Chapter 25

USING SMART TECHNOLOGY TO FORM ENVIRONMENTAL COMPETENCE OF EDUCATION SEEKERS

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INTRODUCTION

In the world of modern technologies and the constant development of innovations, the use of SMART technologies in education is becoming an important aspect. This new era, which is based on intelligent devices and software solutions, opens up endless opportunities for improving the educational process. The use of SMART technologies in education not only makes the process more interesting and exciting for students, but also contributes to their better assimilation of the material and the development of critical thinking.

In the context of the constant growth of global environmental problems, the use of SMART technologies to form the environmental competence of students is becoming increasingly relevant. SMART technologies, which cover a wide range of tools and devices to promote learning and personal development, open up new opportunities for raising environmental awareness and awareness of the importance of preserving natural resources.

Conducting environmental activities and educational programs in the field of environmental protection are extremely important in the modern world, where the problem of environmental pollution and deforestation is becoming increasingly serious. Using SMART technologies, you can create interactive educational materials, virtual tours, games, and other tools that will interest and engage students in environmental issues. The use of these technologies will help promote the formation of environmental competence and the perception of the importance of caring for nature in the youngest generation.

With such prospects, the use of SMART technologies for teaching environmental competence becomes an important direction in the development of education and preservation of the environment of our planet.

To determine the ways of using SMART technologies in the educational environment, the study used the results of the works of domestic and foreign scientists, in particular: V. Bykov, V. Boychuk, G. Bonch-Bruyevych, R. Gurevich, K. Johnson, M. Kademiya, S. Kadzita, K. Johnson, K. Kim, G. Kosenko, B. Slavin, L. Shevchenko, V. Kobys, A. Kobys, H. Pen, V. Umanets, S. Yakubov, etc.

The purpose of the study is to analyze the use of SMART technologies to form the environmental competence of education seekers.

To achieve this goal, the following tasks are envisaged:

1) to analyze the basic concepts: «SMART technologies», «SMART learning», «SMART environment», «SMART teacher»;

2) to reveal the features of the application of SMART technology in education;

3) to analyze modern approaches to the use of SMART technology to form the environmental competence of participants in the educational process;

4) to give examples of the use of SMART technology to form the environmental competence of education seekers.

To achieve the set goal and defined tasks, the following methods were used: *theoretical*: theoretical analysis and generalization of literary sources – in order to theoretically analyze the problem of using SMART technology to form the environmental competence of education seekers; comparison, classification, generalization to clarify the content of the main concepts of the study; deductive, inductive methods – to determine the features of using SMART technology to form the environmental competence of education seekers; systemic method, formalization – to develop a concept for forming environmental competence in education seekers using SMART technology; idealization and pedagogical modeling – in order to design a system for forming environmental competence in education seekers using SMART technology; *empirical*: pedagogical observation, generalization of pedagogical experience – in order to generalize the state of using SMART technology in the educational process to form the environmental competence of education seekers.

1. The role of SMART technologies in education

The role of education in modern global society is determined by the rapid development of information technologies and the Internet. This leads to a new vision, due to the fact that the use of technical means, services and the Internet in various industries is aimed at improving human life.

The education system now offers a significant selection of technologies and learning tools that can provide a sufficiently high level of education that meets the tasks of modern society. One of the criteria for the quality of the

education system is the speed of updating knowledge and technologies. SMART technologies occupy one of the leading positions in this matter.

The introduction of SMART technologies into the educational process has undeniable advantages for all subjects of educational activity, which entails a transition from the old scheme of reproductive knowledge transfer to a new, creative form of learning using innovative methods, forms and means [1].

Today, in the education system of Ukraine, it is a common phenomenon to conduct training sessions using multimedia presentations. However, along with the usual presentation technologies (Microsoft Power Point, LibreOffice Impress, MySlideShow), new, interactive technologies are entering the field of education, which allow us to move away from the standard and usual presentation in the form of a slide show. An innovative aspect in the education system and the educational process is the tendency to increasingly introduce IT technologies: network, mobile, information [2].

The SMART concept is a key aspect of future education, which includes expanding opportunities in time, space, available educational materials and teaching methods. This concept allows you to overcome the limitations of traditional lessons in classrooms.

