



OPPORTUNITIES FOR IMPROVING THE TEACHING OF TOPICS OF THE DEPARTMENT OF THERMODYNAMICS ON THE BASIS OF INTERDISCIPLINARY INTEGRATION

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Annotation: The article is devoted to the study of the processes of enhancing the educational motives of students or students in the implementation of the interdisciplinary integration of chemistry with Physics, Mathematics and other disciplines in the process of teaching the subjects of the Department of thermodynamics.

Keywords: interdisciplinary communication, integration, holistic lesson, teaching methodology, science unification, interdisciplinary elements, associations.

It is known that the sciences of the 21st century and their fields of research are natural and Exact Sciences the increasing depth of their integration is being developed by the applications of information technology to them. The creation and progress of dozens of disciplines such as physiochemistry, Chemical Physics, Astrophysics, biophysics, mathematical chemistry, biochemistry are clear examples of this. The task of modern education is not only to give and inform knowledge or to turn knowledge into a weapon in creative knowledge of the world, but also to develop and maintain the personal qualities of the student at the present stage of the development of society, to develop its creative potential and intellect, life values. The question of what special pedagogical tools to use in the purposeful development of the student's intellect, his creative thinking, scientific worldview and the formation of an active life position still remains open. Modern science has the property of interdisciplinarity. Interdisciplinary communication is a factor in the effective assimilation of this material. In addition, interdisciplinary communication

increases the academic level of students' knowledge, promotes logical and critical thinking as well as the development of their creative abilities. Interdisciplinary connections and their successful application to the educational process reduce repeatability in the study of new material, lead to significant time savings, and also form the skills of applying general educational knowledge in practice in students.

In the course of the lesson, the following methods of inter – disciplinary communication are used: assignment from other subjects, finding the information used from the side science on the topic to be taken in subsequent lessons, it is assigned to the house as a task, the task is to be clear-from which textbook the student will prepare exactly which topic and what information (One of the ways to implement interdisciplinary engagement is through integrated classes. Through classes in the Natural Sciences cycle integration serves to form the relationship of the students' scientific worldview and the unity of the material world, phenomena in nature. Integrated classes also help to raise the academic level of Education, generalize knowledge, develop students' logical thinking and creative abilities. In the learning process, the teacher takes place in one or more sessions, or even in a few minutes, the formation of a subjective new knowledge that makes the student rely on previously acquired knowledge related to his various subjects. That is, the appropriate conditions must be created for their synthesis, and not to give knowledge in its ready state. One of the technological ways to carry out this task involves the transfer of knowledge from one field to another, which is the main mechanism for establishing interdisciplinary ties. The Department of molecular physics is considered one of the most complex departments of physics, since it is complex to show the processes in this department to students in a clear experimental setting, and in this process and concepts are taught by imagining using the creative thinking of students. For example, imagining molecules and atoms as small balls makes them easy to understand.

Early insights into molecular physics are taught in the 7th grade of general secondary schools and a full section is taught in the 9th grade textbook. In general,

secondary schools, it is very advisable to teach molecular physics by integrating it with the science of chemistry. Because the following concepts are exactly the same concepts in the molecular physics department of physics and in chemistry:

- molar mass; atomic unit of mass;*
- concentration; Mendeleev-Clapeyron equation;*
- ISO processes;*
- interior energy;*
- pressure of gas in the cylinder;*
- the laws of thermodynamics, etc.*

But students imagine these exactly the same concepts differently in the process of learning in chemistry and physics lessons. In addition, in secondary schools, the above concepts are taught in Chemistry Lessons in Grades 7 to 8, while the molecular physics course is taught in Grade 9. Another physical explanation of these phenomena in a physics lesson in the 9th grade does not lead to further consolidation of these concepts in the student, but leads to suspicion of the student.

Applying a variety of pedagogical technologies before starting a topic to solve such problems, it is possible to repeat students' knowledge of the Department of Molecular Physics in chemistry and give new knowledge of physics, and to summarize, compare and draw conclusions from physics and chemistry in the process of strengthening the subject perfectly. In particular, the pedagogical technology "two-part diary" can be used in the process of teaching the topics of the Department of Molecular Physics in the physics textbook of the 9th grade. In this pedagogical way, students divide their notebooks from the middle into equal halves, the teacher announces the basic concepts that will be studied in today's topic. On the first side of the diary, the student records his knowledge of the subject from chemistry, and on the second side he records his knowledge of physics during the course of the lesson. At the end of the lesson, they are compared and general conclusions are drawn.

Ensuring that these topics are passed at the same time in physics and Chemistry Lessons, while revising textbooks as much as possible, before starting the course in molecular physics, students are asked What knowledge and concepts they have in chemistry on this topic, and if they are strengthened, the students ' mastery of the science increases and becomes more noticeable. In conclusion, the Department of thermodynamics is one of the most complex departments of physics and chemistry, and the process of mastering science becomes much simpler if integration with other disciplines is established in the process of its teaching. After all, the task and purpose of each teacher is to determine the ability, Ability, talent of the younger generation, to open up and create opportunities for their development.

REFERENCES

1. Сафиуллина Т. Р., Нуриева Э.Н. Химическая термодинамика. I и II законы: учебно-методическое пособие, — Москва; Берлин: Директ-Медиа. — 2020.
2. Sultonov G'. Termodinamika qonunlarini o'rganish. Metodik qo'llanma. T.: O'qituvchi, 1993.
3. Razakov, G. A. (2021). DETERMINATION OF NATURAL SCIENCE LITERACY OF STUDENTS ACCORDING TO THE INTERNATIONAL ASSESSMENT PROGRAM. *Oriental renaissance: Innovative, educational, natural and social sciences*, 1(8), 866-871.
4. Razakov, G. A. (2022). METHODS OF INCREASING THE NATURAL SCIENCE LITERACY OF STUDENTS IN TEACHING CHEMISTRY ORGANIZATION OF PEDAGOGICAL EXPERIMENTAL TESTING AND RESEARCH RESULTS. *Academic research in educational sciences*, 3(2), 804-808.
5. Гуломжон, Разаков. «Методика формирования естественнонаучной грамотности учащихся на уроках химии». *Журнал NX*, том. 6, нет. 05, 2020, стр. 132-135.