the opinion of an expert in this topic about a working prototype. The emergence of Artificial Intelligence (AI) has revolutionized various fields, and materials science is no exception. By harnessing AI algorithms, scientists and researchers have been able to expedite the process of discovering and designing new materials and alloys. This paper aims to explore the various applications of AI in the creation of novel materials and alloys, highlighting its benefits and potential challenges.

Key words: Artificial Intelligence, alloys, modeling new materials, benefits, stable materials

Google DeepMind researchers announced that using artificial intelligence they were able to discover 2.2 million previously unknown crystalline materials, of which 380 thousand were found to be stable. Many of them can be useful in various technological fields, from batteries to superconductors. Scientists using a robotic laboratory were able to reproduce parts of these materials. Previously, this would have taken years, but now it takes half a month.[2]

The A-Lab uses AI to manipulate a variety of ingredients, such as nickel oxide and lithium carbonate, to produce new and interesting experimental materials, some of which may have applications in future batteries. Results may be unpredictable. Even a human scientist usually doesn't create what is needed the first time. That's why sometimes robots just produce beautiful powder. Other times it's a melted gooey mess, or everything evaporates and nothing remains.

“At this point, a person will have to make a decision: What do I do now?” says Gerbrand Ceder, a materials scientist at the Lawrence Berkeley Laboratory (LBL) at the University of California, Berkeley. Robots should do the same. They analyze what happened, adjust the recipe and try again. Once again. And again. “You give them a few recipes in the morning, and when you get home, you might have a beautiful new «soufflé»…” says materials scientist Kristin Persson, Söder's collaborator at LBL. “Or maybe you’ll end up back in a burnt out mess!” But at least tomorrow they will make a much better «soufflé»” [1]

Recently, the range of “foods” available to robots at LBL has grown exponentially thanks to an artificial intelligence program developed by Google DeepMind. The algorithm, called GNoME, was trained using data from the Materials project - a free database of 150,000 known materials curated by Persson. Using this information, the artificial intelligence system proposed material designs containing 2.2 million new crystals, of which 380,000 were found to be stable. They do not decompose or explode, and therefore are most suitable for synthesis in the laboratory, which has expanded the range of known stable materials by almost 10 times.

When deciding whether a material can actually be manufactured, whether by human hands or robot hands, one of the first questions is whether it is stable. Typically, this means that a collection of atoms is in the lowest possible energy state. Otherwise, the crystal will want to turn into something else. Over thousands of years, people have continually added to the list of stable materials, initially by observing those found in nature or discovering them through basic chemical intuition or chance. Recently, materials have begun to be developed using computers [3].

How does it work?

1. AI-Assisted Materials Discovery:

1.1. Databases and Data Mining:

AI algorithms are employed to mine vast databases of existing materials, analyzing their properties, and identifying patterns and relationships. This enables

researchers to develop a comprehensive understanding of material behavior and aids in the formulation of new compositions with desired properties [1].

1.2. Predictive Modeling:

AI, combined with advanced computational simulations, predicts material properties with high accuracy. Machine Learning (ML) algorithms learn from existing data to generate reliable models that aid in the efficient design of new alloys based on specific requirements [1].

2. Optimization and Design

2.1. High-Throughput Experimentation:

AI algorithms automate the experimentation process, allowing for the rapid synthesis and testing of a wide range of materials and alloys. This approach significantly accelerates the discovery of promising candidates for various applications [3].

2.2. Multi-Objective Optimization:

AI-based techniques optimize materials and alloys for multiple properties simultaneously, considering trade-offs between conflicting objectives. This ensures the development of optimized materials with a fine balance of multiple desirable properties.

3. Material Process Optimization:

3.1. Real-time Process Control:

AI algorithms monitor and control various process parameters, optimizing material synthesis, refinement, and manufacturing. This leads to improved material properties, reduced waste, and enhanced process efficiency [2].

3.2. Defect Detection and Quality Control:
AI-powered technologies, such as computer vision, enable real-time defect detection during the manufacturing process. This helps in mitigating quality issues and reducing production costs by minimizing material waste.

4. Challenges and Future Directions:

4.1. Data Limitations:

The effectiveness of AI algorithms heavily depends on the quality and quantity of available data. Limited data availability, especially for novel materials, can hinder the accurate prediction and optimization processes [2].

4.2. Interpretability and Trustworthiness:

AI models often lack interpretability, making it challenging to understand the underlying factors driving material development decisions. Efforts are needed to improve the transparency and trustworthiness of AI-based systems in this field.

4.3. Integration of Human Expertise:

While AI plays a significant role in the materials discovery process, human expertise is essential for guiding and validating the results. The symbiotic collaboration between AI and human researchers will continue to be vital for future advancements [3].

The application of AI in the creation of new materials and alloys has revolutionized the field of materials science. With the ability to mine vast amounts of existing data, predict material properties, optimize compositions, and enhance manufacturing processes, AI accelerates the discovery and development of novel materials with tailor-made properties. However, challenges regarding data limitations, interpretability, and collaboration between human experts and AI must be addressed to fully realize the potential of AI in this domain.

References

1. Stephen M. Machine Learning: An Algorithmic Perspective, Second Edition (2nd. ed.), 2014. Chapman & Hall/CRC.

2. Millions of new materials discovered with deep learning [Electronic resource]: https://deepmind.google/discover/blog/millions-of-new-materials-discovered-with-deep-learning/ 2 p.

3. Jose R., Ramakrishna S., Materials 4.0: Materials big data enabled materials discovery // Applay Materials Today. 2018. Vol. 10. Pp. 127–132. DOI: 10.1016/j.apmt.2017.12.015

HOW AI AND NEURAL NETWORKS ARE HELPING DOCTORS IN VETERINARY DIAGNOSTICS

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Abstract. This article discusses the impact of artificial intelligence and neural networks on the work of veterinarians. The author emphasizes that the use of these technologies significantly improves diagnostic accuracy, helps to optimize animal treatment and prevent possible complications. The possibility of faster analysis of large data sets and research is also noted. The main idea of the article is that modern technologies make veterinary medicine more efficient and accessible to all, improving the quality of life of animals.

Keywords: Artificial Intelligence, veterinary medicine, diagnostics, medicine, neural network, digital technologies

In the last decade, artificial intelligence (AI) has become one of the key technologies that has made its way into people's daily lives, particularly in the field of veterinary medicine. Today, digital technologies help remotely monitor the condition of each animal, analyze its behavior, speed of development, identify the difference of animal diseases at early stages, and prevent infection of the herd.

Scientists of St. Petersburg State University "LETI" together with the University of Haifa (Israel) under the guidance of Dmitry Kaplun, Associate Professor of the Department of Automation and Control Processes of St. Petersburg State University "LETI", have created an effective tool - an effective alternative for measuring and monitoring parameters related to the health of the dog. The effective alternative is based on video analysis.

A team of scientists from Chelyabinsk State University (Chelyabinsk State University), led by Alexey Ruchay, together with colleagues from the Federal Research Center for Biological Systems and Agrotechnologies of the Russian

Academy of Sciences, have improved the method of non-contact weighing of cattle and small livestock and their productivity using artificial intelligence (AI) - now, to find out the weight of a calf after six months, it is enough to point a camera at the animal.

A team of scientists from the University of Queensland, led by Professor Ben Hayes, believe that the use of AI in breeding will accelerate the breeding of high performance animals.

Scientists from the University of Bristol, led by Professor Andrew Dawsey of Bristol Veterinary School, have proposed using AI to interact cattle. According to them "Slight changes in behavior can signal the onset of disease in an animal." Professor Dawsey's team has developed an AI that can recognize cows by their characteristic coloration and can track their movements. The scientists plan to collect data from 64 cameras installed on a dairy farm in the UK for 2 years. Then, based on the information obtained, a model will be created that will help identify patterns in the change of animal behavior at the earliest stages of mastitis and lameness development.

The high interest of both domestic and foreign researchers to the issue of using AI and neural networks in the field of veterinary medicine has caused a significant amount of research on this issue and determined the relevance of the selected problem

In veterinary medicine, AI and neural networks can assist veterinarians in diagnosing animals

For example, the IBM Watson for Oncology program is a supercomputer that can provide the most accurate answer to a question. It has access to various data sources, thanks to which the veterinarian will be able to make much faster decisions in the treatment of animals. It will also be able to make more accurate diagnoses

AI programs can also provide "home hospital" conditions. These are portable devices that can monitor heart rate, respiration, blood pressure and other various health indicators

The Sense program is a "nurse app." A hologram of a nurse who acts as a consultant. After the consultation, the program sends the information to the veterinarian and immediately connects you via video link to the doctor. The "nurse" will remind you to take medications or procedures.

In our work, we were able to study the existing programs that can help in optimization in the veterinary field. To date, there are a large number of programs involving AI, we have studied only a few of them. Every year the quality of veterinary medicine is improving, new approaches are formed, new programs appear, with the help of which diseases are diagnosed faster than in the case of traditional work of veterinarians, in addition, there are programs that help veterinary clinic in document management with the help of automatic filling of the patient's database.

Литература

1. Петербургские ученые предложили использовать искусственный интеллект для мониторинга состояния здоровья животных URL: https://kodeks-msk.ru/news/read/peterburgskie-uchenye-predlozhili-ispolzovat-iskusstvennyj-intellekt-dlya-monitoringa-sostoyaniya-zdorovya-zhivotnyh/novosti-obrazovaniya (дата обращения: 1.03.2024)

2. Астралийские ученые предложили использовать искусственный интеллект в селекции URL: https://xn--80aaowedegbx6b7a3h.xn--p1ai/avstralijskie-uchyonye-predlozhili-ispolzovat-ii-v-selekcii?ysclid=lt4qn5zgw8836817792 (дата обращения: 1.03.2024)

3. Ультразвуковое исследование органов пищеварения у животных / А. Р. Джумакова, Д. В. Бурковецкая, Г. Д. Меньшов [и др.] // Прикаспийский международный молодежный научный форум агропромтехнологий и продовольственной безопасности 2021 : материалы Прикаспийского международного форума, Астрахань, 01 января – 31 2021 года. – Астрахань: Издательский дом «Астраханский университет», 2021. – С. 39-40. – EDN OBAOVR.

4. В Великобритании намерены применить искусственный интеллект для раннего диагностирования мастита у коров URL: https://vetandlife.ru/sobytiya/v-velikobritanii-namereny-primenit-iskusstvennyj-intellekt-dlya-rannego-diagnostirovaniya-mastita-u-korov/?ysclid=lt4qu9xgx1630359742 (дата обращения: 1.03.2024)

5. Динамика накопления тяжелого металла (свинца) в органах и тканях крупного рогатого скота в биогеохимических условиях Астраханской области / Н. И. Захаркина, В. В. Зайцев, Ж. В. Огаркова, М. П. Колесников // Актуальные вопросы аграрной науки : Материалы Национальной научно-практической конференции, Ульяновск, 20–21 октября 2021 года. – Ульяновск: Ульяновский государственный аграрный университет им. П.А. Столыпина, 2021. – С. 172-177. – EDN QJULMN.

6. Челябинские ученые определяют вес домашнего скота с помощью искусственного интеллекта URL: https://chel.mk.ru/science/2023/05/03/chelyabinskie-uchenye-opredelyayut-ves-domashnego-skota-s-pomoshhyu-neyroseti.html?ysclid=lt4s71gbfb936601821 (дата обращения: 1.03.2024)

7. Искусственный интеллект в медицине URL: https://22century.ru/popular-science-publications/artificial-intelligence-in-medicine (дата обращения: 1.03.2024)

8. Потапов А.С. Искусственный интеллект и универсальное мышление / А.С. Потапов. – СПб: Политехника, 2012. – 711 с.: ил.

References

1. St. Petersburg scientists proposed using artificial intelligence to monitor the health status of animals URL: https://kodeks-msk.ru/news/read/peterburgskie-uchenye-predlozhili-ispolzovat-iskusstvennyj-intellekt-dlya-monitoringa-sostoyaniya-zdorovya-zhivotnyh /novosti-obrazovaniya (access date: 03/1/2024)

2. Australian scientists proposed using artificial intelligence in URL selection: https://xn--80aaowedegbx6b7a3h.xn--p1ai/avstralijskie-uchyonye-

predlozhili-ispolzovat-ii-v-selekcii?ysclid=lt4qn5zgw8836817792 (access date: 03/1/2024)

3. Ultrasound study of digestive organs in animals / A. R. Dzhumakova, D. V. Burkovetskaya, G. D. Menshov [et al] // Caspian International Youth Scientific Forum of agropromotechnologies and food security 2021 : proceedings of the Caspian International Forum, Astrakhan, 01 January - 31 2021. - Astrakhan: Publishing House "Astrakhan University", 2021. - C. 39-40. - EDN OBAOVR.

4. In the UK they intend to use artificial intelligence for the early diagnosis of mastitis in cows URL: https://vetandlife.ru/sobytiya/v-velikobritanii-namereny-primenit-iskusstvennyj-intellekt-dlya-rannego-diagnostirovaniya-mastita-u-korov/ ?ysclid=lt4qu9xgx1630359742 (access date: 03/1/2024)

5. Dynamics of heavy metal (lead) accumulation in organs and tissues of cattle in biogeochemical conditions of the Astrakhan region / N. I. Zakharkina, V. V. Zaitsev, J. V. Ogarkova, M. P. Kolesnikov // Actual issues of agrarian science : Proceedings of the National Scientific and Practical Conference, Ulyanovsk, 20-21 October 2021. - Ulyanovsk: Ulyanovsk State Agrarian University named after P.A. Stolypin. P.A. Stolypin, 2021. - C. 172-177. - EDN QJULMN.

6. Chelyabinsk scientists determine the weight of livestock using artificial intelligence URL: https://chel.mk.ru/science/2023/05/03/chelyabinskie-uchenye-opredelyayut-ves-domashnego-skota-s-pomoshhyu-neyroseti. html?ysclid=lt4s71gbfb936601821 (access date: 03/1/2024)

7. Artificial intelligence in medicine URL: https://22century.ru/popular-science-publications/artificial-intelligence-in-medicine (access date: 03/1/2024)

8. Potapov A.S. Artificial intelligence and universal thinking / A.S. Potapov. – St. Petersburg: Politekhnika, 2012. – 711 p.: ill.

ADVANCED DESIGN SOLUTIONS, DEVELOPMENTS IN INFORMATION TECHNOLOGY AND ARTIFICIAL INTELLIGENCE IN THE INFORMATION SOCIETY

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Abstract. The article refers to the question of artificial intelligence in different spferes in general and in agriculture in particular. The author gives definition of this phenomena according to the different authors' opinion. The analysis of the modern market situation is carried out and the results are presented. The author describes the situation in the Astrakhan region and comes to the conclusion that especially this region needs AI implementation.

Keywords: artificial intelligence, development, information technology, information society, agriculture.

Artificial intelligence (AI) is a field of computer science that deals with the creation of intelligent machines that can perform tasks normally performed by humans, such as visual perception, decision-making, speech recognition and language translation.

According to Gray Scott, an AI expert, "there is no reason or way in which the human mind will be able to catch up with artificial intelligence by 2035."

The AI market is predicted to grow by **$76.44 billion** from 2020 to 2025, with a compound **annual growth rate of 21%.** AI is already having a significant impact on our daily lives and is set to change our world in the coming years.

Information Technology(IT) is one of the key industries of the current world, having a huge impact on all areas of human life. Due to the constant development and innovation in this field, we are faced with new opportunities and challenges. In this project, we will look at the current trends in IT as well as its future prospects.

As I am studying at the Faculty of Agronomy, it was important for me to come up with a tool to help in this industry.

The climate of the Astrakhan region is **continental and dry**.

They are represented by zonal light chestnut soils in northern areas, brown semi-desert soils in more southern areas, and floodplain soils in the Volga-Akhtuba floodplain, delta and substeppe ilmens. Intrazonal - solonts and solonchaks - are found everywhere among all types of soils. Light chestnut soils are spread on the territory of the right and left banks of the Volga-Akhtuba valley only in the northern part. They occupy the most elevated areas and not continuous massifs, but are located in spots, discontinuous strips. The thickness of humus horizons of these soils is 30-40 cm, the amount of humus is small and it is distributed unevenly. Most often such soils are used for pastures. They are also potentially fertile. Brown semi-desert soils are located in patches among light chestnut soils and gradually expand their areas when moving from north to south, with increasing aridity of climate. Usually they are confined to levelled areas, but they can also be found on the Berov hillocks and other hills. Increased salinity is one of the main reasons for low fertility of these soils. Salts deposited at depth gradually move towards the surface, resulting in salinisation. Low amount of vegetation enriches such soils with organic matter, and dead plant remains coming to the surface decompose quickly. Brown semi-desert soils are rich in mobile forms of phosphorus and potassium, while nitrogen content is minimal and therefore such soils need mineral and organic fertilisers. Irrigation is also a prerequisite for this type of soil. Within the Caspian Sea, in the middle and southern part of the region, there are areas occupied by sands with different relief and area. Soil cover has not been formed there yet. Alluvial sod soils formed in the Volga-Akhtubinsk floodplain are the youngest and least formed soils and need protection from wind dispersion. These soils are the least valuable because they contain a small amount of humus. Alluvial-meadow soils are widespread in the central, most levelled part of the floodplain. In some parts of the floodplain, these soils stand out in the form of large masses. They are characterised by high humus content and are therefore

fertile. Grass-grass and sedge-grass-grass meadows are widespread here. These are the best soils of the floodplain. The near-terrace floodplain is not well defined. The soils in this part of the floodplain contain large quantities of humus and their composition resembles brown soils. There is no sharp transition of the Volga-Akhtuba floodplain into a delta. The delta occupies a lower position, which results in high moisture content caused by longer flooding and proximity of groundwater, which leads to waterlogging of soils. These soils are characterised by high humidity, silt composition and bluish tones. Peat is not formed here, but products of complete decomposition of organic matter are accumulated. Bog soils contain a lot of nitrogen, phosphorus, potassium, but they are used only after special reclamation measures. Soil salinisation increases in the delta. Extreme degree of soil salinisation leads to formation of solonchaks. Salts not only permeate the whole soil profile, but even accumulate in the form of white deposits on the surface or even crusts. A great diversity of soils is observed on the territory of the Western Ilmeno-Bugrovaya Plain. Here, between the Berov hillocks, where brown semi-desert soils are widespread, ilmenno-boggy, ilmenno-meadow soils are widespread in inter-hill depressions. They are formed by periodic flooding of ilmens during floods.

Due to the fact that some ilmens receive insufficient amount of water, there is drying of bottoms and formation of solonchaks.

Analysing the given information we come to the thought, how to minimise this problem with drought and increase survival and prosperity in the field of crop production.

A person being busy with his work, not having the opportunity to control the process of irrigation, could use distant switching on, and possibly automatic irrigation of his agro-farm.

In the heat of the day, moisture from the soil evaporates in a matter of hours, the soil becomes dry and crumbly. Not only plants with surface root system suffer, but also trees and shrubs, which usually have access to groundwater. Because in

the heat the level of groundwater drops significantly, and sometimes the water completely dries up. Which is very relevant for our region.

For this purpose, I would like to propose a development in the field of IT.

A special thermometer, which could also be controlled in a smart home system. This programme would include data on the amount of water in the ground and air temperature, and in case of lack of moisture, watering or spraying could be switched on remotely in the application.

For example, sitting somewhere in the office or at home on holiday, the farm owner receives a notification that there is not enough water in the soil and the temperature is higher, so he could eliminate this problem without travelling to the site. At the same time saving the financial cost of travelling to the site, time, as well as the cost of paying employees.

This technology would help to improve the quality and quantity of crops reducing the problem of "climate" in the soil.

The IT world never stops improving and changing the world around us. It is our job to be creative in our work to improve the world through advanced technologies, internet of things, blockchain and cloud computing. It is important to keep up with new developments and apply them in real life to remain competitive and successful in our fast changing world. Information technology has great potential in improving the lives of agronomy, agroengineering and agri-technology. It creates new opportunities and it also comes with risks and challenges. Therefore, it is important to develop effective information technology management strategies and ensure data security and confidentiality. In the future, with the advancement of technology, we can create larger scale developments in different areas. For easy and accessible work in fields, greenhouses and vegetable gardens, orchards.

Литература

1. Бабакова, А. С. Солнечная радиация и температура в производстве томатов / А. С. Бабакова, И. Н. Бабаков // Прогрессивные технологии

выращивания сельскохозяйственных культур в условиях орошения : Сборник научных трудов / Под научной редакцией Ш.Б. Байрамбекова ; Всероссийский научно-исследовательский институт орошаемого овощеводства и бахчеводства. – Астрахань : Индивидуальный предприниматель Сорокин Роман Васильевич (Издатель: Сорокин Роман Васильевич), 2017. – С. 22-26. – EDN YOWVQI.

2. Водный режим томата при капельном орошении и дождевании в засушливой зоне Астраханской области / Л. П. Ионова, А. С. Бабакова, Р. А. Арсланова, Н. Д. Смашевский // Астраханский вестник экологического образования. – 2018. – № 5(47). – С. 83-89. – EDN YCKDCH.

3. Айтпаева, А. А. Современное состояние и тенденции развития АПК Астраханской области / А. А. Айтпаева, Р. А. Арсланова, А. С. Бабакова // Социально-экономические и экологические аспекты развития Прикаспийского региона : Материалы Международной научно-практической конференции, Элиста, 28–30 мая 2019 года. – Элиста: Калмыцкий государственный университет имени Б.Б. Городовикова, 2019. – С. 253-256. – EDN HRVQKZ.

4. The trace elements influence on the tomato plants heat resistance in arid climate / L. P. Ionova, Z. A. Vilkova, R. A. Arslanova [et al.] // IOP Conference Series: Earth and Environmental Science, Novoivanovskoye, Virtual, 19–20 ноября 2020 года. – Novoivanovskoye, Virtual, 2021. – P. 012025. – DOI 10.1088/1755-1315/843/1/012025. – EDN HRLVHZ.

5. Digital technologies in producing programmable vegetable crops / A. Aitpaeva, R. Arslanova, A. Babakova, R. Dubin // The Caspian in the Digital Age : "The Caspian in the Digital Age" within the framework of the International Scientific Forum "Caspian 2021: Ways of Sustainable Development", Astrakhan, 27 мая 2021 года / Editors: Baeva Liudmila Vladimirovna, Markelov Konstantin Alekseevich. Vol. 2. – Astrakhan: Dela Press, 2022. – P. 002. – EDN SFCBLU.