The main goal of SMART education is to develop the skills necessary for successful activity in a digital society.

The main tasks for SMART education are:

1) development and implementation of electronic textbooks;

2) creation of online classrooms and an electronic knowledge assessment system;

3) expanded use of educational resources for public purposes;

4) strengthening education in the field of ethics of using information technologies to solve social problems;

5) improving the skills of teachers for the wider application of SMART education;

6) creating a basis for educational services [3].

SMART is an acronym that stands for: Self-Directed; Motivated; Adaptive; Resource-enriched; Technology.

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[1] Гуревич Р. С., Коношевський Л. Л., Особливості професійної Smart-технології як засіб підвищення якості освіти. *Смарт-освіта: досвід, реалії, перспективи*: монографія. Вінниця, 2019. 220 с.

[2] Бонч-Брує́вич Г.Ф., Абрамов В.О., Косенко Т.І. Методика застосування технології SMART Board у навчальному процесі: навчальний посібник. Київ: КМПУ імені Б.Д. Грінченка, 2007. 102 с.

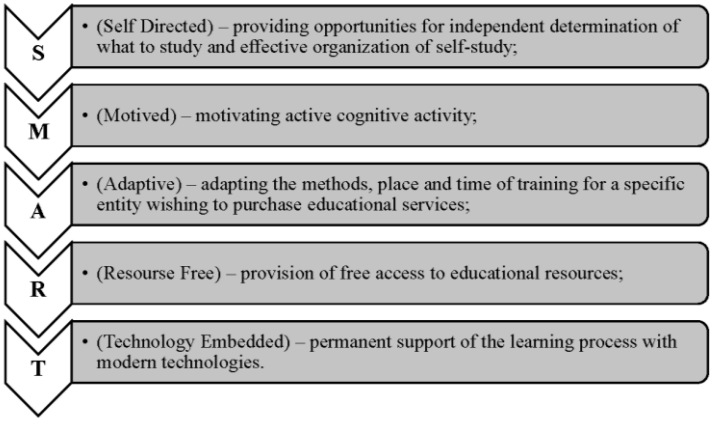
[3] Smart-освіта: ресурси та перспективи: матеріали Міжнародної наук.-метод. конференції (16–17 жовтня 2014 р., Київ). Київ: Київський національний торговельно-економічний університет, 2014. 350 с.

SMART technology is an interactive learning complex that allows you to create, edit, and distribute multimedia learning materials, both in and out of class [4].

SMART learning is flexible learning in an interactive educational environment using freely available content from around the world, which allows you to expand the boundaries of learning, not only in terms of the number of students, but also in terms of time and space: learning becomes available everywhere and always.

SMART learning environments are physical environments enriched with contextual digital devices to enhance and accelerate learning. Based on this, they can recommend the right learning content in the right place and at the right time. This is especially useful for lifelong learning in the workplace [5].

The application of the SMART approach aims to achieve the following goals in the learning process (Fig. 1):



[6]

Fig. 1. SMART approach goals in the learning process

Source: created by the author

The transition to SMART technologies places new demands on teachers, who must now provide conditions for students to acquire their own experience and skills, and not just transfer ready-made knowledge. One of

[4] Семеніхіна О.В. Нові парадигми у сфері освіти в умовах переходу до SMART-суспільства. *Науковий вісник Донбасу*. 2013. № 3. URL: http://nbuv.gov.ua/UJRN/nvd_2013_3_22

[5] UNESCO ICT Competency Framework for Teachers. URL: https://unesdoc.unesco.org/ark:/48223/pf0000265721.

[6] Дмитрів, М. В. Застосування SMART-технологій у навчальному процесі. 2018. URL: https://informatika.udpu.edu.ua/?page_id=2855

the key aspects of this approach is the integration of various educational resources, including multimedia materials and external electronic resources[7].

A Smart teacher is a participant in the educational process who actively implements technological innovations and Internet tools to achieve a new quality of learning, to prepare a school graduate who will meet the requirements of a Smart society. Therefore, a teacher who masters Smart technologies faces important tasks [8].

The tasks of a SMART teacher:

– intensification of the use of electronic resources;

– continuous professional development;

– ensuring reasonable and justified use of electronic resources;

– design of software and methodological support.

