

Ahmadjonova Umida Tojimuradovna

Senior Lecturer, Department of Physics

Jizzakh Polytechnic Institute, Uzbekistan

EDUCATIONAL INTEGRATION AND INNOVATION IN SCIENCE TEACHING

Annotation. The article presents methods of educational integration and innovation in teaching future exact sciences (mathematics, physics, chemistry), analyzes the meanings of the words integration and innovation. The introduction of the words integration and innovation into science and their current use are described.

Keywords: education, integration, innovation, pedagogical innovative technology, pedagogical innovation science.

The basis of comprehensive education of students is the formation of a scientific worldview in them. The role of exact sciences in the implementation of this task in higher educational institutions is of great importance. Because, in order to successfully implement the task of training high-level personnel in our republic, it is necessary to give priority to the teaching of mathematics, physics, chemistry and biology from exact and natural sciences at all levels of education, especially in general education schools, academic lyceums and vocational schools, and in the higher education system, as Western countries, Japan, and South Korea have proven by the fact that they have achieved global successes in the field of science and technology due to the development and in-depth teaching of these subjects.

In the process of education and upbringing, new tasks cannot be implemented today with the old method. Every day, many new things and new innovations enter our country. New innovations come with their own concepts, “language”, and gradually raise the level of scientific and technical development. The pedagogical development of our homeland is no exception, of

course. The tree of our current national pedagogy drinks water from two life-giving rivers. One is the national educational experience formed over millennia and formed from the particles of gems, and the other is the achievements of advanced, proven innovative technologies of the world. In order to ensure the unity of science and practice, the activities of higher educational institutions should not be an exception. Without mastering the fundamental essence of such concepts as “innovative technologies”, “pedagogical diagnostics”, “cybernetic pedagogy”, “test-rating”, and without using them in the educational process, it will be difficult for us to achieve our worthy position in world pedagogical integration. In this sense, we will not be mistaken if we say that the word “integration” means unification [1].

Integration - why has it become a necessity in today's educational process? Why do we need to abandon the old-fashioned organization of the educational process, which has been used for so many years, and take a new approach to designing the educational process? To answer such questions, first of all, it is necessary to understand the main directions of the radical reforms being carried out in the field of education. These directions are:

- reforming the content and system of education;
- reforming educational management;
- creating a mechanism for education based on a market economy;
- forming new views of parents, teachers and students on the educational process;
- and finally, the main driving force of these radical reforms is the implementation of new pedagogical innovations in practice.

There is a need for a new approach and organization to designing the educational process based on the new education system, content, curriculum, and textbooks.

The concept of “innovation” has long been widely used in the world pedagogical lexicon. This concept is combined with the concepts of “innovation”, “reform”. In a broad sense, any change in the education system is a pedagogical innovation. Initially, these concepts were applied to socio-economic and technological processes, and then to any innovations in the education system. That is why it is called pedagogical innovative technology. By now, the science of pedagogical innovation has been formed. Pedagogical innovation is considered as a doctrine of pedagogical innovations, their evaluation and assimilation by the pedagogical team, and finally, their application in practice.

The current concept of pedagogical innovative technology is the product of the creative activity of a wide range of teachers. It is only necessary to fully develop the concept of pedagogical innovative technology, understand its scientific essence and apply it to the educational process. Pedagogical innovative technology is the implementation of the previously planned goal in consistent and sequential practical activities, in the educational process. Any educational process takes place in a certain pedagogical system. Pedagogical innovative technology answers the question of what methods of teaching will give a good result. It has its own system, in which the sequence, interdependence, and integrity of components are preserved. The controllability of pedagogical innovative technology is that it allows for planning, diagnosing, and making corrections to the educational process. In this case, the expected result of education is achieved, time is saved, which means the effectiveness of pedagogical innovative technology[2].

The verifiability of pedagogical innovative technology means that the developed model should give the same results when used by other teachers. In short, only with a new approach to the educational process, creativity and

originality are applied, the effectiveness of education will rise to a new level, namely:

- the student's responsibility, accountability and duty for the educational process will increase;
- the skills of independent acquisition of knowledge and free thinking will be formed;
- an environment will be created for a person to find his place in society faster.

To do this, today we need to move from the mandatory call to the student "you need to know this" to instilling in him an inner confidence and aspiration "I need this and I am able to know this and apply it in life."

Pedagogical innovative technology is the application of a certain project in practice in the pedagogical system[3].

If we think about the formation of education in the current conditions, as Y.A. Comenius wrote in his work "Great Didactics", only lessons and conversational forms of education are not enough to meet modern requirements. Our teachers, along with the stereotyped 5-stage lesson, should also widely use forms of education outside the classroom, which teachers call non-standard lessons in their experience, such as lectures, practical exercises, competitions and discussions, independent work, conferences, and trips. To do this, teachers need to test the structure and stages of each form of education outside the classroom, determine its effectiveness, and test its superiority over traditional lessons. Of course, this will not happen by itself, it requires knowledge of the theory of education, its current problems, creativity, and constant research. The main factor that ensures students' interest in subjects is the content and its essence. Nowadays, at a time when science and technology are rapidly developing, it is not difficult to define the content, essence, tasks, and approaches of teaching specific subjects in a general way.

We must not forget that the creation of alternative versions of textbooks for exact sciences (mathematics, physics, chemistry) at all levels of the continuous education system and their use in the educational process will greatly contribute to a high level of quality education.

The organization of exact sciences in all educational institutions based on modern pedagogical technology at the level of modern requirements depends on the scientific and educational system of education and the choice of students and teachers. As mentioned above, not involving students and pupils in all educational systems in secondary things that distract them from studying and various activities that are far from the content of education is also of great importance in solving current problems in the education system and achieving high efficiency.

In conclusion, it can be said that the professional skills of future teachers studying in the field of exact sciences allow for the effective preparation of students for school education. The results of the study of the activities of future teachers of the field of exact sciences from the pedagogical, psychological, organizational and methodological perspectives show that their personal qualities and professional training play a significant role in increasing the effectiveness of students' educational activities. Accordingly, the professional skills, knowledge and creativity of future teachers of the field of exact sciences are the main factors in the formation of conscious activity and independence in students. The work of future teachers of the field of exact sciences at school during pedagogical practice is of great importance in the formation of professional skills in them.

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