6. Выращивание огурца в весенне-летней теплице с применением биопрепаратов / Р. А. Арсланова, Л. П. Ионова, Ж. А. Вилкова [и др.] //

Картофель и овощи. – 2019. – № 6. – С. 14-15. – DOI 10.25630/PAV.2019.12.65.003. – EDN CVDMHC.

References

1. Babakova, A. S. Solar radiation and temperature in tomato production / A. S. Babakova, I. N. Babakov // Progressive technologies for growing agricultural crops under irrigation conditions: Collection of scientific papers / Scientifically edited by Sh.B. Bayrambekova; All-Russian Research Institute of Irrigated Vegetable and Melon Growing. – Astrakhan: Individual entrepreneur Sorokin Roman Vasilievich (Publisher: Sorokin Roman Vasilievich), 2017. – P. 22-26. – EDN YOWVQI.

2. Water regime of tomato under drip irrigation and sprinkling in the arid zone of the Astrakhan region / L. P. Ionova, A. S. Babakova, R. A. Arslanova, N. D. Smashevsky // Astrakhan Bulletin of Environmental Education. – 2018. – No. 5(47). – pp. 83-89. – EDN YCKDCH.

3. Aitpaeva, A. A. Current state and development trends of the agro-industrial complex of the Astrakhan region / A. A. Aitpaeva, R. A. Arslanova, A. S. Babakova // Socio-economic and environmental aspects of the development of the Caspian region: Materials of the International Scientific- practical conference, Elista, May 28–30, 2019. – Elista: Kalmyk State University named after B.B. Gorodovikova, 2019. – pp. 253-256. – EDN HRVQKZ.

4. The trace elements influence on the tomato plants heat resistance in arid climate / L. P. Ionova, Z. A. Vilkova, R. A. Arslanova [et al.] // IOP Conference Series: Earth and Environmental Science, Novoivanovskoye, Virtual, 19–20 ноября 2020 года. – Novoivanovskoye, Virtual, 2021. – P. 012025. – DOI 10.1088/1755-1315/843/1/012025. – EDN HRLVHZ.

5. Digital technologies in producing programmable vegetable crops / A. Aitpaeva, R. Arslanova, A. Babakova, R. Dubin // The Caspian in the Digital Age : "The Caspian in the Digital Age" within the framework of the International Scientific Forum "Caspian 2021: Ways of Sustainable Development", Astrakhan,

27 мая 2021 года / Editors: Baeva Liudmila Vladimirovna, Markelov Konstantin Alekseevich. Vol. 2. – Astrakhan: Dela Press, 2022. – P. 002. – EDN SFCBLU.

6. Cucumber cultivation in spring-summer greenhouse with the use of biopreparations / R. A. Arslanova, L. P. Ionova, J. A. Vilkova [et al.] // Potatoes and Vegetables. - 2019. - № 6. - С. 14-15. - DOI 10.25630/PAV.2019.12.65.003. - EDN CVDMHC.

PROSPECTS FOR THE USE OF ARTIFICIAL INTELLIGENCE IN MARITIME TRANSPORT

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Abstract: The relevance of the research is due to the problem of using artificial intelligence (AI) in modern professional conditions. The purpose of the article is to identify the main advantages and disadvantages of using artificial intelligence to optimize and automate the operation of marine transport. The material characterizes autonomous vessels using AI for safe navigation. Special attention is paid to improving security systems and creating an intelligent system in the field of marine technology. The issue of the risks associated with AI, ethical aspects, and the training of highly qualified personnel for the development of an AI system continues to be debatable.

Keywords: artificial intelligence (AI), autonomous vessels, repair automation, security system, intelligent systems, logistics, accident prevention, marine transport.

The prospects for the use of artificial intelligence (AI) in maritime transport are promising. AI can help improve efficiency, safety and environmental friendliness in this industry, which is crucial for the future of the maritime transportation sector.

Artificial intelligence (AI) is one of the most innovative and promising fields in the modern world. In addition, its potential application in maritime transport does not go noticed. From autonomous ships to improved management and safety processes, AI is making significant changes to the maritime industry.

One of the most important prospects for the use of artificial intelligence in maritime transport is autonomous navigation. Developers are already working on creating ships capable of independently making decisions, maneuvering and

performing tasks without human intervention. This will improve the efficiency and safety of maritime transport, reduce operational costs and reduce the risk to the crew.

In addition, artificial intelligence can be used to optimize the operation of seaports and terminals. AI algorithms can be used to predict cargo flows and ensure efficient allocation of resources such as cranes and berths. This will help speed up cargo handling, reduce ship downtime and improve logistics operations planning [3].

Another promising area for the use of artificial intelligence in maritime transport is the improvement of security systems. AI can detect and prevent emergencies, analyze data from radars and sensors to predict dangerous conditions and take measures to prevent them. With the help of AI, it is possible to create intelligent video surveillance systems to detect unauthorized access and prevent crimes at port facilities.

In addition to this, artificial intelligence can be used to analyze and process the large amounts of data that marine transport generates every day. AI algorithms allow you to optimize routes, predict the demand for transportation services, manage stocks and offer the best solutions to optimize business processes in the marine industry.

Here are a few areas where AI can be applied [1,5]:

1. Autonomous vessels using artificial intelligence (AI) is an innovative direction in the development of marine technology, which promises to turn the industry of shipbuilding and the movement of goods on the water. They are vessels capable of functioning without human intervention and are fully controlled using highly efficient AI algorithms.

The main goal of creating autonomous vessels using AI is to improve the efficiency and safety of maritime navigation. Technology Also provides an opportunity for ships to make decisions and respond quickly to changing conditions on the way. Thanks to a set of sensors, a situation recognition system

and various algorithms, autonomous vessels are able to optimally plan routes, avoid obstacles and adapt to current weather conditions [2].

One of the main advantages of autonomous AI vessels is the minimization of human impact on the marine environment. They do not need a crew, which reduces maintenance costs and ensures less dependence on the human factor, which can be a source of errors and accidents. AI vessels are also able to effectively manage and control resource consumption, which helps to reduce emissions of pollutants and reduce negative environmental impacts.

In addition to environmental efficiency, autonomous vessels can bring significant economic benefits. With AI, they can increase the speed and efficiency of transportation, as well as reduce the cost of maintenance and maintenance of ships. Smart algorithms are able to analyze huge amounts of data and predict optimal routes, which leads to a reduction in travel time and lower fuel costs.

However, there are also some challenges associated with the development of autonomous vessels using AI. It is important to ensure the safety and reliability of such vessels, especially in conditions of variable weather conditions and oncoming traffic with other vessels. This requires the development of high-tech collision detection and avoidance systems, as well as the creation of a legal and regulatory framework for autonomous navigation [3].

In general, autonomous vessels using artificial intelligence represent a unique opportunity to modernize and improve the shipbuilding industry, transport logistics and international trade, providing an environmental, economic and safe alternative to traditional vessels. Their successful development requires joint efforts on the part of specialists in the field of marine technology, programming and regulatory regulation in order to realize their potential and make artificial intelligence an integral part of the future of maritime navigation.

2. Route optimization and logistics: Route optimization and logistics play an important role in the efficiency of international trade and cargo transportation. With the constant growth of global traffic volumes, the need to improve processes

is being fulfilled through the introduction of artificial intelligence (AI) in maritime transport [6].

Moreover, it has the potential to transform the maritime logistics industry by bringing innovation and optimizing often complex and inefficient cargo delivery routes. AI algorithms can analyze huge amounts of data, including information about the weather, technical characteristics of the ship, cargo, schedule and blocking objects on the way. This allows you to create optimal routes, taking into account all these factors.

One example of the use of AI in maritime transport is the optimization of cargo distribution between containers. AI systems can solve complex loading tasks, taking into account the density, weight and fragility of the cargo, as well as time and weather restrictions. This makes it possible to achieve optimal container loading, reduce costs and improve transportation safety.

In addition, it helps to optimize delivery routes, taking into account the limitations of ports and channels, in order to avoid delays, minimize travel time and reduce ship wear. AI algorithms can predict the optimal departure time, travel speed, and suggest alternative routes in case of obstacles or changing conditions [4].

Combining AI with marine logistics also opens up new opportunities to eliminate the influence of the human factor on the process of launching a vessel at sea. Automation using AI allows you to reduce the number of errors and reduce the risk of unforeseen situations related to the human factor, such as errors in planning or decision-making.

In general, the use of AI in maritime transport is a revolutionary technology that can improve the efficiency of logistics processes and the economic efficiency of cargo transportation. By optimizing routes and logistics with AI, we can expect significant cost reductions, reduced delivery times, and improved overall reliability of marine logistics.

3. Event forecasting and equipment maintenance: Modern ship repair is a complex synthesis of various technologies, with special emphasis on predicting potential

malfunctions, primarily in the field of electromechanical equipment. This issue is especially relevant in the context of the constant complexity of ship systems and high requirements for reliability and safety of maritime transportation.

The prediction of breakdowns in ship repair is based on a comprehensive analysis of large amounts of data obtained using modern diagnostic tools, including vibration analysis, thermography and acoustic diagnostics. In addition, machine learning and artificial intelligence methods are used in this process to process and interpret data. According to the conducted research, the integration of these methods makes it possible to increase the accuracy of forecasts to 85-90% [3].

Through the efforts of an integrated approach to predicting breakdowns in ship repair, significant progress has been made in preventing unforeseen failures. The developed algorithms make it possible to predict potential malfunctions with high accuracy, which contributes to timely repair work and significantly reduces the risks of unforeseen situations at sea.

Thus, the simulation results are a valuable tool for predicting potential breakdowns, allowing you to optimize the processes of maintenance and resource management on ships. The effective use of the presented data contributes to improving the reliability and service life of electromechanical equipment, which in turn contributes to improving the safety and economic efficiency of maritime transport.

5. Accident detection and prevention: In the modern world, ship accidents have become one of the most serious problems that can threaten the safety and even the lives of people on board. However, with the development of artificial intelligence (AI), new opportunities have emerged to detect and prevent such accidents. A report from the International Maritime Organization (IMO) shows that the use of AI in shipping can significantly improve safety and efficiency at sea.

One of the key tasks of AI on a ship is to detect potential threats and prevent accidents. With the help of advanced data analysis and machine learning technologies, AI-equipped devices are able to quickly process huge amounts of

information and identify risks associated with weather conditions, other vessels, currents, obstacles and other factors that can lead to accidents [2].

Due to the high level of automation, the AI on the ship has the ability to quickly respond to detected threats and act appropriately. He can reconfigure the ship's course, direct maneuvering and even stop the ship in case of a critical situation. In addition, AI-based systems can independently assess the condition of the vessel and offer recommendations for preventing breakdowns or malfunctions that may later cause accidents.

An important aspect of the ship's AI accident detection and prevention system is continuous monitoring and analysis of information. Sensors, cameras and other devices installed on the ship constantly collect data on the state of the environment and the parameters of the vessel. This data is transmitted to the AI, which conducts timely analysis and makes appropriate decisions.

It should be noted that the use of AI on a ship does not exclude human participation. AI-based accident detection and prevention systems can serve as an additional tool for the crew, providing them with additional data and recommendations. In this way, humans and AI work synergistically, increasing the safety and efficiency of navigation.

The use of artificial intelligence on a ship to detect and prevent accidents is an important step towards improving the safety and efficiency of maritime transport. AI allows you to quickly process huge amounts of information identify potential threats and respond appropriately. In the future, the use of AI in the field of navigation will expand more and more, and this will minimize the risks of accidents and create a safer and more reliable maritime communication.

6. Improved maintenance and repair: With the development of technology and the progress of artificial intelligence, shipowners and ship crews are faced with new opportunities to improve on-board maintenance and repair. The use of artificial intelligence (AI) on a ship can significantly improve the efficiency of operations and ensure more reliable and safe navigation [1].

One of the applications of AI on a ship is to optimize maintenance. Artificial intelligence systems can analyze and interpret data from various sensors on board in order to quickly detect malfunctions or prevent equipment failures. This allows the crew to have a real-time view of the ship's condition and take measures to eliminate problems before they become serious. Thanks to AI, predictive maintenance can also be implemented on board the ship, which allows you to plan repairs in advance and avoid unexpected stops.

Another important aspect of using AI on a ship is the automation of repairs. Artificial intelligence systems are able to analyze sensor data and diagnose faulty systems or equipment. This allows the crew to quickly identify the causes of problems and take measures to eliminate them. Moreover, the AI can offer the crew various repair options, taking into account the available resources and limitations of the vessel. Thus, the time spent on repair work can be reduced, and the crew will be able to return to normal operation faster [5].

The introduction of artificial intelligence on the ship also helps to prevent accidents and ensure safety. The AI can analyze data from various security systems and warn the crew about possible threats or violations. For example, AI systems can monitor the implementation of safety procedures and prompt the crew if they are not followed. This ensures stricter compliance with the rules and increases safety for both the crew and passengers and cargo.

In general, the use of artificial intelligence on the ship contributes to a significant improvement in maintenance and repair. This allows you to increase the efficiency of operations, reduce downtime and reduce the risk of accidents. Thanks to this, both shipowners and ship crews can ensure more reliable and safe navigation, thereby increasing their competitiveness in the modern maritime industry.

In conclusion, the prospects for the use of artificial intelligence in maritime transport promise significant improvements in the field of safety, efficiency and sustainability of operations. However, the successful implementation of AI requires the joint efforts of the industry and the state, as well as strict compliance

with ethical and legal norms. And only then will we be able to fully realize the potential of artificial intelligence in the marine field.

The use of artificial intelligence in maritime transport contributes to the automation and optimization of operations, improved planning and decision-making, as well as increased resource efficiency. This leads to an improvement in the competitiveness of maritime transport and a reduction in their negative impact on the environment.

However, it is also necessary to take into account the possible challenges and risks associated with the use of artificial intelligence in maritime transport. These include the need for highly qualified personnel to develop and support AI systems and algorithms, as well as cybersecurity and ethical issues.

In general, the prospects for the use of artificial intelligence in maritime transport are huge. By automating, optimizing and analyzing large amounts of data, AI can improve the efficiency and safety of maritime transportation, improve planning and decision-making, and reduce negative environmental impacts. If implemented correctly, artificial intelligence will become a reliable assistant and an innovative solution in the marine industry.

Литература

1. Гладкова А.М., Марушевский М.В., Фаустова О.Г. Искусственный интеллект и автоматизация в навигации и судоходстве. снижение влияния человеческого фактора // Вестник молодежной науки. 2021. №5 (32). URL: https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-i-avtomatizatsiya-v-navigatsii-i-sudohodstve-snizhenie-vliyaniya-chelovecheskogo-faktora

2. Кучугуров А. О. Вопросы прогнозирования в судоремонте: как предвидеть потенциальные поломки и предотвращать их // Актуальные исследования. 2023. №52 (182). Ч.I. С. 18-24. URL: https://apni.ru/article/7956-voprosi-prognozirovaniya-v-sudoremonte-kak-pr

3. Роль искусственного интеллекта в процессе автоматизации морских портов и терминалов. https://apni.ru/article/883-rol-iskusstvennogo-intellekta-v-protsesse-avto

4. Сидюков М. Е. Роль искусственного интеллекта в процессе автоматизации морских портов и терминалов // Актуальные исследования. 2020. №11 (14). С. 47-49. URL: https://apni.ru/article/883-rol-iskusstvennogo-intellekta-v-protsesse-avto

5. Шаров С.А. Искусственный интеллект в морской отрасли и его регулирование международным правом // Океанский менеджмент. 2024. №1 (24). URL: https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-v-morskoy-otrasli-i-ego-regulirovanie-mezhdunarodnym-pravom

6. Электроника и робототехника в морской индустрии: применение, преимущества и перспективы // Научные Статьи.Ру — портал для студентов и аспирантов. — Дата последнего обновления статьи: 22.11.2023. — URL https://nauchniestati.ru/spravka/elektronika-i-robototehnika-v-morskoj-industrii/

References

1. Gladkova A.M., Marushevsky M.V., Faustova O.G. Artificial intelligence and automation in navigation and navigation. reducing the influence of the human factor // Bulletin of Youth science. 2021. №5 (32). URL: https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-i-avtomatizatsiya-v-navigatsii-i-sudohodstve-snizhenie-vliyaniya-chelovecheskogo-faktora

2. Kuchugurov A. O. Questions of forecasting in ship repair: how to anticipate potential breakdowns and prevent them // Actual research. 2023. No.52 (182). Part I. S. 18-24. URL: https://apni.ru/article/7956-voprosi-prognozirovaniya-v-sudoremonte-kak-pr

3. The role of artificial intelligence in the automation of seaports and terminals. https://apni.ru/article/883-rol-iskusstvennogo-intellekta-v-protsesse-avto

4. Sidyukov M. E. The role of artificial intelligence in the automation of seaports and terminals // Actual research. 2020. No.11 (14). pp. 47-49. URL: https://apni.ru/article/883-rol-iskusstvennogo-intellekta-v-protsesse-avto

5. Sharov S.A. Artificial intelligence in the marine industry and its regulation by international law // Ocean management. 2024. No.1 (24). URL: https://cyberleninka.ru/article/n/iskusstvennyy-intellekt-v-morskoy-otrasli-i-ego-regulirovanie-mezhdunarodnym-pravom

6. Electronics and robotics in the marine industry: applications, advantages and prospects // Scientific Articles.ru – a portal for students and postgraduates. — Date of the last update of the article: 22.11.2023. — URL https://nauchniestati.ru/spravka/elektronika-i-robototehnika-v-morskoj-industrii/

CHART GPT IMPLEMENTATION IN COMPOSING MUSIC

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Abstract. This article examines the implementation of chart GPT during such creative process as music composing. It reveals to the different spheres of composing music by generating sequences of musical notes. The author stresses the advantages of Chat GPT implementation in this process.

Keywords: digitalization, digital technologies, chart GPT, composing music, creative process.

Chat GPT is a large language model developed by OpenAI, which has a number of features, including text creation, translation, writing various types of creative content and writing code. In recent months, there has been a growing interest in using Chat GPT to compose music.

How Chat GPT works for composing music

Chat GPT can compose music by generating sequences of musical notes. He does this based on a huge dataset of text and music data that he has been trained on. Chat GPT can create music in a variety of styles, including pop, rock, classical and electronic.

Users can interact with Chat GPT to compose music in two main ways:

1. Text generation: Users can provide Chat GPT with a text description of the desired music, for example, "write a fun pop love song" or "create a Baroque orchestral piece". Chat GPT will then generate the appropriate music sequence.

2. Interactive Composition: Users can also interact with GPT Chat in real time to compose music. Users can start with a melody or chord sequence, and then ask Chat GPT to add additional elements such as harmonies, rhythms, or orchestrations.

The benefits of using Chat GPT to compose music

Using Chat GPT to compose music has a number of advantages:

Convenience: Chat GPT is easy to use, even for those who do not have a music education.

Speed: Chat GPT can generate music very fast, allowing users to quickly create ideas and experiment with different sounds.

Diversity: Chat GPT can create music in a variety of styles, making it a valuable tool for composers seeking diversity in their work.

Limitations of using Chat GPT for composing music

However, there are some limitations in using Chat GPT to compose music.:

Quality: Although Chat GPT can generate impressive music, the quality can still be unpredictable. Sometimes the generated music may be too simple or lack musical coherence.

Copyright: Music created using Chat GPT may be copyrighted, which restricts its use without the permission of the owner.

Lack of musical theory: Chat GPT does not have a deep understanding of musical theory, which may limit its ability to create complex or sophisticated pieces of music.

The future of Chat GPT in Music composition

Chat GPT and other large language models are expected to play an increasingly important role in music composition. As these models evolve, it can be expected that the quality and variety of the music they create will grow, opening up new opportunities for composers and musicians.

Conclusion

Chat GPT is a powerful tool that can be used to compose music. Although it has some limitations, its advantages make it a valuable asset for those who seek to create music quickly and easily. With the further development of Chat GPT and other large language models, it can be expected that composing music using artificial intelligence will become even more widespread and effective.

Литература

1. YouTube «Rick Astley - Never Gonna Give You Up | Санбой Ai Cover»: URL: https://www.youtube.com/watch?v=rY4XmwODLr0&ab_channel=LeatherMan (дата обращения: 20.02.2024).

2. Yandex Dzen «ChatGPT получил музыкальную функцию: что умеет, какие есть конкуренты». URL: https://dzen.ru/a/ZUe-qDX89A3SPBOv (дата обращения: 20.02.2024).

3. Гроховская, И. А. Компьютерные игры как инструмент для изучения иностранных языков / И. А. Гроховская // Проблемы повышения эффективности научной работы в оборонно-промышленном комплексе России : Материалы IV Всероссийской научно-практической конференции, Знаменск, 15–16 апреля 2021 года / Астраханский государственный университет. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего образования «Астраханский государственный университет», 2021. – С. 350-354. – EDN FPMMRY.

4. Гроховская, И. А. Формирование познавательного интереса у школьников / И. А. Гроховская, А. Ю. Поддубная, Д. Ю. Светлова // Основные проблемы современного языкознания : сборник статей XI международной научно-практической конференции, Астрахань, 20–21 мая 2019 года. – Астрахань: Астраханский государственный университет, Издательский дом «Астраханский университет», 2019. – С. 22-26. – EDN VOJUAV.

5. Гроховская, И. А. Педагогические условия развития креативности личности / И. А. Гроховская, В. Х. Хамзяева, Р. Р. Буштекеева // Основные проблемы современного языкознания : сборник статей XI международной научно-практической конференции, Астрахань, 20–21 мая 2019 года. – Астрахань: Астраханский государственный университет, Издательский дом «Астраханский университет», 2019. – С. 26-30. – EDN TFYHNS.

References

1. YouTube “Rick Astley - Never Gonna Give You Up | Sunboy Ai Cover": URL: https://www.youtube.com/watch?v=rY4XmwODLr0&ab_channel =LeatherMan (access date: 02/20/2024).

2. Yandex Dzen “ChatGPT received a music function: what it can do, what competitors it has.” URL: https://dzen.ru/a/ZUe-qDX89A3SPBOv (date of access: 02.20.2024).

3. Grokhovskaya, I. A. Computer games as a tool for learning foreign languages / I. A. Grokhovskaya // Problems of increasing the efficiency of scientific work in the military-industrial complex of Russia: Materials of the IV All-Russian Scientific and Practical Conference, Znamensk, April 15–16 2021 / Astrakhan State University. – Astrakhan: Federal State Budgetary Educational Institution of Higher Education “Astrakhan State University”, 2021. – P. 350-354. – EDN FPMMRY.

4. Grokhovskaya, I. A. Formation of cognitive interest among schoolchildren / I. A. Grokhovskaya, A. Yu. Poddubnaya, D. Yu. Svetlova // Basic problems of modern linguistics: collection of articles of the XI international scientific-practical conference, Astrakhan, 20 –May 21, 2019. – Astrakhan: Astrakhan State University, Publishing House “Astrakhan University”, 2019. – pp. 22-26. – EDN VOJUAV.