SMART technologies in education offer a wide range of opportunities to improve learning and engage students in the learning process. Some of the features of using SMART technologies in education include:

1. *Interactive lessons*: SMART technologies allow you to create interactive lessons that engage students and promote better learning. Teachers can use special equipment, such as interactive whiteboards, projection devices, tablets or smartphones, to create interesting and educational lessons.

Interactive lessons developed using SMART technologies can include video and audio materials, interactive tasks and exercises, visualization of complex concepts using diagrams and illustrations, interactive group dialogues and discussions, as well as the possibility of interaction between students and the teacher through special software. This approach allows not only to improve learning, but also to develop critical thinking, creativity and collaboration among students.

2. *Visualization*: SMART technologies can be used to visualize complex concepts and processes, which contributes to a better understanding of the material. This may include the use of diagrams, graphs, videos or audiovisual presentations to visually present complex information structures. SMART technologies also allow for the creation of interactive elements that allow users to interact with the presented information, which contributes to a better understanding of the material. For example, this may be the ability to drag elements on the screen, open additional windows with explanations or interact with simulations. This approach allows for a better understanding and memorization of the educational material, which is key to successful learning.

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[7] Пригодій М.А., Гуржій А.М., Липська Л.В., Гуменний О.Д., Зуєва А.Б., Кононенко А.Г., Прохорчук О.М., Белан В.Ю. Методичні основи розроблення SMART-комплексів для підготовки кваліфікованих робітників у закладах професійної (професійно-технічної) освіти: методичний посібник. Житомир: Полісся, 2019. 255 с.

[8] Cooper B. and Brna P. Supporting high quality interaction and motivation in the classroom using ICT: the social and emotional learning and engagement in the NIMIS project. *Education, Communication and Information*. 2002. № 2. pp. 113-138.

3. *Personalized learning*: SMART technologies allow for the creation of individualized learning programs that take into account the needs of each student.

These technologies are used to personalize the learning process, taking into account aspects such as learning speed, information perception style, individual interests and personal approaches to learning.

Using SMART technologies, teachers can analyze data about each student, their performance and level of learning to create an optimal curriculum. Each student receives individualized tasks, exercises and materials that help them better absorb information.

This approach helps to increase the effectiveness of learning, make the process more interesting, strengthen motivation to learn new material, creating comfortable conditions for each student.

4. *Feedback* is an important part of the learning process, as it allows teachers to understand how effectively they are delivering the material and how it is being received by students. With the help of SMART technologies, such as online platforms or learning and communication programs, teachers can receive feedback in real time.

For example, teachers can create surveys or tests for students using online platforms and receive instant results for analysis. They can also use chatbots to answer students' questions outside of class and receive feedback from them. This allows teachers to adapt their teaching approach to the needs of each student.

With the feedback received, teachers can make appropriate adjustments to improve the learning process. For example, if most students do not understand a certain topic, the teacher can change their approach to explaining it or provide additional materials for clarification. This allows them to refine and improve the learning process for each student to ensure their successful learning.

5. *Collaboration*: SMART technologies promote collaboration between students and teachers, which develops communication and teamwork skills. SMART interactive whiteboards, tablets and smartphones with learning applications allow students to create joint projects, solve problems together, discuss ideas and share knowledge in real time.

Thanks to these technologies, students can work in a team even at a distance, collaborating through online platforms, shared documents and chats. They can discuss projects, solve problems together and interact in a virtual environment, which promotes the development of communication and collaboration skills.

SMART technologies also allow teachers to create interesting and meaningful lessons, using interactive teaching methods and involving students in active participation. Thanks to this, learning becomes more

exciting and effective, and students get the opportunity to develop not only academic, but also social skills.

Thus, SMART technologies play a key role in the modern educational process, helping teachers create interesting and effective lessons, as well as engaging students in active learning. They allow for individualization of the learning process, responding to the needs of each student, and create opportunities for interactive interaction and teamwork, as well as contributing to the development of students' digital literacy skills and preparing them for life in a digital society.

