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USE OF MODERN PEDAGOGICAL METHODS IN TEACHING CHEMISTRY

Srajatdinova Kalima Tórebay qizi
Qaraqolpoǵiston Respublikasi Shumanay tumani
15-maktab Kimyo fani óqituvchisi

Annotation
Teaching chemical technology in modern science takes a lot of effort. But today, thanks to modern information and pedagogical technologies, this work has become much easier. This article discusses in detail the use of modern pedagogical methods in teaching chemistry.

Keywords: pedagogical technology, information technology, chemistry, educational process, electronic textbooks, etc.

Introduction

Today, the formation of new social relations in our society, the integration of education into the world education system, the development of democratization and humanization processes require a new approach to modern pedagogical technologies (PT) in the educational process. Pedagogical technology includes the concepts of educational technology, new pedagogical experience, new pedagogical technology, modern pedagogical technology, information technology, new experience, teaching methods. Thus, pedagogical technology is a way to effectively implement didactic tasks, to achieve goals in this area. Pedagogical technology is the process of intensively forming the personality traits that are already given to them, as a product of exposure to the student in a certain situation and in a certain sequence, using various means of the teacher. Also, pedagogical technology means the integrity of the goals, objectives and results of pedagogical activity on the basis of a systematic, scientifically-methodologically based, most advanced tool, method and content combination of the educational process. The most common and characteristic modern pedagogical technologies in the teaching of chemistry are: conversation, debate, game, case study, project method, problem-based method, brainstorming and others.

The modern educational paradigm as a new image of pedagogical science involves the creation of an education system focused on the development of a competent creative personality of a student. In connection with the modernization of the educational system in the Russian Federation (informatization, the introduction of the Federal state educational standards), the use of modern pedagogical technologies aimed at

creating an intellectual product with educational potential and contributing to an increase in the level of motivation and effectiveness of teaching chemistry in modern school. The restructuring of modern education places teachers in the search for new ways and means to optimize the learning process and form natural science thinking. Achieving a high level of development of information and communication competence is carried out in the process of using the flipped classroom blended learning technology in chemistry classes. The technology allows to most effectively implementing the requirements of the standards of the International Society for Technology in Education and teaches students to understand the specifics of learning in the digital world, think critically and solve educational problems in new ways. Modern trends in the development of natural science education imply a revision of approaches to the organization of the educational process and the introduction of new principles of creating the educational process at school. Modern science is focused on the formation of a natural science paradigm, modern pedagogy is aimed at the formation of natural science thinking in students

Being creative as a chemistry teacher is the focus of the “Teaching Chemistry by a Creative Approach” professional development (PD) course, which was taught during the summer of 2020 in the Department of Science Teaching at the Weizmann Institute of Science. The original course was based on an arts-integration (AI) approach for teaching chemistry, which represents the fruit of three years of development and validation. This method builds on creative opportunities for content elaboration, interpersonal interactions, building shared knowledge, and both social and individual active learning. In-service high school chemistry teachers from all over the country applied to participate and experience by themselves learning content through this unusual approach that merges chemistry with arts and crafts. In a “regular” classroom setup, teachers try to transform abstract chemical content into a teachable form, mainly through verbal explanations accompanied by parallel symbolic representations of content on the board. Students must simultaneously pay attention to both the verbal expressions and visual input and, through their integration, make sense of them. Although teachers plan lessons so that the content makes sense, in practice, they might presuppose the students’ linguistic and visual thinking abilities as well as the way each student connects them through visualization. Visual understanding is a conceptual competence based on verbally mediated sense-making processes. However, for some students, a gap may exist between verbal and nonverbal competences. These representational competences are essential for assigning the correct meaning to abstract chemical content through visualization, generating correct mental models, and they cannot be overlooked.

At present, all science teachers are required to provide knowledge based on a competency-based approach. Based on my work experience, I also use a number of exercises to develop specific competencies in students. Increasing the interest of students in chemistry can be the basis for the future development of leading specialists in our country and the development of science and technology. In today's article, I will focus on the role of chemistry in our lives and the use of innovative technologies in the teaching process, as well as the importance of increasing the interest of our students in chemistry. interest in the use of technology, pedagogical and information technologies in the educational process, attention is growing day by day. One of the reasons for this is that so far in traditional education, students are taught only to acquire ready-made knowledge. Modern technology teaches them to search for knowledge, to study and analyze it independently, and even to draw their own conclusions. In this process, the teacher creates the conditions for the development, formation, knowledge and upbringing of the individual, as well as acts as a leader, a guide. The student becomes a key figure in the learning process. Classes for all sections of chemistry textbooks, based on the updated curriculum, begin with a definition, not a rule, but in close connection with other disciplines. This is where the teacher's skills, abilities and learning are manifested. In this process, the gradual transition from one mode of activity to another is formed. Through the teaching of chemistry, students' scientific outlook and self-awareness are formed and developed. They provide the knowledge necessary for the formation of national and universal values, as well as the continuation of social life and education, and the formation of competencies within the themes.

In traditional teaching practices, there is a basic underlying assumption that knowledge acquired in the past by humanity must be conveyed to learners as is. Thus, traditionally, lecturing has been the main means to attain this goal, and students have consequently adopted a passive attitude, both physically and cognitively. Regarding this aspect, the AI approach presented here can be characterized as nontraditional and active learning in nature. Arts or crafts are merged as part of the learning process to facilitate understanding by encouraging students to think more deeply about chemical content and to take an active part in the process of constructing and developing chemical knowledge. In chemistry, art has been included in the curriculum mostly, although not exclusively, (27,28) as an extension of traditional teaching strategies, such as inquiry laboratories that deal with color-related phenomena or restoration tasks, but seldom as a conceptual tool to impart visual thinking skills that facilitate understanding.

Students learn to think freely, develop speech, communicate with one another, and even form their own conclusions in classes that use modern pedagogical technology, allowing them to stay up with the times. The interactive teaching methods in the handbook make chemistry lessons more interesting and encourage all students to take an active part in the lesson. A teacher who teaches in this way achieves high quality in the classroom. In addition, it would be useful to use not only didactic materials, but also information and communication technologies (ICT) in chemistry lessons. In a discussion meeting on the secular challenges of chemistry, we should employ ICT to promote communication between teachers and students. Our students can manage sophisticated experiments that would be impossible to do in a real school laboratory while also saving supplies by modeling similar laboratory procedures. In the classroom, we employ electronic textbooks to help students grasp difficult atomic (molecular) processes in chemistry, such as electron cloud and electron excitation, structural isomerism, and hybrid orbitals. It should be mentioned that in this handbook, a new way of teaching is introduced that not only motivates students to be innovative teachers but also meets the needs of the moment. As a result, it is necessary to create chemistry lessons, provide teacher guidance, and hold seminars, because we must abandon traditional ways and organize classes using worldwide methodologies in order to increase the quality and efficacy of education for the development of our country. It is acceptable. All in all, we must ensure that pupils' critical thinking abilities and scientific knowledge are developed.

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