

## USING INTERACTIVE METHODS TO DEVELOP PRACTICAL SKILLS IN CLINICAL LABORATORY DIAGNOSTICS AMONG STUDENTS OF MEDICAL HIGHER EDUCATION INSTITUTIONS

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### **Annotation**

This article explores the issues of developing and enhancing the practical skills of medical university students through the use of modern pedagogical technologies in teaching the discipline Clinical Laboratory Diagnostics. The specific features of the educational process in clinical laboratory diagnostics, the methodology of organizing practical classes, and the role of innovative technologies and simulation training in improving learning effectiveness are scientifically analyzed.

### **Keywords**

clinical laboratory diagnostics, practical skills, medical education, simulation technology, competence, laboratory practice, innovative method.

In our study, when discussing the preparation of students for teaching based on the development of practical skills in the subject of clinical laboratory diagnostics, we refer to the third approach in defining this concept, which occurs within internal psychological and pedagogical research. According to this approach, the development of practical skills represents the implementation of an individual-centered approach. Our choice of this approach as fundamental is primarily based on its greater alignment with the idea of humanizing education, focusing on the development of the human personality. Secondly, a teacher's readiness to develop practical skills through an individual approach is a prerequisite for successfully implementing both external and tiered differentiation.

In our research, we adhere to the definition of practical skills development in education as proposed by G.D. Glazer, since, in our view, it is the most comprehensive in terms of the tools used to implement this type of education. When this definition is applied to teaching practical skills in clinical laboratory diagnostics, it is important to consider the learning process while taking into account each individual student's natural learning and cognitive activity.

We can observe that in teaching clinical laboratory diagnostics based on the development of practical skills, the management of students' natural learning and

cognitive activity is based on accounting for their individual psychological characteristics.

In improving the methodology of organizing education based on the development of practical skills in clinical laboratory diagnostics, we found it appropriate to use interactive electronic learning resources. The advantage of interactive electronic learning resources is that the teacher can demonstrate practical and laboratory processes, which would normally be explained orally, in just a few minutes using a computer. During the lesson, interactive methods and didactic games should be used according to the allotted time, assigning tasks that encourage students to gradually increase their level of knowledge. Thus, the teaching methodology we propose simultaneously organizes the lesson content in both traditional and non-traditional formats.

This, in turn, ensures that teachers can effectively organize students' readiness to perform practical and laboratory assignments at a high level. Students are recommended to utilize all capabilities of interactive electronic learning resources while completing these tasks.

The approach also involves generalizing the methods, various technological approaches, and tasks used to develop students' skills in acquiring knowledge through interactive learning resources, fostering their motivation, encouraging their engagement with study, research, and science, and developing a positive attitude toward lessons and the process of mastering professional knowledge. It also includes selecting tools that promote students' curiosity and interest in innovation, as well as identifying the motivations that manifest this inclination.

The use of interactive electronic learning resources not only enhances the development of practical skills but also supports the continuous monitoring and regulation of students' cognitive and learning activities. This ensures that each student's individual abilities and learning pace are taken into account, creating a personalized educational environment.

Furthermore, integrating interactive methods allows for the combination of theoretical knowledge with practical application, which is essential in clinical laboratory diagnostics. Students gain hands-on experience in a controlled digital environment before performing real laboratory procedures, thereby increasing both their confidence and competence.

The methodology also emphasizes the importance of active student engagement through tasks that stimulate analytical thinking, problem-solving, and decision-making skills. Didactic games, simulations, and interactive exercises encourage students to apply their knowledge in practical contexts, reinforcing retention and understanding.

In addition, interactive learning promotes collaboration and communication among students, which are critical skills for future medical professionals. By working together on virtual experiments and simulations, students learn to share responsibilities, discuss results, and critically evaluate outcomes, thereby fostering teamwork and professional behavior.

Finally, this approach supports lifelong learning by cultivating students' motivation for self-directed study, research, and continual professional development. By leveraging interactive electronic resources, educators can create an adaptive and dynamic learning environment that aligns with modern educational standards and the evolving demands of the medical profession.

In conclusion, applying interactive methods in teaching clinical laboratory diagnostics effectively develops students' practical skills, enhances their cognitive activity, and fosters personal and professional growth, ultimately contributing to the preparation of competent and motivated future healthcare specialists.

Interactive electronic learning resources also facilitate the visualization of complex laboratory processes, which can be difficult to convey through traditional lecture-based instruction alone. By providing virtual simulations, animations, and step-by-step demonstrations, students are able to observe, replicate, and experiment with laboratory procedures safely, minimizing errors and reinforcing proper technique.

Moreover, the proposed methodology encourages reflective practice among students. After completing interactive exercises, students can analyze their performance, compare outcomes with theoretical expectations, and identify areas for improvement. This reflective component strengthens critical thinking, promotes self-assessment skills, and deepens the understanding of clinical laboratory diagnostics.

The combination of interactive resources and active learning strategies fosters a student-centered environment where learners are motivated to take responsibility for their education. Tasks are designed to challenge students cognitively, encouraging exploration, experimentation, and problem-solving. By engaging in active participation rather than passive reception of information, students internalize knowledge more effectively and develop confidence in applying skills in real-world clinical settings.

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