

THE ROLE OF DIGITAL EDUCATIONAL RESOURCES IN TEACHING GIFTED YOUTH

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Abstract. *The article examines the role of digital educational resources in teaching gifted youth when information and communication technologies are rapidly developing. Teachers of schools and institutions use information and communication technologies in their professional activities, having the necessary set of information competencies, develop various educational resources that allow them to conduct classes with students more effectively.*

Keywords: *gifted youth, teacher, teacher, training, digital educational resource, digitalization, informatization.*

Information and communication technologies are rapidly developing in the modern world. Every day, various new developments in the field of technology are being introduced more and more into our lives. Of course, modern developments in information and communication technologies have not spared the education system. Recently, rapid modernization of education and its improvement have begun. Classrooms in educational institutions are equipped with the necessary material and technical support, including interactive whiteboards, computers, projectors, etc. Now teachers use presentations, video materials, etc. at almost every lesson, which contribute to the better development of knowledge by students.

This process of active implementation of information and communication technologies in education is called digitalization and informatization. What is digitalization and informatization? There is no precise definition of the concept of "digitalization" yet, but it can be more approximated as follows: digitalization is the process of switching to a digital format of education [1]. In short, the use of information and communication technologies in the learning process is the process of digitalization.

The process of digitalization provides humanity with the continuity of its education, i.e. thanks to electronic resources, it has become possible to study at any age, as well as

in any comfortable environment and anywhere in the world. The latest technology developments have allowed us to create online courses to train people in different areas. In most cases, online courses allow you to master various professions, which significantly contributes to the self-development of society.

On the methodology, theory and practice of computerization and Informatization of education worked A. p. Yershov, B.S. Gershunsky, E.I. Mashbits; theoretical and practical development of psychological and pedagogical problems of using modern information technologies in education developed V. p. Bepalko, M. p. Lapchik, B.S. Gershunsky; on the principles of practical use of information technologies worked E.S. Polat, A.A. Yershov, I.G. Zakharova.

The rapid introduction of digital educational resources into the learning process leads to the search for effective technologies for their application in teaching gifted young people natural science subjects, including chemistry, in schools and higher educational institutions. Thanks to the digitalization of education, online schools are being created to prepare for the unified state exam and the main state exam, which allows students to thoroughly and thoroughly prepare for the exams and pass them for the highest score [2].

In chemistry classes, teachers also use presentations, interactive whiteboards, and

projectors. This is a kind of auxiliary aspect in the implementation of the chemistry teaching process. As practice shows, the subject of chemistry is quite complex and time-consuming in content. For some students, it is difficult to understand. In some cases, students may lose their patience and abandon their studies. In such cases, information and communication technologies help the teacher. Using ICT technologies in the classroom regularly and systematically, the teacher thereby increases students' motivation to learn, interest in obtaining new knowledge in chemistry.

It should be noted that, despite all the positive reviews, ICT technologies will not be able to completely replace the teacher, since he is one of the most important subjects of education, i.e. the teacher is the basis of the learning process. Information and communication technologies, as previously mentioned, are only an additional way to increase the cognitive interest of students in the study of a particular subject.

As you know, in Russia there are still schools with insufficient material and technical equipment, equipment and reagents for conducting chemical experiments [3]. The inability to conduct experiments in chemistry makes it much more difficult for students to obtain practical knowledge. The teacher, explaining the theoretical material, can not confirm it in practice, i.e. in some way there is no visibility in the learning process. What to do in this case? Given the fact that information and communication technologies are developing rapidly, Virtual laboratories come to the rescue in such cases. What are they?

Virtual laboratories are computer programs that allow you to conduct chemical experiments without using real reagents and without harming the health of others [4]. This development is one of the best, because it greatly facilitates the learning process for the subject. The teacher can now easily demonstrate chemical experiments to students, as well as allow them to conduct them independently, while studying the physical characteristics of certain substances. I would like to note that virtual laboratories can now be used not only directly on the computer, but also via the phone, because special applications have been

developed that allow you to conduct a particular chemical experiment at any time.

Virtual laboratories allow students to consolidate the received theoretical material and apply it in practice. In addition to the introduction of virtual laboratories and information and communication technologies in the process of teaching chemistry, there is a gradual transition of the training itself to an electronic format. What does it mean? Most recently, in 2018, in Moscow and almost all cities, as we already know, schools were equipped with electronic whiteboards, laptops and high-speed Internet, as well as Wi-Fi.

By 2020, i.e. by now, it was planned to completely eliminate paper versions of textbooks. Instead of paper media, it was planned to use certified personal access devices in accordance with the established procedure. In short, students had to use tablets, laptops, etc. in the classroom instead of the usual textbooks. This project of switching to the e-school format is called "Digital school 2020" [5]. It should be noted that the project has not yet been implemented in all schools in Russia. This is a fairly large-scale project that requires huge investments, i.e. when implemented, it will be necessary to fully equip schools with technical equipment to allow each student to acquire theoretical knowledge and actively participate in classes.

I would also like to say that the project "Digital school 2020" provides for the option that the teacher will be replaced by a virtual tutor. This is quite a controversial issue, because, as previously mentioned, the teacher is one of the components of the structure of education. The teacher provides the basis for building a fully developed child's personality. It provides the necessary set of theoretical and practical knowledge. The teacher also contributes to the development of students' spiritual and moral qualities. All this is based on simple human communication. Therefore, we can safely say that a virtual tutor will not be able to give students what a teacher can give.