5. Grokhovskaya, I. A. Pedagogical conditions for the development of personal creativity / I. A. Grokhovskaya, V. Kh. Khamzyaeva, R. R. Bushtekeeva // Basic problems of modern linguistics: collection of articles of the XI international scientific-practical conference, Astrakhan, 20 –May 21, 2019. – Astrakhan: Astrakhan State University, Publishing House “Astrakhan University”, 2019. – pp. 26-30. – EDN TFYHNS.

THE NEED FOR FENCING AND CONSTRAINTS ON AI WORK IN PUBLIC INFORMATIZATION

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Abstract. The article examines the impact of AI on civil society. It raises civil rights issues. The process of implementing and influencing AI in civil society. AI algorithms makes it difficult to understand the decision-making process and ensure accountability. Involve civil society organizations, community members, and policymakers in discussions about AI's impact and ethical implications.

Keywords: artificial intelligence; NGOs; development of digital platforms; target

As AI technologies evolve and the demand for training samples grows, the nature of trust-related issues will change. Today, private companies and governments' desire to gain access to personal data from internet users determine these issues. In this regard, individuals' attention to the value they receive in exchange for their personal data will increase. However, the development of digital platforms for social change will require participants to share their data for the training of AI systems. Today, the main obstacle is the security of individuals' data and the protection of their right to privacy. In the future, the dilemma between isolation and active participation in creating a digital infrastructure for society will become increasingly urgent. Volunteering and participation in civic initiatives involve the willingness of individuals to share their digital footprints in order to improve the accuracy of AI systems and provide data for self-learning intelligent systems. In other words, social change becomes synonymous with digital change. The "fuel" for this will be the digital traces of millions of people's lives. Under these conditions, personal rights and freedoms are ensured through purposeful

investment in personal data, which means their conscious sharing and not concealing. Non-profit organizations operating in Russia face a number of limitations. These include distrust from the urban population, the selectivity of government support for NGOs, seasonal fluctuations in the influx of volunteers, and a lack of qualified personnel, as well as difficulties in finding these people due to significant differences in the way they organize their activities.

It is obvious that digital technologies, including artificial intelligence (AI) systems, can help to solve some of these problems. They make the work of non-profits more transparent to the public, allowing them to quickly find volunteers through digital platforms. They also facilitate project planning and predictive analytics, which can help them, determine the effectiveness of their projects more accurately. On the other hand, digital technology can make it difficult for NGOs to operate. First, this is due to the increasing fierce technological rivalry between government regulatory services and civil society organizations. This technological confrontation makes it difficult to access and share data, coordinate NGO efforts, and increases the vulnerability of NGO leaders to various pressures. Secondly, new technologies offer great opportunities for destroying trust in civil society through information operations. Using AI allows you to transform information wars into fully automated processes, when neural networks collect the metadata of "targets" and analyze their psychological profiles using digital footprints to find vulnerabilities. Then, they generate artificial video content based on these psychological profiles and organize an army of bots that post it on social networks. The aim is to target messages to users who are most likely to share this information with their friends. Finally, an automated assessment is conducted to determine the devastating impact of the information campaign on society. To protect against lies, more and more advanced technical solutions based on machine algorithms are used. For example, providing links to the original source and alternative versions of a news message help users to be more critical of information, and automatic detection and blocking of false messages through the social network makes it difficult to disseminate them. Meanwhile, non-governmental organizations

(NGOs) can complement these engineering solutions with more sophisticated social technologies that enhance community reflection. An example of this would be civil initiatives for fact-checking as well as social projects aiming to teach Internet users to identify false news. Thus, "fake vaccination" is a promising tool to reduce exposure to lies, for example, through online games that reveal typical mechanisms of manipulating public opinion using examples of false news. In conditions of low social trust, NGO representatives can become opinion leaders in social networks, drawing attention to online platforms in order to increase media literacy among the Russians. The crisis of institutional trust in many countries is shifting political processes towards populism and authoritarian leaders, who declare their readiness to take extreme measures to protect citizens from local and global threats - from the imbalance in the national health system, to forced migrants, and the consequences of climate change.

This shift towards the conservative and authoritarian ends of the political spectrum increases the ability of leaders to form a vision of leadership that motivates them and, at the same time, reduces anxiety about an uncertain future. Such visions of the future, created for strategic purposes, enhance the self-confidence of society and unites it. However, leadership images of the future narrow the field of attention of followers to collective goals. The brighter they are, the less contradictory the picture of the present turns out to be, and the less susceptible the power apparatus is to weak signals of approaching changes that were not foreseen earlier.

References

1. Wouda, F., & Hutink, H. (2019). Artificial Intelligence In De Zorg: Begrippen, Praktijkvoorbeelden En Vraagstukken. Nictiz. Available at: https://www.nictiz.nl/wp-content/uploads/Rapport_artificial_intelligence_in_de_zorg.pdf

2. Wright, G. (2000). Review: 'General purpose technologies and economic growth' (Helpman, Wright, N. al, GRoom perion InN. Wright (red.) Artificial Inelligence, China, Russia and the global order (pp. 35-41). Air University Press.

3. Wright, N. (2019b). Artificial intelligence and domestic regimes: Digital authoritarian, digital hybrid, and digital democracy. In N. Wright (red.) Artificial Intelligence, China, Russia and the global order (pp. 21-34). Air University Press.

4. WRR. (2008). Onzekere Veiligheid. Verantwoordelijkheid Rond Fysieke Veiligheid. Amsterdam University Press.

INTERACTIVE ANATOMICAL ATLAS FOR STUDYING ANATOMY AND CIRCULATORY SYSTEM OF ANIMALS ANIMAL SYSTEM

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Abstract: In-depth knowledge of anatomy helps the veterinary specialist to diagnose and manage pathologies and diseases in time. The in-depth knowledge of anatomy helps a veterinary specialist diagnose and manage pathologies in time and prevent irreversible consequences prevent irreversible consequences. From this fact the relevance of this problem, the development of a new, convenient, interesting, interactive way of studying the structure and location of the circulatory system and animal anatomy follows. An interactive anatomical atlas anatomy is needed to explore the of domestic animals in greater detail with the through animation, three-dimensional graphics, and virtual reality technology reality. Using a three-dimensional model of anatomical structures with a visualization of all organs and blood vessels, it is possible to study the opportunity to study all the different aspects of animal body structure. This innovative development will help students of veterinary medicine veterinary students to understand better the anatomical and topographical relationships of organs and blood vessels topographical relationships of the organs and circulatory system, the precision of the structure of the of the domestic animal body. The interactive atlas has tremendous perspective in the development of modern, innovative ways of obtaining of knowledge in the educational process. It will help to attract students' interest to a detailed study of the anatomical basis of animal structure, to internalize the material due to the detailed and colorful structure of all systems of the organism animal body systems.

Keywords: atlas, interactivity, veterinary medicine, circulatory system, animal anatomy, virtual anatomy, technology, efficiency, multimedia.

Anatomy is the basis for the study of the structure of the body, any animal disease, the topography of organs and blood vessels, it provides an interaction of various anatomical structures, and it also can indicate the possible occurrence of pathological processes. Deep knowledge in the field of anatomy helps the veterinary specialist in time diagnose and manage pathologies and prevent the development of irreversible consequences. For students the study of such anatomical basics such as structure, species and age changes, topography, pathological processes in organs and blood vessels, are given very difficultly, requiring a high level of attention, persistence and motivation. From this fact the relevance of the problem under study, the development of a new, convenient, interesting, interactive way of studying the structure and location of the circulatory system and the anatomy animals arise. In the modern period, education is in a position where there is a difficulty in learning veterinary medicine with the help of interactive resources. In order to do so, it is necessary to develop the direction of this problem with the help of additional features such as three-dimensional graphics, virtual reality technologies, animation and 3D modeling.

Innovation in the educational sphere is one of the most important criteria of human development, it is quite complex, as well as requiring special knowledge and abilities of aspects [7]. Innovative aspects are closely connected with teaching and research, with scientific and methodological activities. Innovative technologies represent a subject of special activity, which are not satisfied by traditional methods, and in its turn requires improved content and quality response, as they had a small circulation. Researchers who have touched upon the problem of interactive education are N. Suvorova, O. Politu, Ya. Pirodenko, L. D. Klarin and many others. At the moment, the question of developing a newer virtual way of studying anatomy is developed by our compatriots from the Samara State Medical University. This issue is being investigated abroad: The development of an atlas dedicated to animal anatomy was carried out by Dr. Susanne Boroffka and Dr. Antoine Micheau.

Today, the task of a veterinarian is not only to treat animals, but also to

perform many different actions. The veterinarian is engaged in the prevention of diseases in productive and unproductive animals, as well as veterinary and sanitary expertise, laboratory diagnostics and develops skills in the study of various technologies. If we compare the study of human disease with veterinary medicine, it can be seen that technology lags behind the study of human beings diseases. And it can also be observed that high-tech advances tends are bypassed the veterinary medicine. In this field, there are no ready-made solutions practical solutions and therefore the actions applied in learning and in practice have to be adapted. It's necessary to project knowledge onto animals, and develop new methods independently. An interactive anatomical atlas is necessary for a more detailed study of the domestic animals anatomy through animation, three-dimensional graphics and virtual reality technologies. virtual reality [6]. With the help of a three-dimensional model of anatomical structures with visualization of all organs and blood vessels, it will be possible to learn all the different aspects of the animal body structure. Animal anatomy atlases in two dimensions do not currently fully meet the needs of today's learners at the time when digital technology is being actively utilized.

To increase motivative quality of students' knowledge in the field of morphology of agricultural and domestic animals it is necessary to use innovative technologies [3]. The anatomical atlas will be convenient for interaction with different parts of the animal body in the viewing mode, studying pathologies of blood vessels, arteries, veins, capillaries and organs, and it will be necessary when comparing healthy body structures with various anomalies. The effectiveness of introducing and utilizing a virtual atlas of the circulatory system will allow a full exploration of sections in anatomy [1]. With the application of interactive technologies, students will have an interest in deep study of anatomy of animals, as well as attention and diligence during the material studying. Interactive systems promote deep study of animal anatomy. For this purpose, it is necessary to apply three-dimensional visual technological aids for students, as well as for teachers. The program of the 3D interactive atlas must use a high quality material, and the

material should be reliable. For convenience and greater interest, the complex may include a description of the circulatory system and the anatomy of several species of domestic animals.

In the development of an interactive anatomical atlas, computer topography will be of great importance to help scan all the most important aspects of the animal's body in order to enter this data into the atlas program. Computer modeling is necessary to create a three-dimensional model of individual parts of the animal's body (organs, bones, blood vessels, etc.) but also of the skeleton itself in its entirety [5]. The work of 3D-scanner is necessary for the formation of a unified coordinate system, digitization of objects and obtaining a complete three-dimensional copy of the animal body structures necessary elements. Also, in information processing 3D-editors are very important programs, which will help to correct flaws and errors in the obtained data [4]. Earlier there was a possibility of ultrasound scanning and a two-dimensional model of the circulatory system created on its basis. Now the latest technologies allow to use both ultrasound and magnetic resonance scanning data, and create on their basis a three-dimensional model, which uses both geometric and hydrodynamic parameters of blood vessels. The system can help provide an examination of the flexibility and elasticity of blood vessels without the use of invasive techniques such as inserting catheters into veins and arteries. The atlas will be very useful for detecting arterial disease and, together with clinical data, it will allow reliable predictions to be made about the pressure in the walls of blood vessels, arteries, capillaries and veins [2]. When working with 3D objects, it will be possible to put any part on the screen.

In connection with the above, we conclude that an interactive anatomical atlas will be able to redirect the study of anatomy in a new direction. It will help to ensure the study of anatomical basics in full. A deep study of animal anatomy and circulatory system will present a tremendous opportunity to remedy this innovative development to future veterinary professionals, it will provide practical application of the acquired knowledge about the impact of pathological processes on the animal organism, structure and topography of various systems of the animal

organism. The study of interactive anatomy of animals, without losing the relevance, is becoming one of the rapidly developing disciplines. This innovative development will help students studying in veterinary specialties, more clearly understand the anatomo-topographical connections of organs and circulatory systems, the accuracy of the body structure of domestic animals. The interactive atlas of animals has a huge perspective in the development of modern, innovative ways of obtaining knowledge in the educational process. It will help to attract students' interest in a detailed study of the anatomical foundations of the structure of animals, to assimilate the material due to the detailed and colorful structure of all animal body systems.

Литература

1. Бармин С.В. Развитие мотивации студентов при изучении курса «Анатомия животных» с помощью интерактивных форм обучения / С.В. Бармин // Образовательная деятельность ВУЗа в современных условиях: Материалы международной научно-методической конференции, Караваево, 14 мая, 2015. Караваево: Костромская Государственная Сельскохозяйственная Академия, 2015. стр. 2. EDN UXXOOP.

2. Баймишев, Х. Б. Морфология венозной системы копытец бычков в зависимости от различной степени локомоции в раннем постнатальном онтогенезе / Х. Б. Баймишев, И. В. Хрусталева // Сельскохозяйственная биология. – 1988. – Т. 23, № 3. – С. 68-70. – EDN TZFAQ.

3. Зайцев, В. В. Сравнительная терапия йодной недостаточности у крупного рогатого скота в биогеохимических условиях Астраханской области / В. В. Зайцев, И. С. Михайлова // Перспективы развития научной и инновационной деятельности молодежи в ветеринарии : Материалы международной научно-практической конференции студентов, магистрантов, аспирантов и молодых ученых, пос. Персиановский, 15 июня 2021 года. – пос. Персиановский: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования

"Донской государственный аграрный университет", 2021. – С. 186-189. – EDN NAZSSL.

4. Бадиев, С. Р. Технология обучения, его сущность Methodological technoloqy and their content / С. Р. Бадиев // Педагогические науки. – 2010. – № 4(43). – С. 10-13. – EDN NCIIYJ.

5. Зависимость про- и антиоксидантной системы крупного рогатого скота в условиях селенодефицита в Астраханской области / В. В. Зайцев, И. С. Михайлова, Н. А. Пудовкин, Д. В. Воробьев // Каспий в цифровую эпоху : материалы Национальной научно-практической конференции с международным участием в рамках Международного научного форума «Каспий 2021: пути устойчивого развития», Астрахань, 27 мая 2021 года / Астраханский государственный университет. – Астрахань: Издательский дом «Астраханский университет», 2021. – С. 265-268. – EDN SYZZDQ.

6. Корч, М. А. Обзор современных технологических решений для изучения морфологических дисциплин / М. А. Корч // Современные тенденции развития образовательных технологий в аграрном вузе : материалы Всероссийской учебно-методической конференции, Екатеринбург, 26 ноября 2021 года. – Екатеринбург: Уральский государственный аграрный университет, 2021. – С. 149-151. – EDN ICXCTB.

7. Компьютерное моделирование в ветеринарии / А. М. Петров, А. В. Колсанов, Х. Б. Баймишев, А. К. Назарян // Известия Самарской государственной сельскохозяйственной академии. – 2019. – № 4. – С. 48-54. – EDN PLAGFV.

8. Минюк, Л. А. Опыт разработки и перспективы использования интерактивного анатомического 3d атласа по ветеринарии / Л. А. Минюк, Е. Н. Буракова, А. В. Нечаев // Инновации в системе высшего образования : Сборник научных трудов Международной научно-методической конференции, Кинель, 24 октября 2018 года / Самарская государственная сельскохозяйственная академия. – Кинель: Самарская государственная сельскохозяйственная академия, 2018. – С. 258-260. – EDN YSRWSL.

9. Пальтов А.Е. Инновационные образовательные технологии: Учебное пособие. – Владим. Гос. ун-т им. А.Г. Столетовых. – Владимир: Изд-во ВлГУ, 2018. – 119 с.

References

1. Barmin S. V. Development of students' motivation when studying the course "Anatomy of animals animals" with the help of interactive forms of teaching / S. V. Barmin // Educational activity of higher education institution in modern conditions : Materials of the international scientific and methodological conference, Karavaevo, May 14, 2015. Karavaevo: Kostroma State Agricultural Academy, 2015. P. 2. EDN UXXOOP.

2. Baimishev H. B. Morphology of the venous system of the acropodium of cattle horned cattle / H. B. Baimishev. Kinel : Samara State Agricultural Academy, 2018. 165 c. ISBN 978-5-88575-509-2. EDN XQXPNB.

3. Zaitsev, V. V. Comparative therapy of iodine deficiency in cattle in biogeochemical conditions of the Astrakhan region / V. V. Zaitsev, I. S. Mikhailova // Prospects for the development of scientific and innovative activities of young people in veterinary medicine : Proceedings of the international scientific-practical conference of students, undergraduates, graduate students and young scientists, Persianovsky settlement, 15 June 2021. - Persianovsky settlement: Federal State Budgetary Educational Institution of Higher Professional Education "Don State Agrarian University", 2021. - C. 186-189. - EDN NAZSSL.

4. Badiev, S. R. Teaching technology, its essence Methodological technology and their content / S. R. Badiev // Pedagogical Sciences. – 2010. – No. 4(43). – pp. 10-13. – EDN NCIIYJ.

5. Dependence of pro- and antioxidant system of cattle under conditions of selenium deficiency in the Astrakhan region / V. V. Zaitsev, I. S. Mikhailova, N. A. Pudovkin, D. V. Vorobyev // Caspian in the digital era : proceedings of the National Scientific and Practical Conference with international participation in the framework of the International Scientific Forum "Caspian 2021: ways of sustainable development", Astrakhan, 27 May 2021 / Astrakhan State University. -

Astrakhan: Publishing House "Astrakhan University", 2021. - C. 265-268. - EDN SYZZDQ.

6. Korch M. A. Review of modern technological solutions for the study of morphological disciplines / M. A. Korch // Modern tendencies of development of educational technologies in agrarian agrarian disciplines. of educational technologies in agrarian higher education : materials of the All-Russian educational and methodical conference. educational and methodological conference, Ekaterinburg, November 26, 2021. Ekaterinburg: Ural State Agrarian University, 2021. C. 149-151. EDN ICXCTB.

7. Computer modeling in veterinary medicine / A. M. Petrov, A. V. Kolsanov, X. B. Baimishev, A. K. Nazaryan // Izvestia Samara State Agricultural Academy. Agricultural Academy. 2019. No 4. C. 48-54. EDN PLAGFV.

8. Minyuk L. A. Experience of development and prospects of using interactive anatomical 3d atlas on veterinary medicine / L. A. Minyuk, E. N. Burakova, A. V. Nechaev // Innovations in the system of higher education : Collection of articles. Burakova, A. V. Nechaev // Innovations in the system of higher education : Collection of scientific papers of the International scientific and methodological methodology. scientific papers of the International scientific and methodological conference, Kinel, October 24, 2018 / Samara State Agricultural Academy. Kinel: Samara State Agricultural Academy, 2018. P. 258-260. EDN YSRWSL.

9. Paltov A.E. Innovative educational technologies: Textbook. - Vladim. State University named after A.G. Stoletovs. – Vladimir: VlSU Publishing House, 2018. – 119 p.

AI TECHNOLOGIES APPLICATION IN EDUCATION: NEW TEACHING METHODS

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Abstract. AI learning technologies are actively being introduced into the educational field, creating new teaching methods and improving the students educational process. This article examines the AI implementation application in education, including algorithms to build an individual educational trajectory, analyzes learning data and predicts student academic performance. Such methods as automated task checking and feedback from students make it possible to manage effectively the learning process and to improve students academic performance and the educational quality. The new technologies emergency opens up broad prospects for the education development and the creation innovative approaches to learning. Individual educational trajectory concept at the education present stage is also considered, a new teaching method idea creating with educational trajectory updated concept is put forward.

Keywords: education, individual educational trajectory, artificial intelligence (AI), methods, technologies.

In the modern world, artificial intelligence technologies are becoming more and more in demand in various human life spheres. So, AI technology has a growing impact on the educational system, adding innovative approaches and new possibilities to it. According to E.V. Molchanova, "educational materials, plans, lessons, journals, and diaries everything will be transferred to their digital versions" [1].

However, now, not only online services, but also AI systems, are used in education. Every day artificial intelligence is becoming more widely used in schools, universities and other educational institutions, helping teachers and students to reach new heights in the educational process.

One of the AI development key areas in education is personalization, which allows teachers to create personalized learning experiences for each student based on their individual characteristics. Thus, individual educational trajectories begin to form for students.

Individual educational trajectories play an important role in learning, as each student is unique and has their own strengths and weaknesses, interests and needs. The support of individual educational trajectories allows students to develop in accordance with their potential and characteristics.

It's worth noting that individual educational trajectories (IET) are "a series of measures, methods, forms of independent work organization, implementation of various educational technologies, and aimed at helping each student achieve their goals" [2]. Also, according to I.N. Bukhtiyarov, IET can be interpreted as a manifestation of the style of each student educational activity, in which this style corresponds to their motivation, training, and is carried out in collaboration with the teacher. [3] Currently, such trajectories exist, but they are developed personally by teachers. This process requires a significant amount of time, due to the need for conducting various tests and checking their results. However, considering using AI in education, the IET concept can be given a slightly different meaning. It will be explained as a set of measures and learning forms that are built using AI systems.

In other words, currently, individual educational trajectories are built basically on student's desire. This is expressed in choosing more suitable subjects. However, other important aspects of a student's education are not taken into account. For example, a system that builds individual educational trajectories does not take into account the speed at which the material is studied, grades for individual tests in certain subjects, or special additional materials availability for classes. But using AI, you can create another learning system that makes the whole process even more automated. With AI, a large database can be used in which data not only about grades is stored but also about all the completed materials, tests, and other tasks. Based on this data, the most optimal individual trajectory path can be created. It is worth noting that in this case, a lot of time will be spent on creating

such a database. However, this task can be solved using third-party electronic systems. Furthermore, it is worthwhile to translate most of the work done into an electronic format. For example, conducting verification tests on digital systems. This technology will help reduce the time required for checking tests and submitting the results to students.

Over time, it may be possible to combine several different systems into one generalized system. In future, this will also help reduce not only the time spent conducting tests and lectures but also the time needed to fill in necessary databases for IET.

Therefore, it is important to pay attention to the significance of automating knowledge assessment for implementing AI in education. Let's take a closer look at the automation of knowledge assessment. With the help of AI algorithms, we can create specialized systems for automatic knowledge verification based on the materials and tests that students have passed. This assessment allows teachers to focus on educational specific aspects and students to receive feedback on their work more quickly.

