

The courses of natural sciences had a significant impact on the scientific cognition of students from the universities of the Dnieper region. The focus of the latter on the search for relationships among real phenomena and processes has actualized the process of students' cognition of the surrounding reality in two main directions:

a) experimental and research approach, which provided for the need to involve methodological tools and logistics to argue or, conversely, deny the existing theoretical provisions;

b) mathematical and descriptive way, which actualized the measurement and representation of the studied patterns in numerical parameters, which significantly facilitated the process of cognition and understanding of the real thing.

It is worth noting that both approaches of learning about the world were replaced by scholastic restrictions that hindered the development of science and, consequently, social progress in general.

Since the first days of the opening of the first classical universities in the Dnieper region, the attention of student youth had not been focused on the need to develop rational thinking, as the priority of the human mind over the theologically established did not cause objections. Maintaining this level of priority was ensured by the current teaching staff, which were invited from different European countries to teach at universities.

The foreign professorship brought to the domestic academic premises the “spirit” of free time devoid of scholastic objections and the understanding that the motion of matter in space and time is limitless, and nature itself is self-sufficient and not affected by the supernatural. The dominant direction of such ideology was the need to organize everything disordered through the bright human mind, flexible thinking, and deep cognition of the truth.

In our opinion, an extremely valuable foundation on the way to building a holistic structure of scientific cognition of the student youth at that time was the Cartesian priority of reason and manifestations of rigor at the stage of comprehending the truth. Moreover, the scientist focused readers' attention on the need for experiments to identify the level of reliability of the data. We can assume that at that time, the above ideology awakened the students' irresistible desire to achieve truth in the process of cognition and conduct experiments to establish the sequence of processes at the level of certain studied systems.

Such a rationally centered concept of Cartesian cognition was sure to appeal to those students who tried to “get” to the truth through their research. In our opinion, the focus of students' attention on the importance of self-awareness in scientific cognition was a rather valuable scientific and cognitive guide of Cartesian provisions. Without a clear understanding of the levels of the interconnection of each “structural element” of the external world, it is extremely difficult for a subject of cognition to move on to the study of polystructural properties at the micro-level. This position became the basis of the popularization vector of the Cartesian statement about the universalism of the method of deduction at the scientific level.

To achieve the above-mentioned ideology, the need for knowledge search in three basic areas – analysis, experiment, and observation – was popularized in the

student circles of the studied period. In the dimensions of such a trio of directions, the subjects of cognition were offered an inductive and deductive way of mastering the surrounding reality, which was opposite to the passive-reproductive one.

The proclamation of the European-praised value significance of experimental work forwarded the issue of supporting the theoretical presentation of the relevant practice-centered activities. As the popularity of experimental research in the academic environment was gaining momentum, the need to submit this issue to the Ministry of Public Education had become urgent. The effectiveness of such a “targeted” appeal can be traced at the level of promulgation of the order “On the introduction of teaching experimental physics as the main subject in the departments of natural and mathematical sciences of the Faculty of Physics and Mathematics of Kharkiv University”. It is worth noting that this order was not a “profanation”, but became a real experimental milestone in the history of the Faculty of Physics and Mathematics of each university in the Dnieper region. In particular, a kind of Slobozhanshchina confirmation of the argumentation of the above thesis is the publication of “Study Program of Experimental Physics” edited by A. Gruzintsev (1907) at the beginning of the next century.