Subjects of the natural science cycle, such as chemistry and physics, are quite difficult to perceive when studying online, i.e. directly without the participation of a teacher. If students have the opportunity to ask questions on certain topics in order to consolidate and mas-

ter the training material, then this is not possible when teaching with a tutor. What is the reason for this? The virtual tutor in the Digital school 2020 project acts as a source of knowledge, i.e. he only explains the educational material, while not interacting with the student himself [6]. This significantly complicates the process of learning by students, because if they could not understand a particular topic, they do not have the opportunity to ask again or explain the training material in more detail.

Speaking about the transition to e-learning, it should be said that 2020 has made it possible to implement online learning in practice. Due to the spread of the coronavirus pandemic, educational organizations were forced to switch to online distance learning. All classes were held on various Internet platforms (Microsoft Teams, ZOOM, etc.). The Essence of this training can be described as follows: students in a comfortable environment get in touch with the teacher and conduct classes in a particular discipline. One of the positive aspects of these platforms is the possibility of video and audio support, i.e. students and teachers interact freely with each other [7].

The teacher can also demonstrate the presentations developed by them and visually present the training material. It would seem that everything is very good, but the problem is that the teacher can not keep track of the honest performance of tasks when organizing tests for knowledge verification, because as previously mentioned, information and communication technologies are improving every time. Another disadvantage of online training is the inability to organize laboratory and practical work in chemistry, physics, etc. The teacher cannot demonstrate chemical experiments to explain the chemical and physical properties of certain elements of the Periodic system of D. I. Mendeleev and various substances that contribute to the consolidation of knowledge in practice. As previously mentioned, students are quite difficult to perceive the theoretical material on the subject of chemistry, so the teacher somehow needs to fix it in practice, which is impossible with online learning. Sometimes, of course, it is possible to use virtual laboratories, but this is also a time-consuming process, because the

teacher and students will need to search for these platforms and organize a parallel presence both in the classroom and on the "Virtual laboratories" platform.

In addition to virtual laboratories and online training, you should also mention the existence of special platforms for organizing the control of students' knowledge, for example, AGI.RU; ACLASS. These platforms are designed for students in grades 1-11.RU is one of the best developments, because it allows students to independently evaluate their knowledge. One of the advantages of this platform is that educational tasks are presented in a kind of game and interactive form, which increases the motivation of students to study certain disciplines.

This platform includes tasks in all subjects studied at school, which is also the advantage of organizing such a format of knowledge control. The use of ICT technologies in the process of teaching chemistry significantly improves it. Due to the process of digitalization of chemical education, students are more interested in studying one of the most difficult subjects in the school course, because chemistry, according to most students, is a very difficult subject, which includes too many chemical formulas, reactions, concepts and theoretical material.

The teacher, using ICT technologies in chemistry lessons, contributes to the growth of motivation for the process of learning chemistry, better assimilation of knowledge. Thanks to the informatization and digitalization of chemical education, students become interested in this subject, understand that chemistry is around us, that everything connected with our lives is chemistry [8, 9].

We note one important aspect that the introduction of information and communication technologies in the process of teaching chemistry should be as an auxiliary material in the structure of chemical education, and not an assistant in the implementation of a full-fledged transition to the online learning format.

Teachers of schools and higher education institutions use ICT technologies in their professional activities in one way or another. They have the necessary set of information competencies in order to independently de-

velop various educational resources, which allows them to conduct classes with students more effectively.

To evaluate the knowledge gained and to conduct control works, test tasks were developed for the eight main sections of the chemistry course.

These test tasks contribute to improving the methodology for evaluating students' knowledge, as well as its objectivity. When developing these control tests, we took into account the fact that they will be implemented online, which will have a positive impact on the methodology for conducting control and final work to verify the knowledge obtained.

After carrying out the necessary work for the creation and development of an electronic educational resource on the discipline "Design and technological practice "workshop on demonstration chemical experiment"" for first-year students of the Department of chemical education, the created course was put into operation. Today, this course is available on the website of Kazan Federal University in the section "Distance education". By going to the section "Higher education" – "Chemical Institute named after Butlerov" – "Department of chemical education", you can find the course "Design and technological practice" workshop on demonstration chemical experiment"" [8, 9].

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**РОЛЬ ЦИФРОВЫХ ОБРАЗОВАТЕЛЬНЫХ РЕСУРСОВ В ОБУЧЕНИИ
ОДАРЕННОЙ МОЛОДЕЖИ**

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***Аннотация.** В статье исследуется роль цифровых образовательных ресурсов в обучении одаренной молодежи, когда стремительно развиваются информационные и коммуникационные технологии. Преподаватели школ и высших учебных заведений, используют информационно-коммуникативные технологии в своей профессиональной деятельности, обладая для этого необходимым набором информационных компетенций, разрабатывают различные образовательные ресурсы, что позволяет более эффективно проводить занятия с обучающимися.*

***Ключевые слова:** одаренная молодежь, учитель, преподаватель, обучение, цифровой образовательный ресурс, цифровизация, информатизация.*