The data collected during this process can then be stored in a database to help organize an IET. AI algorithms can also be used to predict students' academic performance, determine the optimal learning strategies for them, and offer suggestions for choosing courses and materials for studying. Through the AI technologies using in education, teachers and students have access to new tools and resources that help them learn and teach more effectively. These algorithms can analyze data on students' past successes and failures, and predict their future outcomes, which helps teachers and students make more informed decisions about their education.

In the long term period, there technologies can lead to an improvement in the overall educational quality, as well as improved learning outcomes for students. Additionally, AI can also be used to find the most suitable additional materials for each student's individual needs. This can help them study at the speed

which is suitable for their own learning process and the learning will be more effective.

Furthermore, AI -based online courses and training programs can be tailored to each student's specific requirements, allowing them to study at their own speed and convenience.

Thus, we can conclude that the automation of knowledge assessment and the creation of new teaching methods based on data analysis present new opportunities for education to improve learning quality. The AI technologies using in education also presents new opportunities to enhance the learning quality and makes the educational process more efficient.

Thus, the use of AI technologies in education not only enriches the learning process, but also contributes to improving its efficiency and quality. The development of new AI-based learning methods opens up new horizons and opportunities for education to innovate and improve the education system.

Due to individualized curricula, data analysis, and student performance forecasting, learning becomes more effective and more accessible to all students. The modern IET concept takes on a new meaning, and education benefits from these innovations. These innovations allow teachers and students to reach new educational heights and to bring the 21st-century learning principles into reality.

Литература

1. Молчанова Е.В. О плюсах и минусах цифровизации современного образования / Молчанова Е. В. // Проблемы современного педагогического образования. 2019. С. 133-135. URL: https://cyberleninka.ru/article/n/o-plyusah-i-minusah-tsifrovizatsii-sovremennogo-obrazovaniya

2. Internet resources implementation in the English language teaching / R. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Основные вопросы лингвистики, лингводидактики и межкультурной коммуникации : сборник научных трудов по филологии XVI Международной научно-практической конференции, Астрахань, 15 апреля 2022 года. – Астрахань: Астраханский

государственный университет, 2022. – P. 6-12. – DOI 10.54398/20751699_2022_6. – EDN FNSHHP.

3. Шеманаева М.А. О трактовках термина «индивидуальная образовательная траектория» // Научно-методический электронный журнал «Концепция». 2017. № С12. 0,3 стр. URL: http://e-koncept.ru/2017/470154.htm

4. Бухтиярова И. Н. Метод проектов и индивидуальные программы в продуктивном обучении // Школьные технологии. 2001. № 2. С. 108-114.

5. Багринцева, О. Б. К вопросу о мотивации изучения иностранного языка студентов инженерных специальностей / О. Б. Багринцева // Основные проблемы современного языкознания : Материалы X международной научно-практической конференции, Астрахань, 23–25 апреля 2018 года / Министерство образования и науки Российской Федерации; Федеральное государственное бюджетное учреждение высшего образования «Астраханский государственный университет»; кафедра английского языка и технического перевода, Центр научно-технического перевода и методической деятельности «Вавилон». – Астрахань: Издательский дом "Астраханский университет", 2018. – С. 5-9. – EDN XQMBWX.

6. Багринцева, О. Б. Обучение профессионально-ориентированному языку посредством работы над междисциплинарными проектами / О. Б. Багринцева, Л. И. Балашова, Л. Д. Кривых // Иностранные языки и перевод в высшей школе : Сборник научных трудов. Том Выпуск 5. – Донецк: : ДонНУ, 2019. – С. 7-11. – EDN JKWPFN.

7. Кривых, Л. Д. Обучение иностранному языку с использованием ИКТ / Л. Д. Кривых, О. Б. Багринцева, Л. И. Балашова // Проблемы повышения эффективности научной работы в оборонно-промышленном комплексе России : Материалы IV Всероссийской научно-практической конференции, Знаменск, 15–16 апреля 2021 года / Астраханский государственный университет. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего образования «Астраханский государственный университет», 2021. – С. 366-371. – EDN ZAKKDS.

References

1. Molchanova E.V. On the pros and cons of digitalization of modern education / Molchanova E. V. // Problems of modern pedagogical education. 2019. pp. 133-135. URL: https://cyberleninka.ru/article/n/o-plyusah-i-minusah-tsifrovizatsii-sovremennogo-obrazovaniya.

2. Internet resources implementation in the English language teaching / R. E. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Basic issues of linguistics, linguodidactics and intercultural communication : collection of scientific papers on philology XVI International Scientific and Practical Conference, Astrakhan, 15 April 2022. - Astrakhan: Astrakhan State University, 2022. - P. 6-12. - DOI 10.54398/20751699_2022_6. - EDN FNSHHP.

3. . Shemanaeva M.A. On the interpretations of the term "individual educational trajectory" // Scientific and methodological electronic journal "Concept". 2017. No. S12. 0.3 pp. URL: http://e-koncept.ru/2017/470154.htm

4. . Bukhtiyarova I. N. Project method and individual programs in productive learning // School technologies. 2001. No. 2. pp. 108-114.

5. . Bagrintseva, O. B. Towards the question of motivation of foreign language learning of engineering students / O. B. B. Bagrintseva // Basic problems of modern linguistics : Materials of the X International Scientific and Practical Conference, Astrakhan, 23-25 April 2018 / Ministry of Education and Science of the Russian Federation; Federal state budget institution "Astrakhan State University"; the English language and technical translation department; the center of scientific and technical translation and methodical activity “Babilon”. - Astrakhan: Publishing House "Astrakhan University", 2018. - C. 5-9. - EDN XQMBWX.

6. . Bagrintseva, O. B. Teaching a professionally oriented language by working on interdisciplinary projects / O. B. Bagrintseva, L. I. Balashova, L. D. Krivykh // Foreign languages and translation in higher school : Collection of scientific papers. Vol. Issue 5. - Donetsk: : DonNU, 2019. - C. 7-11. - EDN JKWPFN.

7. Krivykh, L. D. Teaching a foreign language using ICT / L. D. Krivykh, O. B. Bagrintseva, L. I. Balashova // Problems of improving the effectiveness of scientific work in the defence-industrial complex of Russia : Proceedings of the IV All-Russian Scientific and Practical Conference, Znamensk, 15-16 April 2021 / Astrakhan State University. - Astrakhan: Federal State Budgetary Educational Institution of Higher Education "Astrakhan State University", 2021. - C. 366-371. - EDN ZAKKDS.

DIGITALIZATION AND EDUCATION

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Abstract. The article is an analysis of the state and prospects of information technology (IT) development in Russia. It presents the areas of application of IT in education, the direction of development and the problems existing in Russia.

Keywords: digitalization of learning, information technology, education, artificial intelligence, virtual reality.

Digitalization is one of the key trends in modern society, affecting all spheres of life, including education. In the modern world, the use of digital technologies is becoming increasingly important in education, opening up new opportunities and necessitating the adaptation of traditional educational models.

Digitalization is the process of introducing digital technologies and innovations into various fields of activity in order to improve the quality of services, increase work efficiency and provide competitive advantages [1].

In education, digitalization aims to transform from our usual learning to digital, which provides many advantages, such as:

• The opportunity to study without leaving home;

• the opportunity to make the learning process more interactive, accessible and effective;

• the transition to digital textbooks and access to a huge amount of reference materials that were not available to everyone earlier;

• a variety of courses and programs that allow students to consolidate their knowledge, try them out in practice.

At the moment, we are not talking about the complete digitalization of learning, but only about adding digital technologies to the learning process. Now

the universities and colleges of our country are implementing a mixed learning format [2].

Digital technologies are constantly developing and improving every day. Today, the main vector of development of IT technologies are: artificial intelligence (AI) and virtual reality (VR). These technologies open up new opportunities for students in the course of their studies.

Artificial intelligence is currently in the process of daily improvement, but already some models allow you to make the learning process easier and clearer, serve as an assistant for a teacher, and in some cases can help a student acquire a new skill on their own.

As examples, AI can allow a teacher to forget about routine activities such as checking homework and tests, performing them automatically with high accuracy, and AI is also able to create training programs for each student individually, taking into account his needs and inclinations [3].

Virtual reality is a powerful tool for creating interactive and immersive learning environments. It allows students and students to experience virtual scenarios and situations that were previously unavailable.

Advantages of using VR systems:

• Visibility (the possibility of a more detailed examination of objects and processes);

• concentration (in the virtual world, a person is not affected by external stimuli that distract from learning);

• Engagement (learning can be fully programmed and controlled);

• safety (in virtual reality, regardless of the complexity of the scenario, the student will not harm himself or others);

• Effectiveness (based on research ("The Impact of Virtual Reality on Academic performance" in Beijing.) it can be argued that the effectiveness of these classes is 10% higher, unlike classical training).

For example, students of medical educational institutions can independently try to perform complex operations, future pilots can conduct their first flights in virtual reality and much more [4].

Unfortunately, at the moment there are a number of problems for the successful digitalization of education in Russia. One of the problems we face is the need to prepare teachers to work with new technologies. Some teachers may have difficulty mastering and applying digital tools in the educational process.

Despite all the development of new technologies, the lack of accessibility of digital infrastructure in remote regions of the country, where there are still not enough computers and the lack of high-speed Internet, remains an urgent problem for our country.

Also, government agencies are now faced with the problem of dependence on foreign technologies and software. There are many actions in our country to support domestic developers and IT specialists who are currently developing technologies and software that we currently lack.

The most important problem is the lack of awareness of the inhabitants of our country and the weak interest of the population in digital technologies, which makes it difficult for their widespread introduction into everyday life and the learning process of students [5].

At the moment, a number of projects for the digitalization of education are being implemented in Russia:

1. Creating a unified information educational environment that will unite all educational institutions and provide access to digital educational resources and tools.

2. The introduction of educational platforms and online courses for distance learning and self-education to ensure access to education anywhere and anytime.

3. The introduction of digital technologies into the educational process (for example, interactive whiteboards, cloud storage for materials and assignments, electronic textbooks).

4. Updating curricula with digital technologies in mind (for example, the inclusion of programming, robotics, cybersecurity).

5. Professional development of teachers in the field of digitalization of education (conducting courses, trainings, workshops on digital technologies).

6. Creation of digital educational resources and platforms for adapting education to the needs of various groups of students (including children with disabilities).

Summing up, we note that the process of digitalization of education in Russia is an important area of development of the educational system, which brings with it both new opportunities and challenges. It is necessary to continue efforts to introduce digital technologies into the educational process, develop digital competencies of teachers, and expand access to education. Only with the joint work of the state, educational institutions and the business sector can success be achieved in the development of digitalization of education and provide high-quality education for future generations.

Литература

1.Виртуальная реальность в образовании URL: https://hsbi.hse.ru/articles/virtualnaya-realnost-v-obrazovanii/ (дата обращения: 8.03.2024)

2. Internet resources implementation in the English language teaching / R. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Основные вопросы лингвистики, лингводидактики и межкультурной коммуникации : сборник научных трудов по филологии XVI Международной научно-практической конференции, Астрахань, 15 апреля 2022 года. – Астрахань: Астраханский государственный университет, 2022. – P. 6-12. – DOI 10.54398/20751699_2022_6. – EDN FNSHHP.

3. Тевс, Д. П. Влияние информационных и коммуникационных технологий на профессиональную деятельность педагога / Д. П. Тевс // Вестник Барнаульского государственного педагогического университета. – 2001. – № 1-1. – С. 98-103. – EDN PYJDLR.

4. Багринцева, О. Б. Обучение студентов неязыковых специальностей английскому языку посредством подготовки проектов о культурно-исторических учреждениях / О. Б. Багринцева, Л. Д. Кривых, М. Г. Гаврикова // Язык и межкультурная коммуникация : сборник статей XI Международной научно-практической конференции, Астрахань, 08 ноября 2018 года. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Астраханский государственный университет", 2019. – С. 7-10. – EDN IVZSDU.

5. Portnova, E. E. Digitalization of higher education in the Russian Federation / E. E. Portnova //, 27 декабря 2023 года, 2023. – P. 123-129. – EDN PDJFMY.

6. Багринцева, О. Б. К вопросу о мотивации изучения иностранного языка студентов инженерных специальностей / О. Б. Багринцева // Основные проблемы современного языкознания : Материалы X международной научно-практической конференции, Астрахань, 23–25 апреля 2018 года / Министерство образования и науки Российской Федерации; Федеральное государственное бюджетное учреждение высшего образования «Астраханский государственный университет»; кафедра английского языка и технического перевода, Центр научно-технического перевода и методической деятельности «Вавилон». – Астрахань: Издательский дом "Астраханский университет", 2018. – С. 5-9. – EDN XQMBWX.

7. Буданцев, Д. В. Цифровизация в сфере образования: обзор российских научных публикаций / Д. В. Буданцев // Молодой ученый. – 2020. – № 27(317). – С. 120-127. – EDN VUHAMS.

8. Багринцева, О. Б. Обучение профессионально-ориентированному языку посредством работы над междисциплинарными проектами / О. Б. Багринцева, Л. И. Балашова, Л. Д. Кривых // Иностранные языки и перевод в высшей школе : Сборник научных трудов. Том Выпуск 5. – Донецк: : ДонНУ, 2019. – С. 7-11. – EDN JKWPFN.

9. Что такое «Цифровая образовательная среда» и для чего она создается? URL: https://obrmos.ru/go/go_scool/news/go_go_school_news_zifr_exp_zos.html (дата обращения: 8.03.2024)

10. Internet resources implementation in the English language teaching / R. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Основные вопросы лингвистики, лингводидактики и межкультурной коммуникации : сборник научных трудов по филологии XVI Международной научно-практической конференции, Астрахань, 15 апреля 2022 года. – Астрахань: Астраханский государственный университет, 2022. – P. 6-12. – DOI 10.54398/20751699_2022_6. – EDN FNSHHP.

References

1. Virtual reality in education URL: https://hsbi.hse.ru/articles/virtualnaya-realnost-v-obrazovanii/ (access date: 03/8/2024)

2. Internet resources implementation in the English language teaching / R. E. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Basic issues of linguistics, linguodidactics and intercultural communication : collection of scientific papers on philology XVI International Scientific and Practical Conference, Astrakhan, 15 April 2022. - Astrakhan: Astrakhan State University, 2022. - P. 6-12. - DOI 10.54398/20751699_2022_6. - EDN FNSHHP.

3. Tevs, D. P. The influence of information and communication technologies on the professional activity of a teacher / D. P. Tevs // Bulletin of the Barnaul State Pedagogical University. – 2001. – No. 1-1. – pp. 98-103. – EDN PYJDLR.

4. Bagrintseva, O. B. Teaching students of non-linguistic specialties English language through the preparation of projects about cultural and historical institutions / O. B. Bagrintseva, L. D. Krivykh, M. G. Gavrikova // Language and intercultural communication : collection of articles of the XI International Scientific and Practical Conference, Astrakhan, 08 November 2018. - Astrakhan:

Federal State Budgetary Educational Institution of Higher Professional Education "Astrakhan State University", 2019. - C. 7-10. - EDN IVZSDU.

5. Portnova, E. E. Digitalization of higher education in the Russian Federation / E. E. Portnova //, December 27, 2023, 2023. – P. 123-129. – EDN PDJFMY.

6. Bagrintseva, O. B. Towards the question of motivation of foreign language learning of engineering students / O. B. B. Bagrintseva // Basic problems of modern linguistics : Materials of the X International Scientific and Practical Conference, Astrakhan, 23-25 April 2018 / Ministry of Education and Science of the Russian Federation; Federal state budget institution "Astrakhan State University"; the English language and technical translation department; the center of scientific and technical translation and methodical activity “Babilon”. - Astrakhan: Publishing House "Astrakhan University", 2018. - C. 5-9. - EDN XQMBWX.

7. Budantsev, D.V. Digitalization in the field of education: a review of Russian scientific publications / D.V. Budantsev // Young scientist. – 2020. – No. 27(317). – pp. 120-127. – EDN VUHAMS.

8. Bagrintseva, O. B. Teaching a professionally oriented language by working on interdisciplinary projects / O. B. Bagrintseva, L. I. Balashova, L. D. Krivykh // Foreign languages and translation in higher school : Collection of scientific papers. Vol. Issue 5. - Donetsk: : DonNU, 2019. - C. 7-11. - EDN JKWPFN.

9. What is a “Digital Educational Environment” and why is it being created? URL: https://obrmos.ru/go/go_scool/news/go_go_school_news_zifr_exp_zos.html (access date: 03/8/2024)

10. Internet resources implementation in the English language teaching / R. E. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Basic issues of linguistics, linguodidactics and intercultural communication : collection of scientific papers on philology XVI International Scientific and Practical

Conference, Astrakhan, 15 April 2022. - Astrakhan: Astrakhan State University, 2022. - P. 6-12. - DOI 10.54398/20751699_2022_6. - EDN FNSHHP.

THE USE OF CHAT GPT BY STUDENTS IN EDUCATION

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Abstract. The article refers to the question of Chat GPT implementation in educational establishments. The author states about positive and negative effects of this instrument use. In the article there are different opinions about psychological and emotional effects risen by this tool application. In modern educational sphere there is a great problem of substitution of students' self-work by chart GPT. The author expresses her own opinion about the value of combination of Chart GPT with other educational tools.

Keywords: chart GPT, educational establishment, information technologies, students curriculum, information availability.

Chat GPT is an advanced technology that offers the ability to interact with chatbots that can generate human-like responses to user queries. In recent years, this technology has become increasingly popular among schoolchildren and students, providing them with unique opportunities to receive help and information. In this article, we will look at the pros and cons of using Chat GPT among students, as well as its impact on the learning process and interaction between students and teachers.

The use of chat GPT technology among schoolchildren and students has its pros and cons. One of the main advantages is the availability of information. Thanks to chatbots, students can quickly get information and answers to questions, which allows them to focus on subjects that are more interesting and meaningful to them [1]. This helps optimize the learning process and manage time more efficiently. As a result, students may not experience such significant discomfort when studying subjects of no interest, which helps maintain their motivation for education in general.

However, instead of independently studying the material and preparing homework on their own, they include the possibility of unconscious dependence on technology. Students may be inclined to rely solely on chatbots for answers, without fully understanding and mastering the material. This can lead to a superficial understanding of the subject and loss of ability to solve problems independently.

It is worth noting that Chat GPT is still limited in its ability to process and analyze large amounts of information, so there is a risk that students may receive erroneous, inaccurate or unverified answers [2].

The use of chat GPT may, in some cases, result in decreased communication between students and their teachers. Students may prefer to interact with a chatbot instead of contacting tutors, which will not always be conducive to their full learning.

In addition, using chat GPT instead of studying the material independently may reduce students' motivation to actively search and analyze information. This can lead to a decrease in the development of critical thinking skills and independence in learning activities.

Overall, the use of chat GPT among schoolchildren and students can be a useful tool for quickly accessing information, but it must be used wisely and combined with traditional teaching and communication methods. It is important that the use of chat GPT is included in the educational process as an additional resource, but does not replace independent study of the material and completing assignments on your own.

Литература

1. Лавриненко, И. Ю. Использование чат-ботов GPT в процессе обучения английскому языку в неязыковом вузе: теоретический аспект / И. Ю. Лавриненко // Вестник Сибирского института бизнеса и информационных технологий. – 2023. – Т. 12, № 2. – С. 18-25. – DOI 10.24412/2225-8264-2023-2-18-25. – EDN UIAZUW.

2. Internet resources implementation in the English language teaching / R. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Основные вопросы лингвистики, лингводидактики и межкультурной коммуникации : сборник научных трудов по филологии XVI Международной научно-практической конференции, Астрахань, 15 апреля 2022 года. – Астрахань: Астраханский государственный университет, 2022. – P. 6-12. – DOI 10.54398/20751699_2022_6. – EDN FNSHHP.

3. Нагорянская, А. И. Чат GPT: помощник или вредитель? / А. И. Нагорянская // Экономика, финансы, проектное управление и социальная система России: подходы и перспективы в условиях устойчивого цифрового развития : Материалы региональной научно-практической конференции студентов и молодых учёных, Краснодар, 18 мая 2023 года. – Краснодар: ФГБУ "Российское энергетическое агентство" Минэнерго России Краснодарский ЦНТИ- филиал ФГБУ "РЭА" Минэнерго России, 2023. – С. 710-715. – EDN OANNVG.

4. Багринцева, О. Б. Обучение студентов неязыковых специальностей английскому языку посредством подготовки проектов о культурно-исторических учреждениях / О. Б. Багринцева, Л. Д. Кривых, М. Г. Гаврикова // Язык и межкультурная коммуникация : сборник статей XI Международной научно-практической конференции, Астрахань, 08 ноября 2018 года. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Астраханский государственный университет", 2019. – С. 7-10. – EDN IVZSDU.

5. Students Inside “Is Chat GPT Good for Students? A Comprehensive Analysis” URL: https://www.studentsinside.com/is-chat-gpt-good-for-students/ (дата обращения: 12.02.2024)

6. Багринцева, О. Б. К вопросу о мотивации изучения иностранного языка студентов инженерных специальностей / О. Б. Багринцева // Основные проблемы современного языкознания : Материалы X международной научно-практической конференции, Астрахань, 23–25 апреля 2018 года /

Министерство образования и науки Российской Федерации; Федеральное государственное бюджетное учреждение высшего образования «Астраханский государственный университет»; кафедра английского языка и технического перевода, Центр научно-технического перевода и методической деятельности «Вавилон». – Астрахань: Издательский дом "Астраханский университет", 2018. – С. 5-9. – EDN XQMBWX.

7. The New York Times “Don’t Ban ChatGPT in Schools. Teach With It”: URL: https://www.nytimes.com/2023/01/12/technology/chatgpt-schools-teachers.htm (дата обращения: 12.02.2024)

References

1. Lavrinenko, I. Yu. The use of GPT chat bots in the process of teaching English at a non-linguistic university: theoretical aspect / I. Yu. Lavrinenko // Bulletin of the Siberian Institute of Business and Information Technologies. – 2023. – T. 12, No. 2. – P. 18-25. – DOI 10.24412/2225-8264-2023-2-18-25. – EDN UIAZUW.

2. Internet resources implementation in the English language teaching / R. E. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Basic issues of linguistics, linguodidactics and intercultural communication : collection of scientific papers on philology XVI International Scientific and Practical Conference, Astrakhan, 15 April 2022. - Astrakhan: Astrakhan State University, 2022. - P. 6-12. - DOI 10.54398/20751699_2022_6. - EDN FNSHHP.