2. Advantages of using SMART technologies in education

The organization of the educational process, which is based on the use of SMART technologies, includes new teaching methods and forms of work, such as individual and group classes with electronic courses, student work in small groups with mutual assessment, remote learning outside the program using Internet services for communication and collaboration. The use of platforms such as Moodle, Eliademi, Elearn, social networks, websites, forums, chats and webinars allows you to create your own educational content for the development of SMART technologies [9].

New generation electronic educational resources should have the following innovative qualities (Table 1).

A new form of presenting material using interactive equipment (interactive boards, interactive displays), unlike slide show presentations, is a presentation created directly during a lecture, created «here and now» [10]. The use of interactive equipment (SMART Boards) turns the learning process into an exciting experience.

Smart Boards are interactive boards that combine the functionality of a regular board with a computer, which allows the teacher to conduct lessons more effectively and interestingly. These boards have touch-sensitive surfaces that can be used to interact with digital content, such as presentations, videos and educational software. Teachers can easily comment, highlight and manipulate content in real time, making lessons more dynamic and interesting for students. Interactive whiteboards also allow for seamless integration of multimedia elements, allowing teachers to enhance their lessons with videos, images, and interactive activities.

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[9] Криворот Т. SMART-технології у професійній підготовці кваліфікованих робітників. XIV Всеукраїнська науково-практична конференція: *Науково-методичне забезпечення професійної освіти і навчання*. 2020. URL: https://lib.iitta.gov.ua/id/eprint/723982/1/Страницы %20из%203%20Тези-2.pdf

[10] Гуревич Р. С., Коношевський Л. Л., Особливості професійної Smart-технології як засіб підвищення якості освіти. *Смарт-освіта: досвід, реалії, перспективи*: монографія. Вінниця, 2019. 220 с.

Table 1

Innovative qualities of new generation electronic educational resources

№	Quality	Characteristics
1.	*high interactivity* (ensures active educational activities);	These qualities make it possible to implement virtual reality classroom content. Activities in the virtual world not only satisfy educational and cultural needs, but also motivate users and generate new interests in them.
2.	*full-scale multimedia* (provides adequate representation of fragments of the real world);	
3.	*widespread use of simulation modeling* (allows to fully reflect typical reactions, characteristics of objects and processes being presented);	
4.	*ability to modify* (the user can independently make changes/additions to the content);	These qualities provide the ability to adapt content to the requests and capabilities of each specific user, necessary for the implementation and widespread use of new resources. In addition, the ability to modify and cross-platform provide the potential for self-development of aggregate content, the ability to create the necessary variations of its structural units [11].
5.	*cross-platform* (the resource can be played on multiple operating systems).	

Source: created by the author

The basis for the effective use of SMART technology is a specially developed software package for a multimedia board with a range of various functions and tools (Table 2).

Thus, creating presentations using audio and video files helps students develop auditory skills and the ability to perceive new information through visual perception. This approach activates their cognitive activity and contributes to a better understanding of the presented information [12].

SMART technologies, which have powerful educational capabilities, can be described as modern innovative tools aimed at improving the learning process and knowledge acquisition:

− *Smart textbooks* are comprehensive educational materials that are developed and updated using technological innovations and Internet resources. Such a textbook usually consists of a section that studies new material, a section for mastering this material, a section for practical application of knowledge, a section for discussing the topic, and a section for controlling knowledge.

[11] Якубов С., Якінін Я. Технології SMART та навчальні матеріали. *Hi-Tech у школі*. 2011. № 3 – 4. С. 8-11.

[12] Дмитрів, М. В. Застосування SMART-технологій у навчальному процесі. 2018. URL: https://informatika.udpu.edu.ua/?page_id=2855

Table 2

Software package for multimedia board

Functions / tools	Characteristic
«SMART Notebook»	Allows you to create presentations, slide frames, the size of which corresponds to the size of the screen. These frames contain drawings, texts, other objects that can change size, be copied, become transparent. Using this educational program in lessons will ensure the activation of cognitive and active activity of students, the formation and development of language and speech competence.
«Object Return»	Allows the teacher to make drawings interactive to enhance educational material, making it more accessible and interesting for students.
«Marker»	Provides connection of individual elements of a word, sentence; separation of grammatical structures.
«Eraser»	Allows you to delete incorrect answers, which will help develop students' ability to work independently and self-analyze their own actions.
«Object movement»	Allows you to easily change the conditions of the task. Individual drawings are easily moved to different places and arranged according to the transfer process, while everything is preserved.
«Scissors»	Provides the creation of mosaics, lotto, cutting and storage, with the subsequent use of elements of drawings and sentences in the clipboard. During training, this tool will help to activate the cognitive activity of students, it is advisable to use it when performing exercises for quick recording of words, with support for drawings, with support for text.

