

The Role and Place of the Use of Historical Materials in the Teaching of Physics

Mansurova M.Yu.

Tashkent Institute of Engineers of Railway Transport



Abstract – This article discusses the role and place of using historical material in increasing students' interest in physics, on the importance of intersubject communications in the teaching of physics.

Keywords – Pedagogy, Learning Process, Intersubject Communications, Teaching Methodology.

I. INTRODUCTION

Targeted selection and improvement of the content of various courses has played a decisive role in increasing the effectiveness of teaching the basics of science at all stages of education, in an environment where only interdependence and coherence, wide application of knowledge, skills and abilities from the studied disciplines. In other words, in a certain type of educational institution it is possible to achieve a high level of mastery of the basics of science only in the context of systematic and systematic implementation of interdisciplinary links that reflect the real existing relationships between events and processes of objective reality. Such an approach to teaching helps to optimally develop dialectical thinking in pupils and students, to form in them a scientific worldview, holistic thinking and point of view, which is the goal of any teaching.

The effectiveness of the organization of the learning process using interdisciplinary links has been proven in many pedagogical studies [1; 2]. It is well known that the phenomenon of interdisciplinary communication is multidimensional. It is characterized by the diversity of its content and the diversity of teaching methods and forms,

and forms the basis for the interaction of teachers' teaching activities with students' learning activities. The emergence of the problem of interdisciplinary communication in teaching has historically arisen due to the fact that the educational process is a structural subject that helps to form in the minds of students separate systems of knowledge about various phenomena of the real world.

The problem of interdisciplinary connection began with the introduction of separate teaching of academic subjects due to the basic development of science in school.

If we look at the problem of interdisciplinary communication in the historical context, then we can see that this problem has received a lot of attention from educators of the last century and researchers of today. As noted by VN Kelbakiani, "this problem is studied from different angles: the history of its development, its methodological and theoretical significance, the content of interdisciplinary links in educational disciplines, the motives for their implementation in teaching and education ..." [3, 11-p].

Interdisciplinary connections are a clear expression of the integration processes taking place in science and society

today. These connections play an important role in enhancing the practical and scientific-theoretical preparation of students, helping them to form generalized features of cognitive activity.

During the Renaissance, progressive educators opposed scholasticism in teaching, emphasizing the importance of instilling in students an understanding of the interdependence of natural phenomena and processes. The classic of world pedagogy Ya.A. Comenius stated, "Everything that is interconnected must be taught in the same way, because it is very important in the formation of systematic knowledge. He said that in order to form a knowledge system, it is necessary to establish a link between the disciplines. According to Comenius, "everything must be taught." He believed that school children should be educated in a way that develops their minds, morals, emotions and will in every way [2].

Many educators ask the question, "Why don't all children get involved in the learning process in the same way?" One of the reasons for this is the individuality of each child, and this individuality determines his or her path to knowledge. By establishing interdisciplinary links in the classroom, it is possible to organize the learning process in a colorful way and arouse children's interest in learning more. Teachers are well aware that if a student is indifferent to reading, learning, it is impossible to teach him successfully. Therefore, the school is tasked to form and develop a positive motivation for the child's learning activities. The task of the physics teacher is to arouse the interest of students, especially in the early stages of teaching a physics course, not to intimidate students with the complexity of science. especially today, it is noted that the development of creative abilities of students is a matter of urgency.

N.M.Cherkas-Zoda considers interdisciplinary connections as a didactic condition, and the correct use of interdisciplinary connections not only helps to systematize the learning process and increase the strength of students' knowledge, but also increases students' interest in learning and thus scientific understanding of natural laws, ideas and theories. also introduces. As a result, knowledge is not only defined but also generalized. This allows students to transfer the acquired knowledge to new situations and apply it in practice [3]. By enhancing the use of interdisciplinary connections, we can better understand the role of our sciences in the future lives of students [4].

In the teaching of physics, interdisciplinary links are also a means of increasing students' learning motivation. At the same time, the use of historical materials in the teaching of

physics, especially historical materials on the subject, gives a brief account of the life, work, worldviews of physicists who discovered the law under study, stimulates students' interest in science, patriotism and, in general, great physicists. I think that clips from the lives of scientists will help students conclude that much can be achieved even with contentment.