2. Nagoryanskaya, A. I. GPT chat: helper or pest? / A. I. Nagoryanskaya // Economics, finance, project management and the social system of Russia: approaches and prospects in the context of sustainable digital development: Proceedings of the regional scientific and practical conference of students and young scientists, Krasnodar, May 18, 2023. – Krasnodar: Federal State Budgetary Institution “Russian Energy Agency” of the Ministry of Energy of Russia Krasnodar CSTI - branch of the Federal State Budgetary Institution “REA” of the Ministry of Energy of Russia, 2023. – P. 710-715. – EDN OANNVG.

4. Bagrintseva, O. B. Teaching students of non-linguistic specialties English language through the preparation of projects about cultural and historical institutions / O. B. Bagrintseva, L. D. Krivykh, M. G. Gavrikova // Language and intercultural communication : collection of articles of the XI International Scientific and Practical Conference, Astrakhan, 08 November 2018. - Astrakhan: Federal State Budgetary Educational Institution of Higher Professional Education "Astrakhan State University", 2019. - C. 7-10. - EDN IVZSDU.

5. Students Inside “Is Chat GPT Good for Students? A Comprehensive Analysis” URL: https://www.studentsinside.com/is-chat-gpt-good-for-students/ (access date: 02.12.2024)

6. Bagrintseva, O. B. Towards the question of motivation of foreign language learning of engineering students / O. B. B. Bagrintseva // Basic problems of modern linguistics : Materials of the X International Scientific and Practical Conference, Astrakhan, 23-25 April 2018 / Ministry of Education and Science of the Russian Federation; Federal state budget institution "Astrakhan State University"; the English language and technical translation department; the center of scientific and technical translation and methodical activity “Babilon”. - Astrakhan: Publishing House "Astrakhan University", 2018. - C. 5-9. - EDN XQMBWX.

7. The New York Times “Don’t Ban ChatGPT in Schools.” Teach With It”: URL: https://www.nytimes.com/2023/01/12/technology/chatgpt-schools-teachers.htm (access date: 02/12/2024)

INTERACTIVE SIMULATORS FOR PRESCHOOL CHILDREN EDUCATION IN FOREIGN LANGUAGES SPHERE

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Abstract. This article addresses the current topic of using interactive simulators in the educational process of preschool children for the purpose of learning the English language. The research is based on the analysis of modern teaching approaches as well as the psychological characteristics of child development. Interactive simulators are used to stimulate interest, encourage active interaction, and deepen material acquisition among preschoolers.

Keywords: education, linguistics, English language, interactive simulators.

The preschool age is a critically important period in a child's development, where the foundations of their language skills are formed. Teaching English at this age requires a special approach that takes into account the peculiarities of child perception and learning motivation. In recent years, interactive simulators have become a popular tool in the educational process as they are capable of providing children with necessary information for comprehensive English language learning in the future, helping to build a solid knowledge base. In this article, we explore how the use of such simulators can enhance the process of teaching English to preschoolers.

The effectiveness of interactive simulators in children's education is based on several key aspects that determine their superiority over traditional teaching methods:

1. Game-based approach.
2. Visual and auditory support.
3. Interactivity.

Interactive simulators offer educational games and tasks designed to develop language skills through a playful process. For preschoolers, playing is a natural way of exploring the world around them. It is this playful approach to learning English that allows children to perceive educational material as a game, stimulating their interest in discovering something new. Such simulators use bright images, animations, and sound effects to capture attention and improve material retention. Visual and auditory support helps children better understand and remember new words and phrases in English.

Modern interactive simulators provide opportunities for interaction with educational material, which promotes active participation in learning: children can answer questions, pronounce words, solve tasks, and receive feedback directly through the simulator, making the learning process more interactive and dynamic. They provide children with the opportunity to learn English in a playful manner, which fosters enthusiasm and motivation for learning since the gaming process triggers interest and emotional engagement in children. Additionally, interactive simulators provide an individualized approach to learning, considering each child's level of knowledge and needs.

The preschool age is characterized by rapid cognitive and emotional development. The game-based approach typical of interactive simulators corresponds to the child's natural needs for variety and dynamism. Interaction with bright pictures, sounds, and animations promotes better material retention and the development of speech skills.

Studies on the use of interactive simulators in teaching English to preschoolers have demonstrated significant positive results, confirming the effectiveness of this teaching method. However, despite the achievements, there are still some aspects that require further research and improvement. Firstly, it is necessary to study in more detail the impact of the duration of sessions using interactive simulators on the effectiveness of learning. The optimal duration of learning sessions and their frequency may vary depending on the age and individual characteristics of children. Secondly, it is important to conduct research

comparing the effectiveness of different types of interactive simulators and their combinations with other teaching methods. This will help determine the most effective strategies for using these technologies in preschool education.

Furthermore, it is important to consider various cultural and social contexts in which interactive simulators are used. Adapting content to local characteristics and cultural requirements can improve the effectiveness of learning and ensure greater accessibility of educational resources for all children.

The use of interactive simulators in teaching English to preschoolers is a powerful tool that promotes active participation of children in the learning process, stimulates their interest, and motivates them to learn the language. Further development of research in this area can lead to even more effective use of interactive technologies in education and improve learning outcomes for preschool children.

Литература

1. Расада С.А., Фрезе О.В. Теория и практика обучения иностранному языку посредством мультимедийных ресурсов // Наука о человеке: Гуманитарные исследования. 2020. №2. URL: https://cyberleninka.ru/article/n/teoriya-i-praktika-obucheniya-inostrannomu-yazyku-posredstvom-multimediynyh-resursov (дата обращения: 30.03.2024).

2. Кривых, Л. Д. Обучение иностранному языку с использованием ИКТ / Л. Д. Кривых, О. Б. Багринцева, Л. И. Балашова // Проблемы повышения эффективности научной работы в оборонно-промышленном комплексе России : Материалы IV Всероссийской научно-практической конференции, Знаменск, 15–16 апреля 2021 года / Астраханский государственный университет. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего образования «Астраханский государственный университет», 2021. – С. 366-371. – EDN ZAKKDS.

3. Рак Е.А., Ильин И.В. Разработка интерактивных тренажеров для поддержки уроков английского языка // Вестник Пермского

государственного гуманитарно-педагогического университета. Серия: Информационные компьютерные технологии в образовании. 2018. №14. URL: https://cyberleninka.ru/article/n/razrabotka-interaktivnyh-trenazherov-dlya-soprovozhdeniya-uchebnyh-zanyatiy-po-angliyskomu-yazyku (дата обращения: 30.03.2024).

4. Internet resources implementation in the English language teaching / R. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Основные вопросы лингвистики, лингводидактики и межкультурной коммуникации : сборник научных трудов по филологии XVI Международной научно-практической конференции, Астрахань, 15 апреля 2022 года. – Астрахань: Астраханский государственный университет, 2022. – P. 6-12. – DOI 10.54398/20751699_2022_6. – EDN FNSHHP

5. Бурдина Е.С. Использование цифровых образовательных платформ в процессе обучения английскому языку // Скиф. 2023. №7 (83). URL: https://cyberleninka.ru/article/n/ispolzovanie-tsifrovyh-obrazovatelnyh-platform-v-protsesse-obucheniya-angliyskomu-yazyku (дата обращения: 30.03.2024).

6. Багринцева, О. Б. Обучение студентов неязыковых специальностей английскому языку посредством подготовки проектов о культурно-исторических учреждениях / О. Б. Багринцева, Л. Д. Кривых, М. Г. Гаврикова // Язык и межкультурная коммуникация : сборник статей XI Международной научно-практической конференции, Астрахань, 08 ноября 2018 года. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Астраханский государственный университет", 2019. – С. 7-10. – EDN IVZSDU.

7. Багринцева, О. Б. К вопросу о мотивации изучения иностранного языка студентов инженерных специальностей / О. Б. Багринцева // Основные проблемы современного языкознания : Материалы X международной научно-практической конференции, Астрахань, 23–25 апреля 2018 года / Министерство образования и науки Российской Федерации; Федеральное государственное бюджетное учреждение высшего образования

«Астраханский государственный университет»; кафедра английского языка и технического перевода, Центр научно-технического перевода и методической деятельности «Вавилон». – Астрахань: Издательский дом "Астраханский университет", 2018. – С. 5-9. – EDN XQMBWX.

References

1. Rasada S.A., Freze O.V. Theory and practice of teaching a foreign language through multimedia resources // Science of Man: Humanities Research. 2020. №2. URL: https://cyberleninka.ru/article/n/teoriya-i-praktika-obucheniya-inostrannomu-yazyku-posredstvom-multimediynyh-resursov (Accessed: 30.03.2024).

2. Krivykh, L. D. Teaching a foreign language using ICT / L. D. Krivykh, O. B. Bagrintseva, L. I. Balashova // Problems of improving the effectiveness of scientific work in the defence-industrial complex of Russia : Proceedings of the IV All-Russian Scientific and Practical Conference, Znamensk, 15-16 April 2021 / Astrakhan State University. - Astrakhan: Federal State Budgetary Educational Institution of Higher Education "Astrakhan State University", 2021. - C. 366-371. - EDN ZAKKDS.

3. Rak E.A., Ilyin I.V. Development of interactive simulators to support english language lessons // Bulletin of Perm State Humanitarian-Pedagogical University. Series: Information Computer Technologies in Education. 2018. №14. URL: https://cyberleninka.ru/article/n/razrabotka-interaktivnyh-trenazherov-dlya-soprovozhdeniya-uchebnyh-zanyatiy-po-angliyskomu-yazyku (Accessed: 30.03.2024).

4. Internet resources implementation in the English language teaching / R. E. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Basic issues of linguistics, linguodidactics and intercultural communication : collection of scientific papers on philology XVI International Scientific and Practical Conference, Astrakhan, 15 April 2022. - Astrakhan: Astrakhan State University, 2022. - P. 6-12. - DOI 10.54398/20751699_2022_6. - EDN FNSHHP.

5. Burdina E.S. Use of digital educational platforms in the process of teaching english language // Scythian. 2023. №7 (83). URL: https://cyberleninka.ru/article/n/ispolzovanie-tsifrovyh-obrazovatelnyh-platform-v-protsesse-obucheniya-angliyskomu-yazyku (Accessed: 30.03.2024).

6. Bagrintseva, O. B. Teaching students of non-linguistic specialties English language through the preparation of projects about cultural and historical institutions / O. B. Bagrintseva, L. D. Krivykh, M. G. Gavrikova // Language and intercultural communication : collection of articles of the XI International Scientific and Practical Conference, Astrakhan, 08 November 2018. - Astrakhan: Federal State Budgetary Educational Institution of Higher Professional Education "Astrakhan State University", 2019. - C. 7-10. - EDN IVZSDU.

7. Bagrintseva, O. B. Towards the question of motivation of foreign language learning of engineering students / O. B. B. Bagrintseva // Basic problems of modern linguistics : Materials of the X International Scientific and Practical Conference, Astrakhan, 23-25 April 2018 / Ministry of Education and Science of the Russian Federation; Federal state budget institution "Astrakhan State University"; the English language and technical translation department; the center of scientific and technical translation and methodical activity “Babilon”. - Astrakhan: Publishing House "Astrakhan University", 2018. - C. 5-9. - EDN XQMBWX.

AI AND IT IMPLEMENTATION INTO THE EDUCATIONAL PROCESS: GENERAL QUESTIONS AND POSITIVE EFFECT

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Abstract. the article highlights the prospects and significance of using artificial intelligence and information technology to improve the educational process. The article discusses the positive aspects of implementing high-tech solutions in education, including improving access to education, personalizing learning, increasing the efficiency of the learning process and developing skills that will be useful in the future. The study also highlights the potential benefits that can be derived from innovative approaches to educational activities.

Key words: education, innovative approach, artificial intelligence, information technologies.

Information technology has long been an indispensable part of education in order to improve the learning and development of students. The beginning of the introduction of IT in education can be dated back to 1950-1960, when the first computers appeared and experiments with their use for educational purposes began.

At first, IT in education was used to automate administrative processes such as student records, class schedules, etc. Gradually, computers began to be used in the educational process as well, making it possible to create interactive training programs, training videos, online courses, and much more.

One of the important stages in the introduction of IT in education was the emergence of the Internet and the possibility of conducting training remotely. Now many educational institutions offer online courses, webinars, lectures that can be attended from anywhere in the world.

Technology in education continues to evolve, there are new teaching methods, programs and applications that help teachers and students to make the learning process more interesting, effective and accessible.

The introduction of artificial intelligence (AI) and information technology (IT) into the educational process opens up many new opportunities for students and educators to learn and develop effectively. One of the main positive aspects of this implementation is the increased accessibility of education. Thanks to AI and IT technologies, students can receive quality instruction even remotely.

In addition, the use of AI and IT in the learning process contributes to the individualization of learning. With the help of AI algorithms it is possible to adapt educational material to the specific needs and abilities of each student, which allows to achieve better results and improve the quality of learning in general.

Another positive aspect of implementing AI and IT in education is the increased efficiency of the learning process. Automation and analytics systems help teachers optimize their work, identify students' weaknesses and offer them individual tasks for development. This increases the efficiency of learning and improves the overall level of students' knowledge.

In addition, the introduction of AI and IT in the educational process contributes to the development of digital skills among students. They learn to use modern technologies, work with large amounts of information, and develop skills of independent data search and analysis - which is important for successful adaptation in modern society.

Artificial intelligence (AI) has huge potential in education and can be used to improve learning, personalize the learning process, analyze statistics, automate administrative tasks, and many other purposes. Here are a few ways in which AI can be applied in education:

1. Adaptive learning: Artificial intelligence can analyze student performance data and suggest personalized learning materials and techniques to help each student reach his or her potential.

2. Assessment and evaluation: AI can be used to analyze the results of tests, assignments, and other forms of assessment to provide teachers with more accurate information about student performance and help them better customize instructional plans.

3. Virtual Teachers: AI can be used to develop virtual teachers who can deliver lessons, assignments and tests, communicate with students, and even customize materials to meet the individual needs of each student.

4. New forms of learning: AI enables the creation of interactive and innovative learning methods such as game applications, virtual labs and research projects that make the learning process more engaging and effective.

5. Administrative automation: AI can be used to automate administrative tasks such as scheduling, data management, demand forecasting, and even feedback from students and their parents.

As technology and research in this area advances, we can expect even more innovations and opportunities to improve learning and teaching.

Литература

1. Rajasekaran, S. B. AI and Cybersecurity - How AI Augments Cybersecurity Posture of an Enterprise / S. B. Rajasekaran // International Journal of Intelligent Systems and Applications in Engineering. – 2023. – Vol. 11, No. 1. – P. 179-182. – EDN EZCRML.

2. Internet resources implementation in the English language teaching / R. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Основные вопросы лингвистики, лингводидактики и межкультурной коммуникации : сборник научных трудов по филологии XVI Международной научно-практической конференции, Астрахань, 15 апреля 2022 года. – Астрахань: Астраханский государственный университет, 2022. – P. 6-12. – DOI 10.54398/20751699_2022_6. – EDN FNSHHP.

3. Гибадуллин, А. А. Мифы и легенды вокруг искусственного интеллекта, мифология искусственного интеллекта / А. А. Гибадуллин //

Академическая публицистика. – 2024. – № 1-1. – С. 553-556. – EDN HHGUUP.

4. Багринцева, О. Б. Обучение профессионально-ориентированному языку посредством работы над междисциплинарными проектами / О. Б. Багринцева, Л. И. Балашова, Л. Д. Кривых // Иностранные языки и перевод в высшей школе : Сборник научных трудов. Том Выпуск 5. – Донецк: : ДонНУ, 2019. – С. 7-11. – EDN JKWPFN.

5. Хайритдинов, Д. У. у. Понятие об искусственном интеллекте и адаптивное обучение, как один из возможностей использования искусственного интеллекта в образовании / Д. У. у. Хайритдинов, Ф. Х. Сайдалиева // Фундаментальные и прикладные научные исследования: актуальные вопросы, достижения и инновации : сборник статей XLIX Международной научно-практической конференции, Пенза, 15 октября 2021 года. – Пенза: Наука и Просвещение (ИП Гуляев Г.Ю.), 2021. – С. 10-12. – EDN DUGFBU.

6. Кривых, Л. Д. Оптимизация обучения английскому языку студентов неязыковых специальностей через интерактивные технологии / Л. Д. Кривых, М. А. Симоненко, О. Б. Багринцева // Язык и межкультурная коммуникация : Сборник статей XII Международной научно-практической конференции, Астрахань, 15 октября 2019 года / Составитель Б. Н. Бисенгалиева. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Астраханский государственный университет", 2019. – С. 24-30. – DOI 10.21672/2078-9858-2019.10.15-024-030. – EDN FMLTWX.

7. Lipchanskaya, M. A. Artificial Intelligence Responsibilities: Ethical And Legal Issues / M. A. Lipchanskaya, M. A. Eremina, S. A. Privalov // The European proceedings of social & behavioural sciences epsbs, Nizhny Novgorod, Russia, 19–23 апреля 2021 года. Vol. 125. – Nizhny Novgorod, Russia: European Publisher, 2022. – P. 1-11. – DOI 10.15405/epsbs.2022.03.1. – EDN PUOFXO.

8. Кривых, Л. Д. Использование цифровых технологий в обучении иностранному языку / Л. Д. Кривых, О. Б. Багринцева // Язык и межкультурная коммуникация : Сборник статей XIII Международной научно-практической конференции, Астрахань, 07 октября 2020 года / Редакционная коллегия: О.Б. Багринцева (гл. редактор), Л.Д. Кривых, Н.И. Кривых, Н.М. Колоколова, М.В. Пителина, М.А. Симоненко. – Астрахань: Издательский дом «Астраханский университет», 2020. – С. 72-77. – DOI 10.21672/2078-9858-2020.10.07-072-077. – EDN KNFVFJ.

References

1. Rajasekaran, S. B. AI and Cybersecurity - How AI Augments Cybersecurity Posture of an Enterprise / S. B. Rajasekaran // International Journal of Intelligent Systems and Applications in Engineering. – 2023. – Vol. 11, No. 1. – P. 179-182. – EDN EZCRML.

2. Internet resources implementation in the English language teaching / R. E. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Basic issues of linguistics, linguodidactics and intercultural communication : collection of scientific papers on philology XVI International Scientific and Practical Conference, Astrakhan, 15 April 2022. - Astrakhan: Astrakhan State University, 2022. - P. 6-12. - DOI 10.54398/20751699_2022_6. - EDN FNSHHP.

3. Gibadullin, A. A. Myths and legends around artificial intelligence, mythology of artificial intelligence / A. A. Gibadullin // Academic journalism. – 2024. – No. 1-1. – pp. 553-556. – EDN HHGUUP.

4. Bagrintseva, O. B. Teaching a professionally oriented language by working on interdisciplinary projects / O. B. Bagrintseva, L. I. Balashova, L. D. Krivykh // Foreign languages and translation in higher school : Collection of scientific papers. Vol. Issue 5. - Donetsk: : DonNU, 2019. - C. 7-11. - EDN JKWPFN.

5. Khayritdinov, D. U. u. The concept of artificial intelligence and adaptive learning, as one of the possibilities of using artificial intelligence in education / D.

U. u. Khairitdinov, F. Kh. Saydalieva // Fundamental and applied scientific research: current issues, achievements and innovations: collection of articles of the XLIX International Scientific and Practical Conference, Penza, October 15, 2021. – Penza: Science and Enlightenment (IP Gulyaev G.Yu.), 2021. – P. 10-12. – EDN DUGFBU.

6. Krivykh, L. D. Optimisation of teaching English to students of non-language specialties through interactive technologies / L. D. Krivykh, M. A. Simonenko, O. B. Bagrintseva // Language and intercultural communication : Collection of articles of the XII International Scientific and Practical Conference, Astrakhan, 15 October 2019 / Compiled by B. N. Bisengalieva. - Astrakhan: Federal State Budgetary Educational Institution of Higher Professional Education "Astrakhan State University", 2019. - C. 24-30. - DOI 10.21672/2078-9858-2019.10.15-024-030. - EDN FMLTWX.

7. Lipchanskaya, M. A. Artificial Intelligence Responsibilities: Ethical And Legal Issues / M. A. Lipchanskaya, M. A. Eremina, S. A. Privalov // The European proceedings of social & behavioral sciences epsbs, Nizhny Novgorod, Russia, April 19–23, 2021. Vol. 125. – Nizhny Novgorod, Russia: European Publisher, 2022. – P. 1-11. – DOI 10.15405/epsbs.2022.03.1. – EDN PUOFXO.

8. Krivykh, L. D. Use of digital technologies in teaching a foreign language / L. D. Krivykh, O. B. Bagrintseva // Language and Intercultural Communication : Collection of articles of the XIII International Scientific and Practical Conference, Astrakhan, 07 October 2020 / Editorial Board: O. B. Bagrintseva. Bagrintseva (Editor-in-Chief), L.D. Krivykh, N.I. Krivykh. Krivykh, N.I. Krivykh, N.M. Kolokolova, M.V. Pitelina, M.A. Simonenko. - Astrakhan: Publishing House "Astrakhan University", 2020. - C. 72-77. - DOI 10.21672/2078-9858-2020.10.07-072-077. - EDN KNFVFJ.

THE IMPORTANCE OF THE INTRODUCTION OF INFORMATION TECHNOLOGY IN TEACHING FOREIGN LANGUAGES

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Abstract. This article explores the role of information technologies in education, and also examines the importance of their implementation in teaching a foreign language. The main advantages of using modern technologies in the process of teaching foreign languages are highlighted, such as accessibility, convenience, interactivity, the ability to communicate with native speakers and a personalized approach to learning. The article provides an analysis of the importance of using modern technologies, such as online platforms, applications and programs for teaching languages. The article emphasizes that the introduction of information technologies contributes to the effectiveness and interest of teaching a foreign language, and is also an integral part of the modern educational system. The need for effective use of digital technologies to improve the quality of foreign language teaching in the modern world is also emphasized.

Keywords: information technology, education, foreign languages, digitalization, interactive learning

The most important factor of information technology in education is access to a huge amount of information. With the help of the Internet, students and teachers can access relevant materials, research and educational resources, which contributes to a deeper and broader understanding of the educational material[5]. The introduction of modern technologies in the process of teaching foreign languages opens up new opportunities for students and significantly increases the effectiveness of learning.

One of the main advantages of using information technology in teaching foreign languages is accessibility and convenience. With the development of the Internet and mobile applications, it has become possible to receive educational content at any convenient time and place. Students can learn a language using a

variety of online courses, language learning applications, audio and video tutorials, as well as materials not created for learning, such as texts, news, video content[3]. This makes the learning process more flexible and accessible to everyone, and also helps to expand vocabulary, improve pronunciation and understanding of real speech in a foreign language.

