

MODEL FOR ORGANIZING THE EDUCATIONAL PROCESS FOR STUDYING MEDICAL ELECTRONICS

M.F.Akhmadjonov

Assistant, Department of Physics, Fergana State Technical

University mexriddinaxmadjonov@gmail.com

Annotatsiya: *Ushbu maqolada oliy o'quv yurtida tibbiyot elektronikasi fanini o'qish bo'yicha o'quv jarayonining modelini, uning mazmuni va usullari hamda natijalari haqida so'z boradi. O'quv jarayoni ta'limning fundamental mohiyatini amalga oshirishning muhim tarkibiy qismlarini o'z ichiga oladi. Shu bilan bir qatorda, o'quv jarayonida tibbiyot elektronikasiga oid muhim kontseptsiyalar va usullarga, talabalarning bilim va ko'nikmalarini rivojlantirishga qaratilgan didaktik yondashuvlar ta'kidlanadi.*

Tayanch iboralar: *Tibbiyot elektronikasi, motiv, didaktika, didaktik tamoyillar, o'quv mashg'ulotlari, o'quv faolyati, ta'lim modeli, aqliy faolyat, konstruktiv, kognitiv.*

Аннотация: *В данной статье рассказывается о модели образовательного процесса изучения медицинской электроники в высшем учебном заведении, его содержании и методах, а также результатах. Образовательный процесс включает в себя важные компоненты реализации фундаментальной сущности образования. Кроме того, в образовательном процессе делается акцент на дидактических подходах, направленных на развитие знаний и умений студентов, к важным понятиям и методам, связанным с медицинской электроникой.*

Ключевые слова: *Медицинская электроника, мотивация, дидактика, дидактические принципы, учебная деятельность, учебная деятельность, образовательная модель, мыслительная деятельность, конструктивная, познавательная.*

Abstract: This article discusses the model of the educational process for studying medical electronics at a higher educational institution, including its content, methods, and results. The educational process incorporates essential components for realizing the fundamental essence of education. Additionally, didactic approaches aimed at

developing students' knowledge and skills in important concepts and methods related to medical electronics are highlighted.

Keywords: *Medical electronics, motivation, didactics, didactic principles, educational activities, educational model, cognitive activity, constructive.*

INTRODUCTION

Currently, many developed countries have accumulated significant experience in applying new pedagogical technologies that enhance students' interest and scientific creativity, ensuring the effectiveness of the educational process. This indicates that the foundation of modern education is a quality and high-tech environment. Its creation and development are technically complex, but such an environment contributes to improving the educational system and implementing a model in the educational process.[1]

METHODOLOGY

The educational process model is based on teaching medical electronics at higher education institutions and preparing specialists to use modern medical equipment. We developed the teaching model based on the following fundamental principles of higher education pedagogy:

- The main didactic law of education and educational activity unity, which views the educational process as the interconnected activities of the teacher and student.

- Didactic principles of teaching: scientific nature, systematic approach, visibility, availability, individual and collective harmony, theory-practice connection, durability of knowledge, unity of concrete and abstract, historical conditionality, self-education principle, consistency principle, understanding principle.

- The importance of the holistic development of the future specialist's personality.

- Pedagogy as a subject of human education.

- The necessity of continuous education.

The model of the educational process should correspond to the main functions of the educational process: constructive, organizational, communicative, and research.

Constructive Function: This involves selecting the logical structure of the lesson, implementing interdisciplinary connections, and systematizing and generalizing educational material.

Organizational Function: This focuses on ensuring the teacher's influence on the educational process through the most rational and effective forms and methods of teaching activities.

Communicative Function: This allows for uncovering the personal meaning of learning for students and forming learning activity motivations.

Research Function: This includes searching for and justifying the most effective and rational methods of teaching.

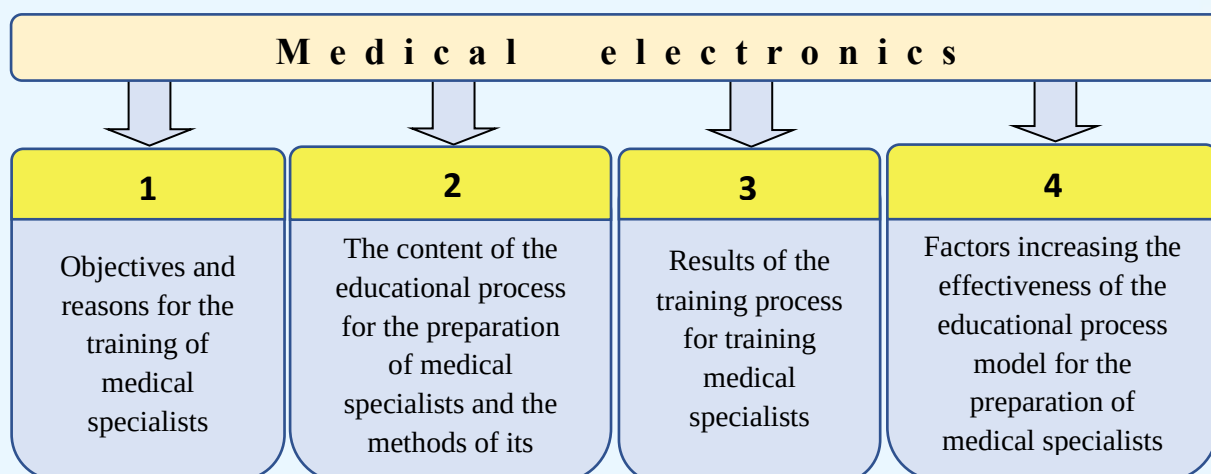


Table 1. Model of the educational process of medical electronics.