For example, Michael Faraday graduated from elementary school at the age of 12 and worked as a newspaper distributor, then a student of the French emigrant bookbinder Ribo, despite discovering a number of physical laws, from an ordinary scientist to the head of the British Academy of Physics. G.Stoletov praised Faraday's contribution to the development of physics, saying that "the world has never seen such a cosmic and diverse discovery since the time of Galileo." Faraday's experiments in both chemistry and physics totaled about 30,000. Gemfrey Dewey, the founder of electrochemistry, admits that his greatest discovery was the discovery of Faraday, that is, the young Michael Faraday as an assistant in his laboratory, and the establishment of the Faraday Order of Chemistry at the Royal Academy of England. Also English physicists Joseph-John Thomson (1856-1940), Ernest Rutherford (1871-1937), Danish scientist Nils Henrik David Bohr (1885-1962), German scientists James Frank (1882-1964) and Gustav Hertz (1887- I think that the fact that 1975) won the Nobel Prize for his great discoveries in physics, especially Albert Einstein's ideas about the Nobel Prize-winning photo effect, will increase the effectiveness of the course by providing information on how solar cells lie today.

It is well known that Eastern thinkers introduced experimental research into science earlier than others. As early as the 11th and 12th centuries, Beruni's "conical instrument" and Khazini's "scales of reason" were designed, which made it possible to measure the densities of various substances with sufficient accuracy. The great encyclopedic scholar Abu Rayhan Beruni studied a number of sciences of his time: astronomy, physics, mathematics, geodesy, geology, mineralogy, history, as well as several languages, the Earth's orbit around the Sun and its radius (6000 km I think that students' interest in science will increase if they are given the historical information about the first scientist who measured the density of about 18 elements by creating a pycnometer and measuring the density of about 18 elements. In addition to providing information about the work of Eastern thinkers such as Al-Khwarizmi, Ibn Sino, Al-Farghani on physics and mathematics, scientists who have contributed to the development of physics in Uzbekistan in our time, the founder of nuclear physics, high

energy physics and high temperature helio materials science S.A. Giving interesting information about the life and creative work of such scientists as Azimov, P. Khabibullaev, who founded new directions of modern physics and brought up many students, strengthens students' sense of pride in their homeland, nation, increases interest in physics.

REFERENCES

- [1] Kelbakiani V.N. Intersubject communications in the natural-mathematical and pedagogical training of teachers. 291 p. Published: (1987).
- [2] Comenius YA.A. Selected pedagogical essays. - M.: Uchpedgiz, 1955, p. 287
- [3] Sinyakov A. P. Didactic approaches to the definition of the concept of "intersubject communication" of teachers / Sinyakov A. P. [Electronic resource]. — Access mode <http://cyberleninka.ru/>;
- [4] Tretyakov P.I. The formation of the concept of students about the natural science picture of the world, subject to interdisciplinary connections. / Interdisciplinary communications of natural mathematical disciplines. A manual for teachers. Sat articles. / Under the editorship of V.N. Fedorova- M., Enlightenment, 2010.-208 page
- [5] Niyazov, I., Ahrorov, F., & Edelstein, M. R. (2012). Going with the flow: economic impacts from the overuse of irrigation. In Disaster by Design: The Aral Sea and Its Lessons for Sustainability. Emerald Group Publishing Limited.
- [6] Ahrorov, F., Murtazaev, O., & Abdullaev, B. (2012). Pollution and Salinization: Compounding the Aral Sea Disaster'. Michael R. Edelstein Astrid Cerny Abror Gadaev (ed.) Disaster by Design: The Aral Sea and its Lessons for Sustainability (Research in Social Problems and Public Policy, Volume 20). Emerald Group Publishing Limited, 29-36.
- [7] Hasanov, S., & Ahrorov, F. (2013). Uzbekistan's Agriculture-Status Quo, Challenges and Policy Suggestions (No. 1611-2016-134591).
- [8] Ahrorov, F. (2016). Curricula and syllabi development for BA and MA and PhD (No. 923-2016-72908).
- [9] Hasanov, S., & Ahrorov, F. (2013). Proceedings of the International Conference and Young Researchers' Forum: UZBEKISTAN'S AGRICULTURE-STATUS QUO, CHALLENGES AND POLICY SUGGESTIONS (No. 1611-2020-287).