In addition, information technology allows you to create interactive learning materials that make learning more fun and effective. Multimedia presentations, game applications, online tests and exercises help students to better assimilate the material and apply their knowledge in practice[1]. This approach to learning stimulates students' interest in learning a foreign language and promotes their active participation in the educational process.

Another important aspect of the introduction of information technology in foreign language teaching is the ability to communicate and communicate with native speakers. Thanks to Internet platforms, social networks and online communication, students have the opportunity to practice a foreign language in real time with native speakers, which contributes to the development of communication skills and understanding of speech[2]. Modern technologies provide an opportunity to communicate with native speakers, share experiences with other students and teachers around the world.

Also, information technology allows you to adapt the teaching material to the individual needs of each student. Online testing systems and adaptive programs help to determine the level of knowledge and create a personalized learning plan, which contributes to more effective learning of the material[4].

Thus, the introduction of information technology in foreign language teaching has brought many benefits and has become an integral part of modern educational practice. These technologies help to make the learning process more effective, interesting and accessible to all students, contributing to their successful learning of a foreign language.

The introduction of information technology in foreign language teaching is an integral part of the modern educational system. They help to increase students'

motivation, improve learning outcomes and develop communication skills. Therefore, it is important to use all the opportunities provided by modern technologies for effective and interesting learning of a foreign language.

Литература

1. Ботавина, Е. Б. Влияние цифровых технологий на изучение иностранных языков / Е. Б. Ботавина, Т. А. Кайдалова, И. В. Пигасова // Современное педагогическое образование. – 2020. – № 2. – С. 8-11. – EDN VHYCTM.

2. Багринцева, О. Б. Обучение профессионально-ориентированному языку посредством работы над междисциплинарными проектами / О. Б. Багринцева, Л. И. Балашова, Л. Д. Кривых // Иностранные языки и перевод в высшей школе : Сборник научных трудов. Том Выпуск 5. – Донецк: : ДонНУ, 2019. – С. 7-11. – EDN JKWPFN.

3. Еренчинова, Е. Б. Использование сети Интернет при обучении иностранному языку / Е. Б. Еренчинова // Инновационные педагогические технологии : Материалы Международной научной конференции : Бук, 2014. – С. 325-327. – EDN SXBRAF.

4. Кривых, Л. Д. Оптимизация обучения английскому языку студентов неязыковых специальностей через интерактивные технологии / Л. Д. Кривых, М. А. Симоненко, О. Б. Багринцева // Язык и межкультурная коммуникация : Сборник статей XII Международной научно-практической конференции, Астрахань, 15 октября 2019 года / Составитель Б. Н. Бисенгалиева. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Астраханский государственный университет", 2019. – С. 24-30. – DOI 10.21672/2078-9858-2019.10.15-024-030. – EDN FMLTWX.

5. Ершова, Т. А. Роль цифровых технологий в изучении иностранных языков / Т. А. Ершова, Е. С. Мордвинова // Вестник педагогических наук. – 2022. – № 4. – С. 250-254. – EDN GBJLCN.

6. Кривых, Л. Д. Использование цифровых технологий в обучении иностранному языку / Л. Д. Кривых, О. Б. Багринцева // Язык и межкультурная коммуникация : Сборник статей XIII Международной научно-практической конференции, Астрахань, 07 октября 2020 года / Редакционная коллегия: О.Б. Багринцева (гл. редактор), Л.Д. Кривых, Н.И. Кривых, Н.М. Колоколова, М.В. Пителина, М.А. Симоненко. – Астрахань: Издательский дом «Астраханский университет», 2020. – С. 72-77. – DOI 10.21672/2078-9858-2020.10.07-072-077. – EDN KNFVFJ.

7. Ефанова, Л. Д. Использование социальных сетей при изучении иностранных языков в ВУЗе / Л. Д. Ефанова, В. Л. Полякова // Вестник университета. – 2019. – № 3. – С. 158-162. – DOI 10.26425/1816-4277-2019-3-158-162. – EDN RBSSZH.

8. Кривых, Л. Д. Обучение иностранному языку с использованием ИКТ / Л. Д. Кривых, О. Б. Багринцева, Л. И. Балашова // Проблемы повышения эффективности научной работы в оборонно-промышленном комплексе России : Материалы IV Всероссийской научно-практической конференции, Знаменск, 15–16 апреля 2021 года / Астраханский государственный университет. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего образования «Астраханский государственный университет», 2021. – С. 366-371. – EDN ZAKKDS.

9. Коваленко, В. М. Использование информационных технологий в обучении иностранному языку в вузе / В. М. Коваленко // Современные научные исследования и разработки. – 2018. – Т. 3, № 4(21). – С. 76-79. – EDN YLXPVB.

10. Internet resources implementation in the English language teaching / R. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Основные вопросы лингвистики, лингводидактики и межкультурной коммуникации : сборник научных трудов по филологии XVI Международной научно-практической конференции, Астрахань, 15 апреля 2022 года. – Астрахань:

Астраханский государственный университет, 2022. – P. 6-12. – DOI 10.54398/20751699_2022_6. – EDN FNSHHP.

References

1. Botavina, E. B. The influence of digital technologies on the study of foreign languages / E. B. Botavina, T. A. Kaydalova, I. V. Pigasova // Modern pedagogical education. – 2020. – No. 2. – P. 8-11. – EDN VHYCTM.

2. Bagrintseva, O. B. Teaching a professionally oriented language by working on interdisciplinary projects / O. B. Bagrintseva, L. I. Balashova, L. D. Krivykh // Foreign languages and translation in higher school : Collection of scientific papers. Vol. Issue 5. - Donetsk: : DonNU, 2019. - C. 7-11. - EDN JKWPFN.

3. Erenchinova, E. B. Using the Internet in teaching a foreign language / E. B. Erenchinova // Innovative pedagogical technologies: Materials of the International Scientific Conference: Buk, 2014. – P. 325-327. – EDN SXBRAF.

4. Krivykh, L. D. Optimisation of teaching English to students of non-language specialties through interactive technologies / L. D. Krivykh, M. A. Simonenko, O. B. Bagrintseva // Language and intercultural communication : Collection of articles of the XII International Scientific and Practical Conference, Astrakhan, 15 October 2019 / Compiled by B. N. Bisengalieva. - Astrakhan: Federal State Budgetary Educational Institution of Higher Professional Education "Astrakhan State University", 2019. - C. 24-30. - DOI 10.21672/2078-9858-2019.10.15-024-030. - EDN FMLTWX.

5. Ershova, T. A. The role of digital technologies in the study of foreign languages / T. A. Ershova, E. S. Mordvinova // Bulletin of Pedagogical Sciences. – 2022. – No. 4. – P. 250-254. – EDN GBJLCN.

6. Krivykh, L. D. Use of digital technologies in teaching a foreign language / L. D. Krivykh, O. B. Bagrintseva // Language and Intercultural Communication : Collection of articles of the XIII International Scientific and

Practical Conference, Astrakhan, 07 October 2020 / Editorial Board: O. B. Bagrintseva. Bagrintseva (Editor-in-Chief), L.D. Krivykh, N.I. Krivykh. Krivykh, N.I. Krivykh, N.M. Kolokolova, M.V. Pitelina, M.A. Simonenko. - Astrakhan: Publishing House "Astrakhan University", 2020. - C. 72-77. - DOI 10.21672/2078-9858-2020.10.07-072-077. - EDN KNFVFJ.

7. Efanova, L. D. Using social networks when studying foreign languages at universities / L. D. Efanova, V. L. Polyakova // University Bulletin. – 2019. – No. 3. – P. 158-162. – DOI 10.26425/1816-4277-2019-3-158-162. – EDN RBSSZH.

8. Krivykh, L. D. Teaching a foreign language using ICT / L. D. Krivykh, O. B. Bagrintseva, L. I. Balashova // Problems of increasing the efficiency of scientific work in the military-industrial complex of Russia: Materials of the IV All-Russian scientific-practical conference, Znamensk, April 15–16, 2021 / Astrakhan State University. – Astrakhan: Federal State Budgetary Educational Institution of Higher Education “Astrakhan State University”, 2021. – P. 366-371. – EDN ZAKKDS.

9. Kovalenko, V. M. The use of information technologies in teaching foreign languages at universities / V. M. Kovalenko // Modern scientific research and development. – 2018. – T. 3, No. 4(21). – pp. 76-79. – EDN YLXPVB.

10. Internet resources implementation in the English language teaching / R. E. E. Altaiakov, R. B. Bekmukhamedova, G. R. Bidalieva [et al.] // Basic issues of linguistics, linguodidactics and intercultural communication : collection of scientific papers on philology XVI International Scientific and Practical Conference, Astrakhan, 15 April 2022. - Astrakhan: Astrakhan State University, 2022. - P. 6-12. - DOI 10.54398/20751699_2022_6. - EDN FNSHHP.

USE OF AI FOR THE DEVELOPMENT OF EDUCATIONAL SYSTEM

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Abstract. The article explores the impact of artificial intelligence (AI) on the field of education. It discusses the potential benefits and challenges posed by AI in educational settings, including personalized learning, adaptive instruction, and efficient administration. Drawing on recent research and developments in AI technologies, the article provides insights into the evolving role of AI in education and its implications for students, teachers, and educational institutions. Additionally, it addresses ethical considerations and the need for effective integration of AI to enhance learning outcomes while ensuring equity and privacy.

Keywords: artificial intelligence; educational system; personalized data; data analysis; learning experience.

In recent years, the integration of artificial intelligence (AI) has significantly transformed various aspects of our society, and the educational system is not an exception. The use of AI in education has sparked both enthusiasm and debate as it promises to revolutionize the way students learn and teachers instruct. This has led to a dozens of applications within the educational sector, ranging from personalized learning experiences to advanced assessment tools. In this essay, we will explore the ways in which AI has been utilized to enhance the development of the educational system, examining its potential benefits and addressing potential concerns. By delving into this topic, we hope to gain an understanding of how AI is reshaping the educational landscape and its implications for the future of learning.

First, we need to know more what AI can offer to participants of educational process. Of course, the main consumer are students because AI offers a range of

abilities to assist them with their homework in various subjects and tasks. Some of these abilities include:

1. Personalized learning: AI can provide personalized learning experiences by adapting to the individual needs and learning styles of each student. Through advanced algorithms, AI can analyze a student's strengths, weaknesses, and learning patterns to generate customized study materials and exercises tailored to their level of proficiency.

2. Tutoring and explanation: AI-powered tutoring systems can offer students real-time assistance with homework problems, providing step-by-step explanations and guidance on difficult concepts. These virtual tutors can adapt to the student's pace, providing additional examples and alternative explanations when needed.

3. Automated grading and feedback: AI systems can efficiently grade assignments and provide detailed feedback to students, saving teachers time and allowing for more immediate evaluation of student work. This can help students understand their mistakes and areas for improvement more effectively.

4. Content recommendations: AI can recommend educational resources, such as articles, videos, or interactive tutorials, based on a student's current assignment or learning objectives. By understanding a student's academic goals and progress, AI can suggest relevant materials to aid in homework completion and comprehension of subject matter.

5. Language translation and interpretation: AI-powered language tools can assist students who speak different languages or are learning a new language, providing translation services, language practice, and support for multilingual homework assignments.

Moreover, in the process of helping students, artificial intelligence is quite capable of not just giving them a direct assessment, but instead instructing them and pointing out mistakes so that the student himself can come to the correct answer. These abilities collectively demonstrate the potential for AI to alleviate some of the challenges students face in completing their homework, fostering a more efficient and tailored learning experience.

Speaking of homework help, we surely may not forget about in-person classes. The structure of the educational process is extremely multi-layered, but AI can be introduced into it in order to bring something new and useful for students and teachers. Here are some ways in which AI can enhance the educational process in schools and universities right now:

1. Intelligent teaching systems: AI-powered tutoring programs can provide additional support to students, offering personalized feedback, explanations, and supplemental learning resources to help students overcome learning obstacles.

3. Data analysis for educational insights: AI can analyze large sets of educational data to identify trends, patterns, and areas for improvement within the educational system. This insight can help educators make informed decisions to enhance student learning outcomes and overall institutional effectiveness.

4. Administrative support: AI can assist with administrative tasks such as scheduling, resource allocation, and student services, helping to streamline operational processes and free up time for educators to focus on teaching and mentoring.

5. Accessibility and inclusion: AI tools can provide support for students with disabilities by offering text-to-speech, speech-to-text, and other accessibility features to ensure that all students have equal access to educational materials and resources.

These applications demonstrate how AI is already contributing to the improvement of the educational process in schools and universities, offering tangible benefits for both students and educators.

Now when we know possible abilities of AI, we surely can talk about the digitalization of education that includes a wide array of practices and tools, encompassing everything from online learning platforms to interactive digital resources. E-learning environments, virtual classrooms, and digital textbooks have become integral components of modern pedagogy, offering students greater accessibility to educational materials and fostering diverse learning experiences. In

this digital era, educational institutions are increasingly leveraging AI to unlock new potentials, thereby revolutionizing the educational process.

AI, with its remarkable computational capabilities, is empowering the educational sector in a multitude of ways. One of its key abilities lies in personalized learning, where AI systems analyze student data to tailor learning materials and instruction to the individual needs and preferences of each learner. By providing customized lessons and adaptive content, AI facilitates a more engaging and effective learning experience, catering to the diverse learning styles and paces of students.

Furthermore, AI's role in providing intelligent tutoring systems is reshaping the traditional classroom dynamics. Students can benefit from personalized tutoring, feedback, and explanations, aiding in their comprehension of complex concepts and problem-solving. As a result, educators have the opportunity to focus on individualized support and mentorship, ultimately fostering a more nurturing and effective teaching environment.

The benefits of digitalization and AI are not limited to students alone. Educational administrators and instructors are increasingly relying on AI for automating grading and assessment tasks, thereby freeing up more time to focus on instructional activities and individual student progress. Additionally, AI's data analysis capabilities are providing insights into educational trends and patterns, enabling educators to make data-informed decisions for improving the educational process.

Moreover, AI-driven administrative support is streamlining operational processes, from scheduling to resource allocation, allowing educators to dedicate more time to teaching and student engagement. At the same time, AI's accessibility features are ensuring that education is inclusive and accessible to all, supporting students with disabilities, language learners, and other groups who require tailored educational support.

As the educational landscape undergoes a digital transformation, the integration of AI is undoubtedly driving this evolution. The combination of

digitalization and AI is paving the way for a more personalized, accessible, and effective learning experience for students, while empowering educators with the tools and insights necessary to enhance their teaching approaches. While this technological shift poses its own set of challenges and considerations, the potential of AI to improve educational outcomes is undeniable. As we continue to leverage the abilities of AI in education, it is imperative to ensure that these innovations are deployed ethically and equitably, thereby maximizing their positive impact on the educational process.

References

1. Brynjolfsson, E., & McAfee, A. (2014). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. W. W. Norton & Company.

2. Luckin, R. (2018). Machine Learning and Human Intelligence: The Future of Education for the 21st Century. British Journal of Educational Technology, 49(6), 995-1003.

3. Siemens, G. (2013). Learning Analytics: The Emergence of a Discipline. American Behavioral Scientist, 57(10), 1380-1400.

4. Ford, M. (2015). Rise of the Robots: Technology and the Threat of a Jobless Future. Basic Books.

5. Baker, R. S., & Yacef, K. (2009). The State of Educational Data Mining in 2009: A Review and Future Visions. Journal of Educational Data Mining, 1(1), 3-17.

6. McKinsey Global Institute. (2017). Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation. McKinsey & Company.

7. National Academy of Engineering. (2018). Left to Our Own Devices: Reshaping the Educational Technology Landscape. National Academies Press.

AI IMPLEMENTATION IN MODERN EDUCATIONAL METHODS

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Abstract. AI learning technologies are actively being introduced into the educational field, creating new teaching methods and improving the students educational process. This article examines the AI implementation application in education, including algorithms to build an individual educational trajectory, analyzes learning data and predicts student academic performance. Such methods as automated task checking and feedback from students make it possible to manage effectively the learning process and to improve students academic performance and the educational quality. The new technologies emergency opens up broad prospects for the education development and the creation innovative approaches to learning. Individual educational trajectory concept at the education present stage is also considered, a new teaching method idea creating with educational trajectory updated concept is put forward.

Key words: education, individual educational trajectory, artificial intelligence (AI), methods, technologies.

In the modern world, artificial intelligence technologies are becoming more and more in demand in various human life spheres. So, AI technology has a growing impact on the educational system, adding innovative approaches and new possibilities to it. According to E.V. Molchanova, "educational materials, plans, lessons, journals, and diaries everything will be transferred to their digital versions" [1]. Thus, new types of education appear, such as distance education or online schools, new opportunities that help not only students, but also other people who are connected with the learning process. However, now, not only online services, but also AI systems, are used in education. Every day AI is becoming more widely used in schools, universities and other educational institutions, helping teachers and students to reach new heights in the educational process.

One of the AI development key areas in education is personalization, which allows teachers to create personalized learning experiences for each student based on their individual characteristics. Thus, individual educational trajectories begin to form for students.

Individual educational trajectories play an important role in learning, as each student is unique and has their own strengths and weaknesses, interests and needs. The support of individual educational trajectories allows students to develop in accordance with their potential and characteristics.

It's worth noting that individual educational trajectories (IET) are "a series of measures, methods, forms of independent work organization, implementation of various educational technologies, and aimed at helping each student achieve their goals" [2].

Also, according to I.N. Bukhtiyarov, IET can be interpreted as a manifestation of the style of each student educational activity, in which this style corresponds to their motivation, training, and is carried out in collaboration with the teacher [3].

Before introducing AI into individual educational trajectories, it is worth asking the question "How interested are students in IOT?" This issue was considered by M.S. Ostapenko, V.Y. Nazarova in the article "Introduction of individual educational path at the university". They conducted a survey among 150 full–time undergraduate students of I-IV courses. They chose from 4 suggested options. As a result, the authors compiled a diagram with the final result of their survey (Fig. 1) [4].

Figure 1. The desire of students to build an individual educational trajectory

Analyzing the results of the survey, it can be seen that most students are interested in individual educational trajectories. Moreover, students are confident that introducing innovations into the educational process makes it better. Thus, the introduction of individual trajectories into the educational process is as promising as the introduction of artificial intelligence into the IOT method.

Further, let's consider individual educational trajectories advantages.

1. Personalization of training. Individual educational trajectories allow teachers to adapt the learning process to the unique needs of each student.

2. Motivation and interest of students. A personalized approach allows you to stimulate the motivation of students, as the training is aimed at their personal goals and interests. This contributes to a deeper immersion in the learning process and an increase in interest in the subjects being studied.

3. The effectiveness of training. IET allows students to study at their own pace and focus on the tasks that are most important to them. This contributes to a more effective assimilation of the material and achieving better results.

4. Development of independence and responsibility. Individual educational trajectories help to stimulate students' independence and responsibility for their studies. Students are more actively involved in the learning process, making informed decisions about their education.

IET represent a unique approach to learning that adapts to the needs of each student. Currently, such trajectories are often created manually by teachers, which requires considerable time to conduct tests, analyze the results and transfer information to students.

However, considering using AI in education, the IET concept can be given a slightly different meaning. It will be explained as a set of measures and learning forms that are built using AI systems.

In other words, currently, individual educational trajectories are built basically on student's desire. This is expressed in choosing more suitable subjects. However, other important aspects of a student's education are not taken into account. For example, a system that builds individual educational trajectories does not take into account the speed at which the material is studied, grades for individual tests in certain subjects, or special additional materials availability for classes.

But using AI, you can create another learning system that makes the whole process even more automated. With AI, a large database can be used in which data not only about grades is stored but also about all the completed materials, tests, and other tasks. Based on this data, the most optimal individual trajectory path can be created.

Using electronic systems to create and store individual educational trajectories can greatly simplify the process and save time. The transition to digital formats for verification tests and other tasks will automate the process of checking results and transmitting information to students. It will also help teachers analyze data faster and adapt learning to the needs of each student.

Therefore, it is important to pay attention to the significance of automating knowledge assessment for implementing AI in education.

Let's take a closer look at the automation of knowledge assessment. With the help of AI algorithms, we can create specialized systems for automatic knowledge verification based on the materials and tests that students have passed. This

assessment allows teachers to focus on educational specific aspects and students to receive feedback on their work more quickly.

The data collected during this process can then be stored in a database to help organize an IET. AI algorithms can also be used to predict students' academic performance, determine the optimal learning strategies for them, and offer suggestions for choosing courses and materials for studying.

Thus, it can be noted that the use of artificial intelligence in the field of education provides participants in the learning process with access to innovative tools and resources, contributing to improving the effectiveness of the educational process for both teachers and students.

These algorithms can analyze data on students' past successes and failures, and predict their future outcomes, which helps teachers and students make more informed decisions about their education.

In the long term period, there technologies can lead to an improvement in the overall educational quality, as well as improved learning outcomes for students.

Additionally, AI can also be used to find the most suitable additional materials for each student's individual needs. This allows students to receive additional information about the material under consideration and expand their knowledge in the chosen field.

Furthermore, AI -based online courses and training programs can be tailored to each student's specific requirements, allowing them to study at their own speed and convenience.

Thus, we can conclude that the automation of knowledge assessment and the creation of new teaching methods based on data analysis present new opportunities for education to improve learning quality. The AI technologies using in education also presents new opportunities to enhance the learning quality and makes the educational process more efficient.

Thus, the use of AI technologies in education not only enriches the learning process, but also contributes to improving its efficiency and quality. The

development of new AI-based learning methods opens up new horizons and opportunities for education to innovate and improve the education system.

Due to individualized curricula, data analysis, and student performance forecasting, learning becomes more effective and more accessible to all students. The modern IET concept takes on a new meaning, and education benefits from these innovations. These innovations allow teachers and students to reach new educational heights and to bring the 21st-century learning principles into reality.

Литература

1. Молчанова Е. В. О плюсах и минусах цифровизации современного образования [Текст] / Молчанова Е. В. // Проблемы современного педагогического образования. — 2019. — С. 133 -135. URL: https://cyberleninka.ru/article/n/o-plyusah-i-minusah-tsifrovizatsii-sovremennogo-obrazovaniya

2. Зобнина, О. А. Некоторые аспекты применения коммуникативно-деятельностного подхода в обучении иностранных студентов английскому языку / О. А. Зобнина, И. Л. Яцукова, О. Б. Багринцева // Повышение глобальной конкурентоспособности российского образования: международное научное и образовательное сотрудничество : Сборник статей региональная научно-практической конференции, Астрахань, 23 сентября 2021 года / Науч. редакторы: О.А. Зобнина, А.В. Петраев, Н.А. Яковлева, И.Л. Яцукова. – Астрахань: ИП Н.В. Забродина, 2021. – С. 70-73. – EDN DUCCOT.