Model for Teaching the Medical Electronics Course The model for teaching the medical electronics course, like any human activity, is based on the following structure: goal - motivation - content - methods - results. Additionally, the educational process model must meet the conditions of operational efficiency.[2]

Let's examine the components of the proposed model:

1. Goals and Reasons for Teaching the Medical Electronics Course.

By analyzing the goals and reasons for teaching this subject, we can ensure their consistent subordination. The hierarchical structure of goals forms a "system of goals" where each subsequent level is characterized by increasing specificity and the number of precise goals. Given the rapid development of technologies in medicine

and their implementation importance, the role of the medical electronics course in the educational process is significant. The primary "system of goals" for this course includes:

- Increasing Technological Proficiency: Teaching students and medical specialists to use medical equipment and technologies correctly, enhancing their skills, and improving the quality of services provided to patients.
- Utilizing Innovations: Keeping students and specialists updated on constantly evolving innovations in medical equipment and technologies.
- Improving Diagnostic and Treatment Quality: Efficient use of medical electronic devices helps make the diagnostic process faster and more accurate, significantly improving treatment quality.
- Emphasizing Practical Exercises: Focusing on practical exercises in the medical electronics course to prepare students for real-world problems.
- Enhancing Quality of Life: Using modern medical technologies enables medical specialists to provide prompt and high-quality treatment for patients.

The educational process model for the medical electronics course helps students understand technological complexities and use them correctly.

2. Content and Implementation Methods of the Educational Process

In the educational process model, the methods and content are closely interconnected. However, this set is crucial for determining the content of the educational process. By analyzing the educational process in training medical specialists, we identified two important aspects:

- Creating Favorable Conditions for Implementing the Best Teaching Methods for Selected Educational Materials: This is fundamental for quality specialist training.
- Ensuring the Content of Educational Materials is Optimal:** Helping form strong professional knowledge in a new discipline without increasing the overall education time in medical higher education institutions.

It is known that an essential element of the educational process in training medical specialists is forming practical and experimental skills and controlling material assimilation. The teacher's ability to adapt the level of material assimilation and practical and experimental skills formation for each student enhances the

effectiveness of their activities. The content and implementation methods of the educational process for the medical electronics course aim to improve the quality and efficiency of specialists' work, enabling them to use modern medical technologies effectively.

3. Results of the Educational Process for Training Specialists

In any specialist training program, skills and competencies are assessed through tests and practical assignments, continuously monitoring students' progress. Evaluating the educational process results is carried out with the "final result." The level of material assimilation, practical, and experimental skills formation, as well as their completeness, depend on the teacher and students' activity model. This model is implemented under the teacher's guidance, so the results of the teacher's activities significantly influence the results of the students' activities[3].

The educational process for the medical electronics course shows effective results for medical specialists. These results include:

- **Work Skills:** Specialists gain the necessary skills to install, adjust, and operate medical electronic equipment. Students are prepared for accurate diagnosis and efficient use of instruments.

- **Responsibility and Safety:** Students and specialists learn to comply with safety standards in the field of medical electronics, feeling a high level of responsibility when using medical equipment.

- **Understanding Technologies:** Students understand the capabilities of modern medical equipment and technologies, being ready to use them correctly. Future specialists can innovate in the medical field by using advanced technologies.

Readiness for Practice: The educational process prepares students to work in real medical conditions, which helps them succeed in their professional activities. Students can apply the necessary skills and knowledge in practice.

Quality of Medical Services: Specialists can improve the quality of medical services for patients through the effective use of medical equipment. Timeliness and accuracy in the treatment process are ensured.

4. Conditions Ensuring the Effectiveness of the Educational Process Model for Training Specialists in Medical Electronics

To ensure the effectiveness of the educational process model for training medical specialists, it is essential to provide cognitive interest as a motive for gaining knowledge. This involves using targeted incentives related to future professional activities. Among the various incentives identified in pedagogy, the main indicators for training medical specialists include the practical significance of the studied material and involving teachers in modern scientific achievements.[4]

The educational process model for mastering the medical electronics course provides deep knowledge in various aspects. Effective activity is possible only if the fundamental conditions of education are met. Achieving fundamental education through the intensive nature of teaching involves focusing on key elements and methods capable of generalizing and transmitting essential knowledge[5].