Source: created by the author

− *Social networks* (Facebook, Instagram, Threads, Telegram) are available to most Internet users who actively create content on these platforms. In these networks, you can create virtual learning groups to which teachers provide access to their students by posting the necessary educational material.

− *YouTube* is a large video platform where you can find both video lessons specially created for learning and vlogs that can be used for educational purposes.

− *Blogs* are defined as a centralized platform where educational material is located and communication between teachers and students is ensured. They are distinguished by the openness and accessibility of information, structure, a limited set of learning functions, and the creation of a community within which both teachers and students can share films and audio recordings.

− *Mobile education technologies* include learning through the use of a personal device and special software, such as Smart-applications. Installing software of this type using the Google system, which offers the application «Play Market», which is available in the standard means of the Android mobile operating system for smartphones and tablets. Some of these

applications are «LearningApps», «Thinglink», «WiseMapping», «Word It Out!», «Kahoot».

− *Web 2.0 technologies* allow the use of network communities for the free exchange of educational materials, independent creation of such materials and participation in new editions of activities without special knowledge in the field of computer science. Teachers and students become equal participants in the educational process, because everyone has access to the necessary information, and everyone complements the general conclusion of the study with their work results.

− *Google Suite for Education* services and tools are a set of standard cloud-based (i.e. hosted on Google servers) applications for planning collaborative activities, teamwork and communication, publishing materials, hosting video materials, and many other tools (for example, Gmail, Google Calendar, Google Cloud Search, Google Drive, Google Docs, Google Sheets, Google Slides, Google Forms, Google Sites, Google Hangouts, Google Talk, Hangouts Meet, Google Keep, Google Safe) [13].

The close relationship between education and SMART technologies is due to the ability of modern technologies to make the educational process more effective. The introduction of these innovations into the educational process has numerous advantages, in particular (Fig. 2):

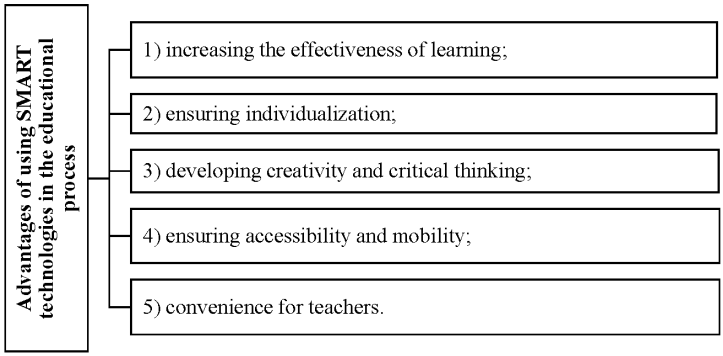

Fig. 2. Advantages of using SMART technologies in the educational process

Source: created by the author

All these factors help to create a more effective and interesting learning environment for students and teachers:

[13] Стрелан Д. В. Використання Smart-технологій під час вивчення фізики в гімназіях: кваліфікаційна робота (проект) на здобуття ступеня вищої освіти «бакалавр». Херсон: Херсонський державний університет, 2021. 46 с.

1) *increasing the effectiveness of learning*: SMART technologies provide the opportunity to create interactive and interesting lessons, which makes it easier for students to learn.

2) *ensuring individualization*: using SMART technologies, teachers can adapt educational material to the specific needs and pace of learning of each student;

3) *developing creativity and critical thinking*: using a variety of interactive tools allows students to develop their creativity and analytical skills;

4) *ensuring accessibility and mobility*: SMART technologies allow you to quickly find the necessary information and materials for learning from any place, which contributes to the convenience and flexibility of learning;

5) *convenience for teachers*: teachers simplify the preparation and conduct of lessons, making them more interactive and interesting for students.