3. Шеманаева М. А. О трактовках термина «индивидуальная образовательная траектория» // Научно-методический электронный журнал «Концепт». – 2017. – № S12. – 0,3 п. л. – URL: *http://e-koncept.ru/2017/470154.htm*.

4. Кривых, Л. Д. Применение технологии организации проектно-исследовательской деятельности при обучении иностранному языку / Л. Д. Кривых, О. Б. Багринцева // Основные вопросы лингвистики,

лингводидактики и межкультурной коммуникации : Сборник материалов XV Международной научно-практической конференции / Сост. Е.Н. Шугаева. – Астрахань : Астраханский государственный университет, Издательский дом "Астраханский университет", 2021. – С. 219-226. – EDN DKPPHE

5. Бухтиярова И. Н. Метод проектов и индивидуальные программы в продуктивном обучении // Школьные технологии. – 2001. – № 2. – С. 108–114.

6. Зобнина, О. А. Формирование профессиональных компетенций в процессе обучения английскому языку в вузе / О. А. Зобнина, О. Б. Багринцева // Язык и межкультурная коммуникация : Сборник статей XV Международной научно-практической конференции, Астрахань, 12 октября 2022 года / – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Астраханский государственный университет", 2022. – С. 114-119. – DOI 10.54398/29491371_2022_114. – EDN KZKYXY.

7. Остапенко М.С., Назарова В.Ю. Внедрение индивидуальных образовательных траекторий в ВУЗе// Вестник ПНИПУ. Машиностроение. Материаловедение. – 2022. – Т. 24, № 2. – С. 87–95. DOI: 10.15593/2224-9877/2022.2.10 URL: https://cyberleninka.ru/article/n/vnedrenie-individualnyh-obrazovatelnyh-traektoriy-v-vuze/viewer

References

1. Molchanova E. V. On the pros and cons of digitalization of modern education [Text] / Molchanova E. V. // Problems of modern pedagogical education. — 2019. — pp. 133 -135. URL: https://cyberleninka.ru/article/n/o-plyusah-i-minusah-tsifrovizatsii-sovremennogo-obrazovaniya

2. Zobnina, O. A. Some aspects of the application of communicative-activity approach in teaching foreign students English / O. A. Zobnina, I. L. Yatsukova, O. B. Bagrintseva // Increasing the global competitiveness of Russian education: international scientific and educational cooperation : Collection of

articles of the regional scientific-practical conference, Astrakhan, 23 September 2021 / Editors: O. A. Zobnina, A.V. Petraev, N.A. Yakovleva, I.L. Yatsukova. - Astrakhan: IP N.V. Zabrodina, 2021. - C. 70-73. - EDN DUCCOT.

3. Shemanaeva M. A. On the interpretation of the term “individual educational trajectory” // Scientific and methodological electronic journal “Concept”. – 2017. – No. S12. – 0.3 p.l. – URL: http://e-koncept.ru/2017/470154.htm.

4. Krivykh, L. D. Application of the technology of project-research activity organisation in teaching a foreign language / L. D. Krivykh, O. B. Bagrintseva // Basic issues of linguistics, linguodidactics and intercultural communication : Proceedings of the XV International Scientific and Practical Conference / Compiled by E. N. Shugaeva. E.N. Shugaeva. - Astrakhan : Astrakhan State University, Publishing House "Astrakhan University", 2021. - C. 219-226. - EDN DKPPHE.

5. Bukhtiyarova I. N. Project method and individual programs in productive education // School technologies. – 2001. – No. 2. – P. 108–114.

6. Zobnina, O. A. Formation of professional competences in the process of teaching English in higher education / O. A. Zobnina, O. B. Bagrintseva // Language and intercultural communication : Collection of articles of the XV International Scientific and Practical Conference, Astrakhan, 12 October 2022 / .- Astrakhan: Federal State Budgetary Educational Institution of Higher Professional Education "Astrakhan State University", 2022. - C. 114-119. - DOI 10.54398/29491371_2022_114. - EDN KZKYXY.

7. Ostapenko M.S., Nazarova V.Yu. Introduction of individual educational trajectories at universities // Bulletin of PNIPU. Mechanical engineering. Materials Science. – 2022. – T. 24, No. 2. – P. 87–95. DOI: 10.15593/2224-9877/2022.2.10 URL: https://cyberleninka.ru/article/n/vnedrenie-individualnyh-obrazovatelnyh-traektoriy-v-vuze/viewer

LINGUOCULTURAL ASPECT OF FOREIGN LANGUAGE LEARNING ON THE EXAMPLE OF K-POP MEDIA

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Abstract. The article is devoted to the study of the influence of distance learning methods on the formation of students' linguocultural competence when studying foreign languages. Under the influence of the COVID-19 pandemic, the introduction of online technologies has become an integral part of the modern educational process. It is worth mentioning that this approach can enhance linguistic and cultural competence. South Korea has attracted global attention due to K-pop and media culture in general. Korean artists and filmmakers make an important contribution to the development and dissemination of their own culture, which makes k-pop a vivid example of the linguocultural aspect in Korean language learning.

Key words. Linguistics, digitalization, k-pop, digital education, linguistical culturology.

Foreign language learning is a continuous process where several key aspects currently aimed at improving the education system worldwide. The definition of linguoculturology given by V. V. Krasnykh is based on the general integrative scheme "culture - language"; but, in addition, the definition specifies other relevant features: national picture of the world, language consciousness, national-mental features as fundamentally new objects of research: "linguoculturology is a discipline that studies the manifestation, reflection and fixation of culture in language and discourse. It is directly related to the study of the national picture of the world, linguistic consciousness, features of the mental-linguistic complex". [1]

The development of linguoculturological direction caused by the desire to comprehend the phenomenon of culture as a specific form of human existence in society and the world. In addition, the COVID-19 pandemic played a great role in the improvement. Humanity forced to introduce distance activities in education. With global access to educational platforms, students have gained the opportunity to enrich their knowledge and understanding of the differences between the linguistic and cultural features of the language they are learning. A huge variety of online courses and learning platforms has emerged, allowing everyone to find the most convenient option. Increased research opportunities, namely access to online library and research resources, allow learners to conduct more in-depth research.

The research problem is the need to reflect on the interaction between language and culture, in order to identify the cultural components that transmit knowledge about the world. Moreover, one of the central problems is the impact of distance learning methods introduced because of the COVID-19 pandemic. In this context, modern education faced with the need to overcome the challenges associated with the acquisition of foreign languages and cultures through online courses and educational platforms. Analyzing the impact of such methods on the perception, understanding and interpretation of language and culture is significant to ensure quality education in today's online learning environment.

It is worth mentioning that the study of the Asian languages is accelerating among the young generations. In recent years, South Korea has been gaining more and more attention in the global market in many areas: for example, K-pop, K-drama and K-food. This speeded up during the COVID-19 pandemic when people forced to switch their living space from offline to online and spend more time watching YouTube or Netflix. More involved people even started to get indulged in learning Korean language and culture. [2]

First of all, humans watched various TV shows with the subtitles, trying to understand the native speech. Korean performers put a lot of sense and meaning into their art works, referring to history and cultural values. Studying song lyrics helps people understand the nation, its language, mentality, traditions and culture.

Watching k-dramas is especially productive for learning vocabulary and phraseology, including a variety of colloquial clichés, as they make them easier to memorize through a combination of audio and video.

The directors and scriptwriters reflect the ancient cultural traditions via a new sight. The same happens with the singers. They mix up their old culture with the new music directions. Moreover, the Koreans promote this type of art around the whole world. For example, boys band ENHYPEN. It consists of three separate Korean words like connection, discovery and development, joined into one meaningful abbreviation. The first year they could not perform in front of the live audience because of the COVID restrictions. Students can learn from the experience of these idols and, by following their example, succeed in the educational process. With the help of ENHYPEN's fascinating music videos, it is possible not only to simulate immersion in a language environment, but also to significantly increase students' motivation and interest in learning, as motivation is one of the most valuable factors in the successful learning of a foreign language. [3]

From all of the above, we can conclude that the linguocultural approach in foreign language teaching plays an important role in teaching students the language not only as a means of communication, but also as a means of learning a foreign culture. In due course, digital tools and technologies have made education more accessible, affordable and flexible. They have also opened up new opportunities to improve teaching and learning methods through the example of K-POP and k-dramas. The above-mentioned characteristics explain their widespread use in foreign language teaching practices. The involvement of audiovisual materials is a multifunctional teaching tool. Their use in the classroom provides an opportunity to change the quality of language teaching to an advanced stage, which in the long run will provide a higher level of foreign language proficiency.

Furthermore, it is important to note that digitalization of education can have a positive impact on developing countries, as it can offer a solution to the lack of access to learning foreign traditions, languages and mentality without leaving your laptop.

Литература

1. Белозёрова А.В., Локтионова Н.М. Лингвокультурология как лингвистический предмет. – 2013. – № 1. URL: https://science-education.ru/ru/article/view?id=7681 (дата обращения: 09.04.2024).

2. От K-pop и K-драмы к «K-обучению»: уроки цифровой эпохи URL:https://digitalmahbub.com/digitalization-of-education/#:~:text=Cybersecurity%20Issues%3A%20Digitalization%20of%20education,also%20lead%20to%20social%20isolation (accessed: 09.04.2024)

3. Oh I., Lee H. J. K-pop in Korea: How the pop music industry is changing a post-developmental society //Cross-currents: East Asian history and culture review. – 2014. – Т. 3. – №. 1. – С. 72-93

References

1. Belozerova A.V., Loktionova N.M. Linguoculturology as linguistical subject. 2013. № 1. URL: https://science-education.ru/ru/article/view?id=7681 (accessed: 09.04.2024)

2. From K-pop and K-drama to ‘ K-learning cities’ : lessons for the digital era URL:https://digitalmahbub.com/digitalization-of-education/#:~:text=Cybersecurity%20Issues%3A%20Digitalization%20of%20education,also%20lead%20to%20social%20isolation (accessed: 09.04.2024)

3. Oh I., Lee H. J. K-pop in Korea: How the pop music industry is changing a post-developmental society //Cross-currents: East Asian history and culture review. – 2014. – Т. 3. – №. 1. – С. 72-93

MACHINE LEARNING METHODS IMPLEMENTATION IN EDUCATIONAL SPHERE

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Abstract. The article presents current trends analysis in machine learning integration methods in educational sphere. It examines a wide range of applications. In addition, the challenges associated with machine learning methods application in the context of educational technologies are discussed, as well as their prospects and potential benefits for improving efficiency and reliability of educational process. In conclusion, the article emphasizes the need for further research in this area in order to further improve the education and increase its competitiveness.

Key words: artificial intelligence, educational technologies, foreign languages, development, research

Learning foreign languages is one of the most important tasks for a modern person. In the modern world it is difficult to imagine a person who does not know at least 1 or 2 foreign languages. Just 50 years ago the knowledge of any foreign language was not included in the top ten necessary skills for an ordinary person. But nowadays everything has changed. With the widespread use of the Internet, the mastery of a foreign language has become one of the priority skills that are necessary in life in the modern world. Foreign educational programs, news, lessons are just a small part of what may not be available to us if we don't possess it. Therefore, learning languages is the trend of our time.

Nowadays, there are different types of educational programs such as online and offline classes. However, online courses are the most relevant nowadays, as they allow you to learn any language from your own home comfort. Due to the widespread digitalization, almost anyone can take advantage of online courses. In

addition, machine learning methods play an important role in modern education and have become an integral part of various fields, including education.

Teaching foreign languages is a complex process that requires an individualized approach to each student. Traditional teaching methods can be limited in their effectiveness due to differences in the speed and learning style of learners. Machine learning provides new opportunities to personalize the educational process by adapting to the needs of each learner.

Machine learning helps to introduce many techniques in the learning process that have their own characteristics. For example, artificial intelligence technologies will enable the adaptive learning platforms development. Platforms that utilize machine learning algorithms can adapt materials and exercises according to each student's level of knowledge and ability. For example, adaptive learning systems can automatically adjust the assignments and offer additional exercises difficulty on topics that require more attention.

Automatic pronunciation checking is another possibility that artificial intelligence provides us with. Pronunciation quality control is one of the most important functions of a teacher. It is used to monitor the student progress. But the process is very time-consuming, and machine learning-based technologies could speed it up. Machine learning algorithms can be used to develop applications that can analyze and evaluate student pronunciation. This allows students to get real-time feedback and improve their pronunciation skills while doing so much faster.

One of the main advantages of online courses is that they constantly generate recommendations to the user, for example, if the system sees that a learner has problems with a certain grammatical thinking, it will recommend a course that aims to eliminate this problem. Recommendation systems based on machine learning can analyze the students preferences and progress to suggest appropriate material for them to study. This might include recommendations for reading, listening to audio materials, or watching video lessons in a foreign language. All without the teacher's involvement, allowing the teacher to dive deeper into the learning process and help each student.

Automatic translators and content generation systems can be helpful to the learner in understanding new words and constructions. Machine learning is also used to create automatic translators and content generation in foreign languages, resulting in easier access to information in different languages and facilitating the sharing of cultural knowledge.

The methods above may in the future fundamentally change the education system in general and the online education system in particular. Undoubtedly, they have a huge number of advantages. Let us consider some of them in more detail.

1. Personalization. Personalization is supposed to be the main advantage of Internet courses. The user can learn anything, anywhere, anytime, given the Internet availability. Machine learning will extend the scope of personalization and create a customized product for each person.

2. Real-time feedback. With the fast running algorithms, students can get feedback on their progress and mistakes in a short period of time, which will accelerate their learning and increase the quality.

3. Effective use of data. Analyzing instructional data allows teachers and developers to improve instruction and create more effective programs.

However, despite all the advantages, there are also limitations to machine learning methods application in foreign language teaching:

1. The need for quality data. For efficient, and most importantly correct operation of algorithms, extensive databases are needed. Of course, they exist, but it takes a lot of time to search for them and then spend a lot of time. And if the service wants to collect its own database, it will need to release at least 2-3 streams of learners to select the best quality data.

2. Limited interaction. Machines are very fast and smart in correcting many errors, but they cannot replace human attitude and human contact. After all, only humans are capable of recognizing emotions. Therefore, artificial intelligence will not be able to fully replace teachers.

3. Limited context. The databases underlying machine learning cannot physically take into account all of pronunciation and sentence construction of

individual nations or continents nuances. For example, such an algorithm will not be able to accurately represent a person from New York or Paris pronunciation, because its databases contain only basic and ubiquitous language constructions.

To summarize, we can conclude that the machine learning techniques in language teaching application opens new opportunities for effective and personalized learning. Despite some limitations, these technologies have the potential to significantly improve the educational process and help students achieve greater success in learning foreign languages. Further research in this area will help to unlock machine learning full potential in education.

Литература

1. Насангалиева, А. Е. Целесообразность использования машинного перевода при обучении иностранным языкам в неязыковом вузе / А. Е. Насангалиева // Иностранный язык в региональной языковой политике : Материалы III Международной научно-практической конференции, Барнаул, 25 мая 2013 года / Ответственный редактор и составитель Т.В. Скубневская. – Барнаул: Алтайский государственный университет, 2013. – С. 148-151. – EDN TAZFJV.

2. Кривых, Л. Д. Использование цифровых технологий в обучении иностранному языку / Л. Д. Кривых, О. Б. Багринцева // Язык и межкультурная коммуникация : Сборник статей XIII Международной научно-практической конференции, Астрахань, 07 октября 2020 года / Редакционная коллегия: О.Б. Багринцева (гл. редактор), Л.Д. Кривых, Н.И. Кривых, Н.М. Колоколова, М.В. Пителина, М.А. Симоненко. – Астрахань: Издательский дом «Астраханский университет», 2020. – С. 72-77. – DOI 10.21672/2078-9858-2020.10.07-072-077. – EDN KNFVFJ.

3. Давлетшин, А. И. Внедрение методов машинного обучения и инструментов обработки естественных языков в программное обеспечение для изучения иностранных языков / А. И. Давлетшин, А. Л. Колесниченко //

Межвузовская научно-техническая конференция студентов, аспирантов и молодых специалистов им. Е.В. Арменского : Материалы конференции, Москва, 19 февраля – 01 2018 года. – Москва: Московский институт электроники и математики НИУ ВШЭ, 2018. – С. 92-93. – EDN XOUSOL.

4. Кривых, Л. Д. Обучение иностранному языку с использованием ИКТ / Л. Д. Кривых, О. Б. Багринцева, Л. И. Балашова // Проблемы повышения эффективности научной работы в оборонно-промышленном комплексе России : Материалы IV Всероссийской научно-практической конференции, Знаменск, 15–16 апреля 2021 года / Астраханский государственный университет. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего образования «Астраханский государственный университет», 2021. – С. 366-371. – EDN ZAKKDS.

5. Берг, П. И. Необходимость пересмотра специфики использования машинного перевода в методиках обучения иностранным языкам, применяющих учебный перевод / П. И. Берг, А. Н. Кечхуашвили // Проблемы и перспективы современной гуманитаристики: педагогика, методика преподавания, филология, организация работы с молодёжью. – 2023. – № 4. – С. 77-86. – EDN HCEGFR.

6. Зобнина, О. А. Некоторые аспекты применения коммуникативно-деятельностного подхода в обучении иностранных студентов английскому языку / О. А. Зобнина, И. Л. Яцукова, О. Б. Багринцева // Повышение глобальной конкурентоспособности российского образования: международное научное и образовательное сотрудничество : Сборник статей региональная научно-практической конференции, Астрахань, 23 сентября 2021 года / Науч. редакторы: О.А. Зобнина, А.В. Петраев, Н.А. Яковлева, И.Л. Яцукова. – Астрахань: ИП Н.В. Забродина, 2021. – С. 70-73. – EDN DUCCOT.

References

1. Nasangalieva, A. E. The feasibility of using machine translation when teaching foreign languages at a non-linguistic university / A. E. Nasangalieva // Foreign language in regional language policy: Materials of the III International Scientific and Practical Conference, Barnaul, May 25, 2013 / Responsible editor and compiler T.V. Skubnevskaya. – Barnaul: Altai State University, 2013. – P. 148-151. – EDN TAZFJV.

2. Krivykh, L. D. Use of digital technologies in teaching a foreign language / L. D. Krivykh, O. B. Bagrintseva // Language and Intercultural Communication : Collection of articles of the XIII International Scientific and Practical Conference, Astrakhan, 07 October 2020 / Editorial Board: O. B. Bagrintseva. Bagrintseva (Editor-in-Chief), L.D. Krivykh, N.I. Krivykh. Krivykh, N.I. Krivykh, N.M. Kolokolova, M.V. Pitelina, M.A. Simonenko. - Astrakhan: Publishing House "Astrakhan University", 2020. - C. 72-77. - DOI 10.21672/2078-9858-2020.10.07-072-077. - EDN KNFVFJ.

3. Davletshin, A. I. Introduction of machine learning methods and natural language processing tools into software for learning foreign languages / A. I. Davletshin, A. L. Kolesnichenko // Interuniversity scientific and technical conference of students, graduate students and young specialists named after . E.V. Armensky: Conference materials, Moscow, February 19 – 01, 2018. – Moscow: Moscow Institute of Electronics and Mathematics National Research University Higher School of Economics, 2018. – P. 92-93. – EDN XOUSOL.

4. Krivykh, L. D. Teaching a foreign language using ICT / L. D. Krivykh, O. B. Bagrintseva, L. I. Balashova // Problems of improving the effectiveness of scientific work in the defence-industrial complex of Russia : Proceedings of the IV All-Russian Scientific and Practical Conference, Znamensk, 15-16 April 2021 / Astrakhan State University. - Astrakhan: Federal State Budgetary Educational Institution of Higher Education "Astrakhan State University", 2021. - C. 366-371. - EDN ZAKKDS.

5. Berg, P. I. The need to review the specifics of using machine translation in methods of teaching foreign languages using educational translation / P. I. Berg, A. N. Kechkhuashvili // Problems and prospects of modern humanities: pedagogy, teaching methods, philology, organization of work with youth. – 2023. – No. 4. – P. 77-86. – EDN HCEGFR

6. Zobnina, O. A. Some aspects of the application of communicative-activity approach in teaching foreign students English / O. A. Zobnina, I. L. Yatsukova, O. B. Bagrintseva // Increasing the global competitiveness of Russian education: international scientific and educational cooperation : Collection of articles of the regional scientific-practical conference, Astrakhan, 23 September 2021 / Editors: O. A. Zobnina, A.V. Petraev, N.A. Yakovleva, I.L. Yatsukova. - Astrakhan: IP N.V. Zabrodina, 2021. - C. 70-73. - EDN DUCCOT.

TO THE QUESTION OF EDUCATIONAL DIGITALIZATION

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Abstract: the article is dedicated to discussing the process of digitalization of education and its impact on the modern education system. The main trends and advantages of digital learning are considered, as well as the problems and challenges those educational institutions face when implementing new technologies.

Keywords: digitalization, education, technologies, learning, advantages, modern education system, trends, challenges.

Living in the 21st century, it is difficult to imagine our lives without digital devices, especially when it comes to education. With the advent of the internet, computers, smartphones, and other devices, learning has become more accessible and convenient for students. Digitalization of education is the process of integrating modern digital technologies into the educational process, which is an integral part of the modern world and plays an important role in shaping the educational environment. This process covers a wide range of activities, starting from the implementation of interactive educational materials to the development of online platforms for distance learning. This innovation has enormous potential to improve the accessibility, quality of education, and response to the changing demands of modern society. What are the advantages and challenges of this process, and how does it affect learners?

One of the main problems in education is the accessibility of educational resources for all segments of society. If something was impossible or difficult to implement in traditional education, digitalization "frees up" for a creative approach, allowing to lower these barriers by providing the opportunity for remote

learning through online platforms, such as university courses, webinars, e-books, and video courses. This is especially important for students living in remote areas, as well as for people with physical limitations, who can receive quality education regardless of their location. It also contributes to the effectiveness of the educational process. Modern technologies allow creating interactive lessons, quizzes, educational games, making learning more engaging and memorable. The use of multimedia content and online tools helps stimulate students' interest in learning and increase their motivation to study. Another important aspect is the ability to personalize the learning process. With specialized educational platforms and programs, it is possible to adapt education to the specific needs and level of knowledge of each student. This allows for creating personalized educational plans, taking into account the characteristics and learning paces of each learner.