Additionally, the optimal ratio of theoretical and practical training is crucial for preparing specialists with sufficiently deep theoretical knowledge. The following conditions should be considered to achieve this fundamental balance:

- Innovative Pedagogical Methods: Using modern pedagogical methods in the educational process increases students' interest in the subject. Interactive teaching methods help apply theoretical knowledge to practice.
- High-Level Technical Base: Modern medical electronic equipment and simulation tools should be available for the educational process. Using advanced technologies in educational institutions ensures a quality educational process.
- Meaningful and Modern Curricula: Medical electronics curricula should be innovative and practice-oriented. Programs should meet international and state educational standards and the requirements of the field.

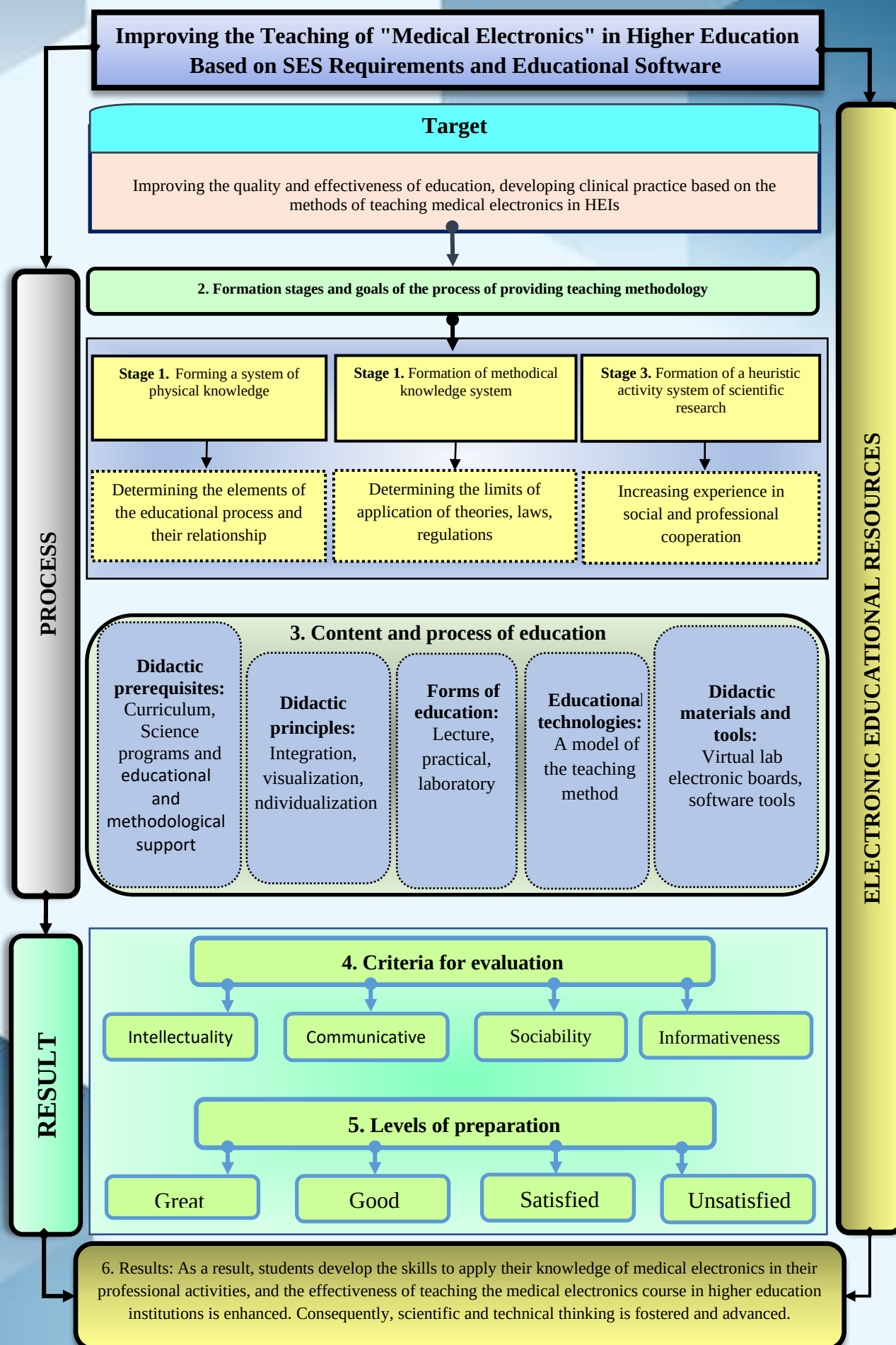


Figure 1: The model for teaching medical physics in higher education

- **Qualified Teachers:** The educational process should involve highly qualified specialists and teachers in the field of medical electronics. Teachers should have opportunities for continuous professional development and acquire updated knowledge.

- **Active Student Participation:** Actively involving students in the educational process enhances their readiness for practice. Students should work on projects they can implement themselves.

CONCLUSION

Thus, the educational process for training medical specialists should align with modern approaches and ensure its humanistic nature. The factors mentioned above contribute to the effectiveness of the educational process model for the medical electronics course, preparing medical specialists to use modern technologies effectively. This foundation helps students become highly qualified medical professionals in the future, improving the quality of medical services.

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