Thus, the use of SMART technologies in teaching contributes to the creation of a stimulating and effective environment for the assimilation of knowledge and the development of students.

3. Innovative approaches to the use of SMART technologies for the formation of environmental competence of students

SMART technologies have already become an integral part of the modern educational process. They open up many opportunities for the formation of students' environmental competence, as they allow them to combine learning and technology. By using interactive tools offered by SMART technologies, students can not only gain new knowledge about ecology, but also independently explore this issue. In addition, interaction with innovative technologies contributes to the development of critical thinking and a creative approach to solving environmental problems.

Thanks to SMART technologies, students can not only study theory, but also apply it in practice. The use of virtual reference books, simulators and other interactive programs allows you to create a living learning ecosystem where students can experiment, analyze and solve real problems in the field of ecology. This approach not only enriches the learning process, but also contributes to the formation of students' environmental awareness and responsibility for nature.

Examples of using SMART technology to develop students environmental competence:

1. *SMART Board* interactive whiteboards can be used to conduct environmental lessons using a variety of multimedia materials. The teacher can play videos, show interactive visualizations that help students better

understand the impact of humans on nature and ways to preserve the environment.

Students can also actively participate in the lesson by using the interactive whiteboard to create and present their own environmental projects. They can demonstrate various visual elements, such as diagrams, animations, and other graphic images, which help them talk about their research and ideas on environmental conservation issues. This makes the lessons more informative for students, as they can work with interactive technology and demonstrate their knowledge in a creative way.

2. *Virtual environmental excursions* are an innovative approach to studying natural ecosystems and environmental problems using SMART technology. This method allows students to visit remote locations or recreated models of environmental problems without leaving the classroom, which allows for a better understanding of current environmental problems.

Thanks to this initiative, students can gain in-depth knowledge about the diversity of nature and the impact of humans on the environment. The recreated models allow students to interact with living ecosystems and virtually explore their composition, functioning, and interactions within them. In addition, students can interact with visual representations of environmental problems, such as deforestation, climate change, or pollution, to understand the seriousness of these problems and explore possible solutions.

This innovative educational program not only helps increase interest in ecology, but also enables students to more easily master complex concepts and solve environmental problems. This approach stimulates creative thinking and increases students environmental awareness, contributing to the creation of an environmentally conscious society.

3. Using interactive exercises and games with an environmental focus based on SMART technology – digital quests can take participants on a journey where they need to solve environmental problems or make decisions that affect the ecosystem. Using technologies such as QR codes, GPS and image recognition will make the process even more interesting and exciting.

Interactive quizzes will help test students' knowledge of ecology and increase their motivation to study this subject. It is important that participation in such games is accessible to a wide range of participants and promotes cooperation and interaction between them.

Games simulate real-life scenarios to help players understand the consequences of their actions for the environment. Including gamification elements such as rewards and challenges will motivate participants to learn more about environmental problems and the importance of environmentally friendly practices.

The combination of interactive exercises, games and SMART technology is a powerful tool for raising environmental awareness and fostering a sense of responsibility for the environment.

4. *The ability to communicate with environmental experts using SMART technologies* is a unique opportunity for students to receive up-to-date information, consultations, and answers to their questions.

Students can participate in webinars, online conferences, and chats with environmental experts, where experts will talk about current issues and trends in this field. This opens up wide opportunities for gaining new knowledge, solving problems, and interacting with leading environmental experts.

Each student can easily find answers to their questions, expand their knowledge, and take important steps in developing their environmental education.

5. *Using smartphones or tablets to study environmental issues together*. Students can work in groups, conduct research, and share results online.

Using smartphones or tablets to study environmental issues together can be very useful and interesting for students. This approach allows them to engage in independent study, communicate with each other, and share knowledge quickly and effectively.

For example, students can use their smartphones or tablets to search for information on environmental issues, conduct research, analyze results, create presentations, or videos. They can work in groups using specialized collaborative applications, share ideas, and help each other. Students can also use the Internet to communicate with other groups of students or environmental experts, share experiences, and find new ideas for their projects. All this promotes active learning, develops independence, and increases students' motivation to study environmental issues.