Digital Literacy and Development of Future Skills

In the virtual environment, real skills can be practiced in a safe environment. If doing something immediately "in real life" is dangerous, impossible, or very expensive, for example, a student cannot be put directly in charge of flying a real plane or sent to an operating table, then VR technologies come to the rescue.

In the digital era, it is important to acquire the skills necessary for working with technologies. Digitalization of education can help develop digital literacy among students, including working with information, assessing the reliability of data, programming, ability to use tools to generate new ideas, projects, and products, as well as the development of creative thinking.

Although digitalization of education provides numerous opportunities, it also faces challenges such as:

1. Inaccessibility of digital infrastructure: Not all schools and educational institutions have access to modern digital technologies due to the lack of suitable infrastructure and technical resources.

2. Lack of qualified personnel: Implementation of digital technologies requires trained teachers and specialists who can effectively use digital tools in the educational process.

3. Data security: With the increase in the amount of digital information in educational institutions, the risk of data leaks and breaches of confidentiality increases, requiring appropriate measures to protect information.

4. Quality of content and methods: Not all digital educational resources meet quality standards and contain up-to-date and reliable information, which can affect the effectiveness of education.

In Russia, there are several state programs and projects for the digitalization of education. Some of them include:

1. The "Digital Educational Environment" project is aimed at creating a digital infrastructure for educational institutions. The goal of the project is to provide schools and universities with modern digital technologies for effective learning and student development.

2. The "E-learning" program involves creating and developing electronic educational resources for schools and universities, including online courses, educational platforms, e-books, and other digital tools.

3. The "Education 4.0" project aims to integrate digital technologies into the educational process and develop innovative educational methods and programs, including the use of artificial intelligence and virtual reality.

4. The National project "Education" includes activities for the digitalization of education, improvement of the infrastructure of educational institutions, as well as increasing the accessibility and quality of education in general.

These projects and programs are part of the strategy for the development of education in the digital age and are aimed at updating the educational system, ensuring quality education, and developing digital competencies among students.

In conclusion, the digitalization of education represents an important stage in the development of education in the modern world. Its implementation requires an integrated approach, including appropriate investments, professional training of teachers, and the development of new teaching methods. The digitalization of education opens up new opportunities for students and educators, enriching the learning process and contributing to the development of the modern education

system. It is important to remember that successful implementation of digital technologies requires not only technical preparation but also readiness for change and constant updating of pedagogical approaches. This process is a way to a modern and innovative system of education, contributing to achieving high results and developing the personality of each student.

Литература

1. Ксенофонтова А.Н. Цифровизация образования: проблемы, перспективы / А.Н. Ксенофонтова, А.В. Леденева // Вестник Оренбургского государственного университета. - 2020. - № 5 (228). -С. 86-90.

2. Зобнина, О. А. Некоторые аспекты применения коммуникативно-деятельностного подхода в обучении иностранных студентов английскому языку / О. А. Зобнина, И. Л. Яцукова, О. Б. Багринцева // Повышение глобальной конкурентоспособности российского образования: международное научное и образовательное сотрудничество : Сборник статей региональная научно-практической конференции, Астрахань, 23 сентября 2021 года / Науч. редакторы: О.А. Зобнина, А.В. Петраев, Н.А. Яковлева, И.Л. Яцукова. – Астрахань: ИП Н.В. Забродина, 2021. – С. 70-73. – EDN DUCCOT.

3. Исследование российского рынка онлайн-образования и образовательных технологий. [Электронный ресурс]. Режим доступа: https://edmarket.digital/ (дата обращения: 30.11.2019).

4. Кривых, Л. Д. Обучение иностранному языку с использованием ИКТ / Л. Д. Кривых, О. Б. Багринцева, Л. И. Балашова // Проблемы повышения эффективности научной работы в оборонно-промышленном комплексе России : Материалы IV Всероссийской научно-практической конференции, Знаменск, 15–16 апреля 2021 года / Астраханский государственный университет. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего образования «Астраханский государственный университет», 2021. – С. 366-371. – EDN ZAKKDS.

5. Блинов В. И., Дулинов М. В., Есенина Е. Ю., Сергеев И. С. Проект дидактической концепции цифрового профессионального образования и обучения // М.: Издательство «Перо». – 2019. – С. 45-47. – URL: https://firo.ranepa.ru/files/docs/proekt_didakticheskoy_koncepcii.pdf (дата обращения: 30.11.2019).

6. Кривых, Л. Д. Применение технологии организации проектно-исследовательской деятельности при обучении иностранному языку / Л. Д. Кривых, О. Б. Багринцева // Основные вопросы лингвистики, лингводидактики и межкультурной коммуникации : Сборник материалов XV Международной научно-практической конференции / Сост. Е.Н. Шугаева. – Астрахань : Астраханский государственный университет, Издательский дом "Астраханский университет", 2021. – С. 219-226. – EDN DKPPHE.

References

1. Ksenofontova A.N. Digitalization of education: problems, prospects / A.N. Ksenofontova, A.V. Ledeneva // Bulletin of Orenburg State University. - 2020. - Nº 5 (228). -C. 86-90.

2. Zobnina, O. A. Some aspects of the application of communicative-activity approach in teaching foreign students English / O. A. Zobnina, I. L. Yatsukova, O. B. Bagrintseva // Increasing the global competitiveness of Russian education: international scientific and educational cooperation : Collection of articles of the regional scientific-practical conference, Astrakhan, 23 September 2021 / Editors: O. A. Zobnina, A.V. Petraev, N.A. Yakovleva, I.L. Yatsukova. - Astrakhan: IP N.V. Zabrodina, 2021. - C. 70-73. - EDN DUCCOT.

3. Research of the Russian market of online education and educational technologies. [Electronic resource]. Access mode: https://edmarket.digital/ (date of access: November 30, 2019).

4. Krivykh, L. D. Teaching a foreign language using ICT / L. D. Krivykh, O. B. Bagrintseva, L. I. Balashova // Problems of improving the effectiveness of scientific work in the defence-industrial complex of Russia : Proceedings of the IV

All-Russian Scientific and Practical Conference, Znamensk, 15-16 April 2021 / Astrakhan State University. - Astrakhan: Federal State Budgetary Educational Institution of Higher Education "Astrakhan State University", 2021. - C. 366-371. - EDN ZAKKDS.

5. Blinov V.I., Dulinov M.V., Yesenina E.Yu., Sergeev I.S. Project of the didactic concept of digital vocational education and training // M.: Pero Publishing House. – 2019. – pp. 45-47. – URL: https://firo.ranepa.ru/files/docs/proekt_didakticheskoy_koncepcii.pdf (access date: November 30, 2019).

6. Krivykh, L. D. Application of the technology of project-research activity organisation in teaching a foreign language / L. D. Krivykh, O. B. Bagrintseva // Basic issues of linguistics, linguodidactics and intercultural communication : Proceedings of the XV International Scientific and Practical Conference / Compiled by E. N. Shugaeva. E.N. Shugaeva. - Astrakhan : Astrakhan State University, Publishing House "Astrakhan University", 2021. - C. 219-226. - EDN DKPPHE.

IMPROVING HIGHER EDUCATIONAL INSTITUTIONS CAREER GUIDANCE WORK BY ARTIFICIAL INTELLIGENCE INTRODUCTION

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Annotation. The article deals with some aspects of career guidance work in a higher education institution, as well as possible ways to improve it taking into account the ever-changing demands of society. Vocational guidance work is presented in the article as a continuous process of support of schoolchildren, starting from the moment of graduation from primary school and up to the moment of their admission to higher education. The necessity of joint career guidance work of school administration, teachers, parents of applicants, teachers and university students is emphasised.

Key words: career guidance work, schoolchild support, professional spheres of activity, school programme, psychophysical and age features of a child, artificial intelligence.

Starting to consider the issue of organisation and ways to improve career guidance work in higher education, we note that there are many definitions of this type of activity, highlighting its specific aspects, depending on the purpose of the study. Our article is based on the most generalised notion of career guidance work presented in the Big Encyclopaedic Dictionary: "Professional orientation (career guidance) is a system of measures aimed at helping young people to choose a profession. It includes information about professions, vocational, specialized secondary and higher educational institutions, individual consultations, etc.; part of the system of labour education and educational work in general education school"[1].

Professional orientation has always been an integral part of the work of higher education institutions. In the conditions of constantly changing demands of society,

the training of qualified personnel in certain areas of life should begin already at the stage of the initial choice of profession by a schoolchild, when the child has the first rudiments of interest in his "adult" professional future.

We have tried to highlight the main problematic aspects of career guidance work, paying attention to which, in our opinion, it is possible to influence the choice of higher education institution by schoolchildren more effectively.

Firstly, the object of career guidance work is traditionally schoolchildren on the threshold of passing the USE and USE, choosing a college or university. Often it is then that the first contact with representatives of the educational organisation where the pupil can continue his/her education takes place.

The Centre for the Study and Network Monitoring of Youth Environment - an accredited IT company established by order of the President of Russia in October 2018, created to form a comprehensive system to protect children and adolescents from the impact of negative information in the digital space, published an interview with Elena Pavlova, a psychologist of the department of early prevention of family disadvantage of the State Budgetary Institution "Family Centre" "Helios", in which she answered the question about at what age vocational guidance work should begin: "As soon as a child learns to study at the age of three. For example, at the age of three you can start to understand popular professions: doctor, teacher, cook. And as the child grows up, make this information more complex. For older children, preschool and primary school age, there are parks of professions, various masterclasses where a child can try himself in different spheres. Naturally, initially he/she will perceive it as a game, but in the process he/she will realise what he/she likes and what he/she does not like" [2].

It is obvious that "career guidance" begins with the family, where the child acquires primary knowledge, skills and abilities and shows the first interest in new occupations. Preschool educational institutions also take an active part in this, forming the child's general outlook. In primary school children show interests more pronounced: someone likes to draw more, someone likes to sing, etc. Of course, in primary school it is still impossible to make predictions about the professional

choice, but it is necessary to develop the child's interests. As for the vocational guidance work carried out by the university, we propose to strengthen contact with the administration of secondary schools and to start vocational guidance work with fifth-graders, i.e. immediately after the end of primary school. Undoubtedly, the applied methods should be selected taking into account the age psycho-physiological features of children. Students of pedagogical areas should be involved in career guidance activities under the guidance of experienced teachers interacting with school teachers, psychologist and parents of schoolchildren.

Activities aimed at generating interest in certain spheres of activity can be carried out both within the school and at the University. Here, teachers acquire wide opportunities for creativity, choosing from a variety of organisational forms and filling them with subject content. The transition to secondary school is a significant stage in the life of every child, when he or she begins to feel more mature and independent. It is important not to miss the moment when, with the growing academic load, interest in extracurricular activities may begin to fade against the background of emotional overload. It is then that a comfortable environment should be formed around the pupil, in which it will be possible to engage in interesting activities, for example, to attend a computer literacy club at the University, without damage, and even with the benefit of mastering the school programme.

Secondly, career guidance work should not be episodic. The positive experience of organising profile classes confirms that the feeling of long-term belonging to a higher education institution strengthens loyalty to it, directs students to higher academic performance, strengthens the desire to enter this particular institution [3]. Vocational guidance work should be carried out throughout the entire secondary school education.

Astrakhan Tatishchev State University has accumulated a great experience of career guidance work. In the conditions of competition with other universities this type of activity is constantly improved, the needs of applicants in certain areas of training are taken into account. An applicant should be aware of the university

events, that is why one of the aspects of career guidance activities, which we would like to strengthen, is the work of social networks popular among young people in terms of informing and attracting applicants. Schoolchildren should be subscribed to the pages of faculties and receive regular interesting content, which will help the university to form the right idea and attitude to the choice of future profession.

Литература

1. Профессиональная ориентация // Большой энциклопедический словарь [Электронный ресурс] // Режим доступа: https://dic.academic.ru/dic.nsf/enc3p/246146 (дата обращения: 04.04.2024).

2. Зобнина, О. А. Формирование профессиональных компетенций в процессе обучения английскому языку в вузе / О. А. Зобнина, О. Б. Багринцева // Язык и межкультурная коммуникация : Сборник статей XV Международной научно-практической конференции, Астрахань, 12 октября 2022 года / – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Астраханский государственный университет", 2022. – С. 114-119. – DOI 10.54398/29491371_2022_114. – EDN KZKYXY.

3. Когда нужно готовить ребенка к выбору профессии? [Электронный ресурс] // Режим доступа: https://www.cism-ms.ru/poleznye-materialy/psikholog-gotovit-rebyenka-k-vyboru-professii-nuzhno-v-rannem-vozraste/ (дата обращения: 04.04.2024).

4. В АГУ имени В. Н. Татищева стартует программа профильных классов [Электронный ресурс] // Режим доступа: https://asu.edu.ru/news/13588-v-agu-imeni-v-n-tatisheva-startuet-programma-profilnyh-klassov.html (дата обращения: 04.04.2024).

References

1. Professional orientation // Big encyclopedic dictionary [Electronic resource] // Access mode: https://dic.academic.ru/dic.nsf/enc3p/246146 (date of application: 04.04.2024).

2. Zobnina, O. A. Formation of professional competences in the process of teaching English in higher education / O. A. Zobnina, O. B. Bagrintseva // Language and intercultural communication : Collection of articles of the XV International Scientific and Practical Conference, Astrakhan, 12 October 2022 / . - Astrakhan: Federal State Budgetary Educational Institution of Higher Professional Education "Astrakhan State University", 2022. - C. 114-119. - DOI 10.54398/29491371_2022_114. - EDN KZKYXY.

3. When is it necessary to prepare a child for choosing a profession? [Electronic resource] // Access mode: https://www.cism-ms.ru/poleznye-materialy/psikholog-gotovit-rebyenka-k-vyboru-professii-nuzhno-v-rannem-vozraste / (accessed 04.04.2024).

4. The program of specialized classes starts at ASU named after V. N. Tatishchev [Electronic resource] // Access mode: https://asu.edu.ru/news/13588-v-agu-imeni-v-n-tatisheva-startuet-programma-profilnyh-klassov.html (date of application: 04.04.2024).

POSITIVE ASPECTS OF INTRODUCING AI AND IT INTO THE EDUCATIONAL PROCESS

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Annotation: the article highlights the prospects and significance of using artificial intelligence and information technology to improve the educational process. The article discusses the positive aspects of implementing high-tech solutions in education, including improving access to education, personalizing learning, increasing the efficiency of the learning process and developing skills that will be useful in the future. The study also highlights the potential benefits that can be derived from innovative approaches to educational activities.

Key words: education, innovative approach, artificial intelligence, information technologies.

Information technology has long been an indispensable part of education in order to improve the learning and development of students. The beginning of the introduction of IT in education can be dated back to 1950-1960, when the first computers appeared and experiments with their use for educational purposes began.

At first, IT in education was used to automate administrative processes such as student records, class schedules, etc. Gradually, computers began to be used in the educational process as well, making it possible to create interactive training programs, training videos, online courses, and much more.

One of the important stages in the introduction of IT in education was the emergence of the Internet and the possibility of conducting training remotely. Now many educational institutions offer online courses, webinars, lectures that can be attended from anywhere in the world.

Technology in education continues to evolve, there are new teaching methods, programs and applications that help teachers and students to make the learning process more interesting, effective and accessible.

The introduction of artificial intelligence (AI) and information technology (IT) into the educational process opens up many new opportunities for students and educators to learn and develop effectively. One of the main positive aspects of this implementation is the increased accessibility of education. Thanks to AI and IT technologies, students can receive quality instruction even remotely.

In addition, the use of AI and IT in the learning process contributes to the individualization of learning. With the help of AI algorithms it is possible to adapt educational material to the specific needs and abilities of each student, which allows to achieve better results and improve the quality of learning in general.

Another positive aspect of implementing AI and IT in education is the increased efficiency of the learning process. Automation and analytics systems help teachers optimize their work, identify students' weaknesses and offer them individual tasks for development. This increases the efficiency of learning and improves the overall level of students' knowledge.

In addition, the introduction of AI and IT in the educational process contributes to the development of digital skills among students. They learn to use modern technologies, work with large amounts of information, and develop skills of independent data search and analysis - which is important for successful adaptation in modern society.

Artificial intelligence (AI) has huge potential in education and can be used to improve learning, personalize the learning process, analyze statistics, automate administrative tasks, and many other purposes. Here are a few ways in which AI can be applied in education:

1. Adaptive learning: Artificial intelligence can analyze student performance data and suggest personalized learning materials and techniques to help each student reach his or her potential.

2. Assessment and evaluation: AI can be used to analyze the results of tests, assignments, and other forms of assessment to provide teachers with more accurate information about student performance and help them better customize instructional plans.

3. Virtual Teachers: AI can be used to develop virtual teachers who can deliver lessons, assignments and tests, communicate with students, and even customize materials to meet the individual needs of each student.

4. New forms of learning: AI enables the creation of interactive and innovative learning methods such as game applications, virtual labs and research projects that make the learning process more engaging and effective.

5. Administrative automation: AI can be used to automate administrative tasks such as scheduling, data management, demand forecasting, and even feedback from students and their parents.

As technology and research in this area advances, we can expect even more innovations and opportunities to improve learning and teaching.

Литература

1. Кривых, Л. Д. Использование цифровых технологий в обучении иностранному языку / Л. Д. Кривых, О. Б. Багринцева // Язык и межкультурная коммуникация : Сборник статей XIII Международной научно-практической конференции, Астрахань, 07 октября 2020 года / Редакционная коллегия: О.Б. Багринцева (гл. редактор), Л.Д. Кривых, Н.И. Кривых, Н.М. Колоколова, М.В. Пителина, М.А. Симоненко. – Астрахань: Издательский дом «Астраханский университет», 2020. – С. 72-77. – DOI 10.21672/2078-9858-2020.10.07-072-077. – EDN KNFVFJ.

2. Кривых, Л. Д. Оптимизация обучения английскому языку студентов неязыковых специальностей через интерактивные технологии / Л. Д. Кривых, М. А. Симоненко, О. Б. Багринцева // Язык и межкультурная коммуникация : Сборник статей XII Международной научно-практической конференции, Астрахань, 15 октября 2019 года / Составитель Б. Н. Бисенгалиева. –

Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего профессионального образования "Астраханский государственный университет", 2019. – С. 24-30. – DOI 10.21672/2078-9858-2019.10.15-024-030. – EDN FMLTWX.

3. Кривых, Л. Д. Обучение иностранному языку с использованием ИКТ / Л. Д. Кривых, О. Б. Багринцева, Л. И. Балашова // Проблемы повышения эффективности научной работы в оборонно-промышленном комплексе России : Материалы IV Всероссийской научно-практической конференции, Знаменск, 15–16 апреля 2021 года / Астраханский государственный университет. – Астрахань: Федеральное государственное бюджетное образовательное учреждение высшего образования «Астраханский государственный университет», 2021. – С. 366-371. – EDN ZAKKDS.

4. Зобнина, О. А. Некоторые аспекты применения коммуникативно-деятельностного подхода в обучении иностранных студентов английскому языку / О. А. Зобнина, И. Л. Яцукова, О. Б. Багринцева // Повышение глобальной конкурентоспособности российского образования: международное научное и образовательное сотрудничество : Сборник статей региональная научно-практической конференции, Астрахань, 23 сентября 2021 года / Науч. редакторы: О.А. Зобнина, А.В. Петраев, Н.А. Яковлева, И.Л. Яцукова. – Астрахань: ИП Н.В. Забродина, 2021. – С. 70-73. – EDN DUCCOT.

5. Кривых, Л. Д. Применение технологии организации проектно-исследовательской деятельности при обучении иностранному языку / Л. Д. Кривых, О. Б. Багринцева // Основные вопросы лингвистики, лингводидактики и межкультурной коммуникации : Сборник материалов XV Международной научно-практической конференции / Сост. Е.Н. Шугаева. – Астрахань : Астраханский государственный университет, Издательский дом "Астраханский университет", 2021. – С. 219-226. – EDN DKPPHE.

References

1. Krivykh, L. D. Use of digital technologies in teaching a foreign language / L. D. Krivykh, O. B. Bagrintseva // Language and Intercultural Communication : Collection of articles of the XIII International Scientific and Practical Conference, Astrakhan, 07 October 2020 / Editorial Board: O. B. Bagrintseva. Bagrintseva (Editor-in-Chief), L.D. Krivykh, N.I. Krivykh. Krivykh, N.I. Krivykh, N.M. Kolokolova, M.V. Pitelina, M.A. Simonenko. - Astrakhan: Publishing House "Astrakhan University", 2020. - C. 72-77. - DOI 10.21672/2078-9858-2020.10.07-072-077. - EDN KNFVFJ.

2. Krivykh, L. D. Optimisation of teaching English to students of non-language specialties through interactive technologies / L. D. Krivykh, M. A. Simonenko, O. B. Bagrintseva // Language and intercultural communication : Collection of articles of the XII International Scientific and Practical Conference, Astrakhan, 15 October 2019 / Compiled by B. N. Bisengalieva. - Astrakhan: Federal State Budgetary Educational Institution of Higher Professional Education "Astrakhan State University", 2019. - C. 24-30. - DOI 10.21672/2078-9858-2019.10.15-024-030. - EDN FMLTWX.

3. Krivykh, L. D. Teaching a foreign language using ICT / L. D. Krivykh, O. B. Bagrintseva, L. I. Balashova // Problems of improving the effectiveness of scientific work in the defence-industrial complex of Russia : Proceedings of the IV All-Russian Scientific and Practical Conference, Znamensk, 15-16 April 2021 / Astrakhan State University. - Astrakhan: Federal State Budgetary Educational Institution of Higher Education "Astrakhan State University", 2021. - C. 366-371. - EDN ZAKKDS.

4. Zobnina, O. A. Some aspects of the application of communicative-activity approach in teaching foreign students English / O. A. Zobnina, I. L. Yatsukova, O. B. Bagrintseva // Increasing the global competitiveness of Russian education: international scientific and educational cooperation : Collection of articles of the regional scientific-practical conference, Astrakhan, 23 September

2021 / Editors: O. A. Zobnina, A.V. Petraev, N.A. Yakovleva, I.L. Yatsukova. - Astrakhan: IP N.V. Zabrodina, 2021. - C. 70-73. - EDN DUCCOT.

5. Krivykh, L. D. Application of the technology of project-research activity organisation in teaching a foreign language / L. D. Krivykh, O. B. Bagrintseva // Basic issues of linguistics, linguodidactics and intercultural communication : Proceedings of the XV International Scientific and Practical Conference / Compiled by E. N. Shugaeva. E.N. Shugaeva. - Astrakhan : Astrakhan State University, Publishing House "Astrakhan University", 2021. - C. 219-226. - EDN DKPPHE.

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