Proceedings of International Conference on Scientific Research in Natural and Social Sciences
Hosted online from Toronto, Canada.
Date: 5th November, 2023
ISSN: 2835-5326 **Website:** econferenceseries.com

USE INTERDISCIPLINARY INTEGRATION CHARACTERISTIC ASPECTS

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Annotation:
The article examines the issue of using an effective teaching system in teaching physics. The importance of didactic methods in this regard is revealed. Particular attention is paid to the effectiveness of integration with other disciplines in the field of in-depth study of physics.

Keywords: physics, career guidance, physical problem, modern methods of teaching physics, physics and medicine, Newton's law, universal gravitational force, elastic forces, force, law of conservation of momentum, mechanical vibrations, sound

At the level of individual educational subjects, technical systems can be created that provide instruction in science. For example, V.F. Shatalov's set of techniques can be considered a subsystem (as part of a methodological system), i.e. focusing. stable combination of physics teaching methodology (mathematics and other school subjects). All of these techniques always correspond to the general didactic system of methods and can be evaluated in terms of didactic completeness and compliance with the main goals of teaching.

The implementation of federal educational standards by the teacher leads to the solution of problems in the educational process and differentiation of the requirements of these standards, taking into account the formation of general competences and universal educational actions.

There are different approaches to solving the problems of integration and differentiation in the educational process.

The purpose of this work is to present an experience of integration and differentiation in teaching physics based on a competency-based approach [1].

Duties:

• providing the experience of incorporating various aspects into the content of the educational material;

• to present the experience of differentiating the educational process by the students' mastery levels of "Physics".

Integration (from Latin Integratio - "connection") - the process of combining parts into a whole. In the work, a combination of various aspects that should be emphasized in the content of the science "Physics" is considered.

Differentiation (from Latin Differentia - difference, difference) - the aspect of the development process related to division, dividing the developing whole into parts, stages, levels. This article presents the experience of studying educational materials and differentiating students according to the level of mastery of basic competencies.

It is appropriate to start the integration process by emphasizing the aspects of learning the material that allow students to form basic competencies. Such aspects include the historical aspect, patriotic education, the formation of an ecological worldview, as well as the updating of professionally oriented information, since the study of general education is carried out in a vocational educational institution.

Of course, the subject of every science has a historical side. But it is important to keep students interested in the subject being studied without overloading them with unnecessary information. Historical information should be logically woven into the material under consideration, the historical aspect should encourage students to study specific issues of science [2].

It is possible to distinguish topics in the work program from physics, the content of which allows updating information about the scientific and technical achievements of great scientists and designers. It is also necessary to draw students' attention to the close relationship between local and foreign achievements, to create parallels, to compare the achievements of our science and the discoveries of foreign scientists [3].

Many topics in the work program directly or indirectly address environmental issues. In education, students' attention should be drawn to environmental protection measures and the positive effects of active factors; it is appropriate to consider the consequences of man-made disasters, as well as issues related to the use (prohibition of use) of nuclear weapons [4].

Professionally oriented information is included in the teacher's work program according to the taught subject. In this case, updating is a natural continuation of learning this material. Vocationally oriented information is distributed according to the subjects of the work program depending on the profession studied by the students [5].

If we take science methodology as the basis for the classification of teaching methods, then all teaching methods can be divided into empirical and theoretical types. Empirical methods of education are characterized by such methods as observation, experiment, hypothesis, drawing conclusions from insignificant aspects of an event or process, analysis and comparison of obtained data, induction, generalization and systematization of experimental facts. The relationship between the formed basic competencies and aspects of material learning is presented in Table 1.

Table 1. "Formation of basic competencies in various aspects of physics education".

№	Study aspects	Basic powers to be formed
1.	Historical aspect	Emotional and psychological competence
2.	Patriotic education	Hissiy va psixologik компетенции
3.	Formation of an ecological worldview	Social powers *
4.	Professionally oriented information updates	Powers of self-development

Theoretical methods of education are characterized by idealization, modeling, thought experiment, theoretical analysis, hypothesis, analogy, deduction, etc. In other words, logical techniques for such classification become integral elements of teaching methods.

Integration with history

Often in physics classes, using interdisciplinary connections with history, students write reports or abstracts about a particular scientist. This type of work does not provide an opportunity to feel the historical period and highlight the necessary

conditions for the development of the phenomenon being studied, as well as to see the results of its practical application. Therefore, we advise you to pay attention to the method of "asking difficult questions" during integrated lessons. This technique can be used as a refresher and homework before starting to study the topic. For example,

1. What historical events led to the discovery of the nuclear bomb?
2. What were the consequences of the use of nuclear weapons in Hiroshima and Nagasaki (ecological, historical, economic)?
3. What historical events show the superiority of the discovery of radio communication by A.S. Popov?

In the lessons, the technique of "matching" is used mainly to reinforce the material at the end of the study of the topic or section. Students are offered real or imaginary facts in the history of physics and world history, which should be divided into groups according to the principle of correspondence to a certain period.

Summary

Thus, the competence-based approach to teaching allows to integrate the educational process from different aspects in terms of content and to differentiate it according to the levels of development for students.

Differentiation allows students to master learning materials at a level that is convenient for them, gradually increasing their achievements.

Integration helps to form a holistic picture of the surrounding world among students.

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