

# The Challenge of Chemistry Teaching in Transport

**Sabirova Dilorom Kabulovna**  
Candidate of Technica Sciences Senior Lecturer  
Tashkent State Transport University

**Annotation:** This article discusses the importance of chemistry education and chemistry teaching in the field of transport, its goals and objectives. It also discusses the development of a chemistry curriculum in the field of transport, the basic level of learning chemistry as a consistent course in the field of transport, the process of applying chemistry to the field of transport. The article also discusses the fact that a chemistry teacher analyzes the content of the subject in order to provide students with knowledge in the field of transport.

**Keywords:** chemistry, transport, chemistry curriculum, consistent course in transport, general and basic competencies.

Chemistry is the study of the structure and evolution of matter. Chemistry, like other sciences, came into being as a product of human activity, with the aim of satisfying natural needs, producing the necessary products, creating one from the other, and finally learning the secrets of various phenomena. In ancient times, people knew how to extract metals from ores, prepare and use various alloys, including glass, and use it for various purposes.

The importance of chemistry education is determined by its role in the development of science and technology, industry and everyday life. Through the teaching of chemistry, students' scientific outlook, ability to think logically, intellectual development, and self-awareness are formed and developed. They provide the knowledge necessary for the formation of national and universal values, as well as for the continuation of social life and education.

The importance of teaching chemistry in the field of transport is a topical issue. Because today the transport sector in our country is developing rapidly. Knowing this field requires not only physical knowledge but also chemical knowledge.

The importance of teaching chemistry in the field of transport and its main purpose - the formation of general competencies in the field of transport and chemistry in students, the most important chemical concepts in the field of transport, chemical elements, properties, structure, composition of substances, as well as the relationship between inorganic and organic substances, their use in everyday life and familiarization with the rules of safety in the chemistry classroom and transport enterprises.

The importance of teaching chemistry in the field of transport and its main task - to connect the content of chemistry in the educational process with modern social life, the development of science and technology in the field of transport, contributed to the development of chemistry by great scientists and chemists, contributes to the formation of knowledge, skills and competencies about the impact of chemical production on the environment.

In the field of transport, chemistry is studied in a certain sequence, from simple to complex. The chemistry curriculum generalizes the natural sciences from the world around us, natural sciences, biology, and physics, which are studied in the primary grades, and focuses on the concepts of chemistry during the initial introduction to the field of transport. These include: the importance of water or antifreeze in the training of transport radiators, bodies and substances, chemical properties, cold tolerance, the main properties of antifreeze, its freezing, boiling, melting of ice, various phenomena, mixtures of substances, engine oil and its composition, its properties, the importance of engine oil, etc.

During the study of chemistry on the basis of the application of the field of transport, students gain basic knowledge about the composition of the main devices of the vehicle and its chemicals, its chemical properties, as well as the structure of the body, matter in physics and prepares for the acquisition of knowledge about chemistry in the context of these disciplines and its role in the field of transport, ensuring interdisciplinary connections.

At the basic level of studying chemistry as a consistent course in the field of transport - mainly taught to university students, in which the main content of chemistry studied in the field of transport is based on theoretical scientific knowledge of machine parts, industries and their safety. In chemistry, first of all, to impart and apply knowledge about matter, properties of substances, chemical language, the most important chemical concepts and laws, theories, chemical production technology, achievements in transport, the role and effects of chemical processes in nature and society great importance is attached to the formation of competence.

Based on the process of applying chemistry to the field of transport, the education system determines the formation of basic competencies in students, along with general competencies in science. Accordingly, in the process of teaching chemistry in the field of transport, students develop the following basic competencies:

1. In the field of transport, first of all, knowledge of chemistry, along with physics, technology and similar sciences.
2. Ability to communicate effectively in the field of transport on the basis of chemical knowledge.
3. Adhere to a culture of dealing with technical workers in communication.
4. Ability to work effectively in a team in collaboration with technical staff during transport collection processes.
5. Search social and media sources for chemical compounds that are widely used in the field of transport, as well as the necessary information in this area.
6. Finding and sorting information from these sources.
7. Achieving social and media culture in the search for widely used chemical compounds in the field of transport from social and media sources, as well as the necessary information in this area.
8. Sorting data from relevant sources and using them effectively in the field of transport.
9. Independent development of knowledge in the field of chemistry and transport.
10. Being able to apply knowledge of chemical phenomena and processes in daily activities.
11. Independent self-knowledge through vehicle observations based on what students have learned.
12. Being able to solve problems in the field of transport using his life experience based on chemical knowledge and experience.
13. Being able to apply the knowledge of chemistry in the field of transport and keep abreast of scientific and technical innovations.
14. Knowing the importance of chemistry in the development of the transport industry.
15. Being aware of scientific and technical innovations that facilitate the work of workers in the field of transport in the study of chemistry.
16. Being aware of the latest scientific and technical developments in the field of transport, which will increase productivity and create favorable conditions for the study of chemistry.

As we apply chemistry to the field of transportation, the basics of safety and the concepts of austerity will be integrated into the topics. The above-mentioned chemistry competency is the ability of a student to apply in practice the knowledge, skills and abilities to be acquired in the field of transport in solving practical and theoretical problems encountered in everyday life. The chemistry teacher analyzes the content of the subject in order to provide students with knowledge in the field of transport, all forms of teaching: lessons, extracurricular activities, trips to transport enterprises and extracurricular activities. It is necessary to design the work to be done systematically and interconnected.

The chemistry teacher has to master the oral and written speech, which is necessary for future communication with those working in the field of transport in the community, in chemistry classes, with the aim of providing students with knowledge in the field of transport, clear and concise statement, technical and transport knowledge, additional literature, questions in a logical sequence on the basis of drawings, written and oral answers to questions, peers and teachers to adhere to the norms of communication culture in communication, to be able to express their opinions in small groups while respecting the opinions of group members, to work in a team, to be able to express themselves based on the acquired knowledge, skills and abilities. to be able to defend and persuade, to manage their passions in class discussions and various conflict situations, to solve problems.

In addition, the application of chemistry to the field of transport requires the presence of visual aids and the necessary equipment. Periodic table of chemical elements, hydrometer, set of containers and equipment for teacher demonstration experiments, set of chemical reagents, protective screen made of organic glass, pen for writing on glass, dry fuel, ceramic plate, magnetic stirrer, laboratory electronic scales, polypropylene chemical laboratory container set, sharstergen models of atoms, indicator paper, chemical universal laboratory tripod, poster set, set of laboratory work utensils and equipment for students, glass container set, "Minerals and rocks" and "Simple substances" collections, a device for demonstrating the law of conservation of mass of substances, a set of models of molecules of substances on a magnetic board, self-adhesive label, a set of rubber tubes, digital training thermometer car body, engine, separate transport parts, etc.

It should be noted that the study of best practices in the education system of developed countries shows the need to apply the process of continuous chemical education in the field of transport.

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