Thus, the use of SMART technologies in the process of forming environmental competence of students is an extremely important step in the development of modern education. These technologies make learning more interesting, effective and accessible, contributing to the development of environmentally literate people capable of overcoming the environmental challenges of the future.

CONCLUSIONS

Thus, SMART technologies are a powerful tool for improving the educational process and improving the quality of education, developing key skills of students and providing them with the opportunity to learn effectively and interestingly.

As a result of the study, an analysis of the conceptual apparatus of the study was carried out: «SMART technologies», «SMART learning», «SMART environment», «SMART teacher».

The features of the application of SMART technologies in teaching were determined: the ability to create interactive lessons that involve students and contribute to better assimilation of the material; using SMART technologies, complex concepts and processes can be visualized, which contributes to a better understanding of the material; personalized learning – SMART technologies allow you to create individualized learning programs that take into account the needs of each student; feedback allows teachers to understand how effectively they convey the material and how it is perceived by students; collaboration – SMART technologies promote cooperation between students and teachers, which develops communication and teamwork skills.

The use of SMART technologies to form student's environmental competence is an effective and innovative approach to education in the modern world. These technologies allow not only to involve students in the learning process, but also to make a strong connection between theoretical material and practical exercises. Examples of the use of SMART technology to form students' environmental competence are given: SMART Board interactive whiteboards can be used to conduct ecology lessons using a variety of multimedia materials; virtual ecological excursions provide students with the opportunity to visit remote places or recreated models of environmental problems without leaving the classroom, which allows for a better understanding of modern environmental problems; the use of interactive exercises and games with an ecological focus based on SMART technology is a powerful tool for raising environmental awareness and fostering a sense of responsibility for the environment; communication with specialists in the field of ecology using SMART technologies is a unique opportunity for students to receive up-to-date information, consultations and answers to their questions; using smartphones or tablets to search for information on environmental issues, conduct research, analyze results, and create presentations or videos.

The implementation of SMART technologies in the educational process has numerous advantages, including: increasing the effectiveness of learning, developing creativity and critical thinking, ensuring accessibility and mobility, and convenience for teachers. Therefore, it is important to implement SMART technologies in the educational process to improve the quality of education and prepare the younger generation for life in a digital society.

SUMMARY

SMART technologies play an important role in the modern educational process. They make learning more interesting, accessible and effective for students. The use of SMART technologies in education has undeniable

advantages for all participants in educational activities, which leads to a transition from the traditional scheme of knowledge transfer to a new, creative approach to learning using modern methods, forms and means.

Features of the use of SMART technologies in the educational process include: the ability to create interactive lessons that involve students and contribute to better assimilation of the material; using SMART technologies, you can visualize complex concepts and processes, which contributes to a better understanding of the material; personalized learning – SMART technologies allow you to create individualized learning programs that take into account the needs of each student; feedback is an important component of the learning process, as it allows teachers to understand how effectively they convey the material and how it is perceived by students; collaboration – SMART technologies promote cooperation between students and teachers, which develops communication and teamwork skills. In addition, SMART technologies allow teachers to create educational materials, conduct distance learning classes, and interact with students in real time. This facilitates the learning process, makes it more effective, and opens up new opportunities for the development of education.

SMART technologies open up many opportunities for the formation of environmental competence of students. The use of virtual guides, simulators and other interactive programs allows you to create a living learning ecosystem where students can experiment, analyze and solve real problems in the field of ecology.

Examples of using SMART technology to form environmental competence of students: SMART Board interactive whiteboards can be used to conduct lessons on ecology using a variety of multimedia materials; virtual environmental excursions allow students to visit remote places or recreated models of environmental problems without leaving the classroom, which allows them to better understand modern environmental problems; the use of interactive exercises and games with an ecological focus based on SMART technology is a powerful tool for raising environmental awareness and fostering a sense of responsibility for the environment; communication with specialists in the field of ecology using SMART technology is a unique opportunity for students to receive up-to-date information, consultations and answers to their questions; using smartphones or tablets to search for information on environmental issues, conduct research, analyze results, create presentations or videos. This approach not only enriches the learning process, but also contributes to the development of environmentally literate people capable of overcoming the environmental challenges of the future.

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