The OSCAR PUBLISHING Services
International Journal of Pedagogics

VOLUME Vol.05 Issue01 2025
PAGE NO. 89-92
DOI 10.37547/ijp/Volume05Issue01-24

The role of interactive teaching technologies in the formation of professional competence among medical university students

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Received: 27 October 2024; **Accepted:** 29 December 2024; **Published:** 30 January 2025

Abstract: The article describes the use of educational technologies in the formation of professional competence of medical university students.

Keywords: Technology, pedagogical technology, interactive methods, taxonomy, discussion, brainstorming, jigsaw, cluster, sinvein, organizers, VENN diagram, "T" scheme.

Introduction: Developing a new system for training highly qualified personnel, based on our nation's rich intellectual heritage, universal values, and the latest achievements in modern culture, economics, science, technology, and innovation, has become one of the key conditions for the advancement of the Republic of Uzbekistan. It can be said that the formation of a well-rounded individual entails mastering a respectable profession, contributing to societal progress to the best of their abilities, and thereby expressing their individuality and personal growth. Striving for excellence is a complex process that goes hand in hand with professional development and spans almost an entire lifetime.

In a broad sense, professional development refers to an individual's intellectual capabilities, physical potential, aptitude, interest, and aspirations for a specific field, as well as their values and worldview. It includes acquiring education in a particular profession, entering and adapting to that field, and ultimately becoming a skilled and qualified specialist over the years. In particular, the process of training qualified professionals should begin with understanding the system of requirements for professionals in a given field. What qualities should a modern doctor possess? A doctor must have general knowledge, practical skills, specialized expertise, and specific applied competencies.

General Skills a Doctor Must Possess

1. The ability to assess the fundamental laws governing the formation and regulation of human physiological functions throughout life.
2. Understanding the age-specific characteristics of the human body and its functional systems.
3. Utilizing the theoretical foundations of medicinal and non-medicinal methods for treating and preventing common diseases.
4. Gaining in-depth knowledge of clinical sciences.
5. Implementing preventive measures aimed at detecting early and latent forms of diseases and identifying risk factors.
6. Making timely and accurate diagnoses.

Considering all the above, it becomes evident that developing essential competencies in future medical professionals is of utmost importance.

Competence refers to expertise, professionalism, qualification, experience, mastery of one's field, and a deep understanding of its intricacies. It involves:

1. Awareness of answers to specific questions.
2. The ability to make necessary decisions to achieve desired results in the workplace.
3. The capacity to identify and resolve optimal solutions to problematic, contentious, or conflicting situations.

These skills and competencies collectively indicate a professional's competence. Pedagogical competence refers to the professional and personal qualities that

enable educators to perform their pedagogical functions in accordance with the norms, standards, and requirements of a specific historical period. In medical education, the development of the above-mentioned competencies requires the prior formation of professional motivation in students, as motivation serves as the primary driving force for their actions. To foster professional competence in medical education, the use of interactive technologies is considered appropriate. Such an approach ensures active student participation and effective outcomes. A technological approach to teaching, which aims to make the educational process repeatable and systematic, akin to a production process, was first explored in the 1950s by American pedagogical scientists. Notably, the term "teaching technology" was first introduced by American scientist Skinner, who described it as the application of psychological science advancements in practical settings.

The concept of "teaching technology" was defined by the Association of Pedagogical Communications and Technologies' text committee professor, Galbraith, as "the systematic application of scientific and other knowledge to solve practical problems." Similarly, psychologist N.F. Talizina noted that the emergence of the term "pedagogical technology" in the education system was influenced by several factors:

1. The limited global popularity of didactic principles (particularly in the USA),
2. The lack of highly constructive and modern didactic principles,
3. The introduction of technical and programmed educational tools in the 1960s.

The term "interactive" originates from the English word "interact" ("inter" – "together," "act" – "to act"). Interactive teaching refers to a specialized type of cognitive activity organization. It involves clear, specific, and planned goals. One of its main objectives is to create a high-level environment where learners recognize their success and intellectual potential, transforming the learning process into a productive experience. Interactive teaching methods can be adapted by each teacher based on their available resources and capabilities. Each student learns at varying levels, depending on their motivation and intellectual abilities.

Interactive Teaching Technology. This approach ensures that all students achieve the planned learning outcomes. Every student, regardless of their motivation or intellectual level, can successfully master the content according to the predetermined goals. Examples of Interactive Methods:

- Roundtable discussions
- Business games
- Small group work
- Mini-lectures
- Debates
- Educational discussions
- Brainstorming
- Case studies (analysis of specific practical situations)
- Role-playing games

Based on the points mentioned above, the following fundamental characteristics of pedagogical technology implementation can be highlighted:

1. Encouraging Independent Learning Students are not simply taught but are trained to learn independently. They are guided to analyze, comprehend, and assimilate study materials, think critically, and arrive at personal conclusions through creative reasoning.

2. Promoting Independent Knowledge Acquisition

Knowledge is not handed to students in a ready-made form. Instead, they are taught to independently extract knowledge from various sources, including textbooks, supplementary literature, online resources, and reference materials. This approach helps students reinforce and expand upon the lessons taught in class.

3. Ensuring Knowledge Mastery According to Individual Abilities

All students are guaranteed to grasp knowledge at a level corresponding to their capabilities. Their mastery is evaluated by their ability to apply the acquired knowledge in practical, real-life activities and tasks.

Pedagogical Technology Defined. Pedagogical technology encompasses programs, textbooks, teaching aids, visual tools, and technical resources, unifying them into an effective educational process. It also involves organizing various activities—such as literary evenings, meetings, and events promoting national independence ideals—that stimulate emotional engagement and participation, thereby increasing learning effectiveness. Interactive Teaching and Its Benefits.

From the first year of study, incorporating age-appropriate elements of interactive pedagogical technologies into lessons has shown significant positive outcomes. Interactive teaching involves fostering collaboration between teachers and students to increase lesson efficiency. It develops students' abilities to think independently, critically analyze, and express their opinions. In interactive methods, students actively participate by working individually, in pairs, or

in groups to solve problems and answer questions. They engage in thinking, evaluating, writing, speaking, and presenting evidence-based solutions. This active involvement ensures that the knowledge acquired is retained longer in their memory. In mastering a new topic (information), a critical and analytical approach is taken. The teacher only performs the role of a facilitator (guide, organizer, observer).

To achieve the pedagogical goals of each lesson type, the teacher must mobilize their intellectual capacity, use advanced pedagogical experience, and, ultimately, the selection of the method should become a true creative act. The advantage of lessons organized based on interactive pedagogical technologies is that such lessons promote thinking, serve as a foundation for forming endless love for the homeland, loyalty, civic ethics, and democratic culture. In teaching subjects, methods such as “Working with Groups,” “Debate,” “Problem-Based Learning,” “Brainstorming,” as well as working with tables, writing assignments that express independent thoughts, and composing essays, enhance student activity. Lessons conducted using these methods not only save time but also deliver new knowledge to students while encouraging deep thought, inducing reflection, and drawing their full attention. Such lessons provide an opportunity for students to engage in problem-solving situations, draw correct conclusions during debates, and apply their knowledge to other topics, thereby making connections and generalizing information.

One of the teaching methods that increases student activity in the learning process is the “Working in Small Groups” method. In this approach, students are divided into small groups, and during this process, each group learns from one another, evaluates what they have learned within their potential scope, and is encouraged to value and draw conclusions from knowledge in various situations. “Brainstorming” is the most effective method for solving a problem by collecting free thoughts and opinions from participants, through which a solution is found. This method can be used to develop and enhance students’ creative and technical abilities, as well as to activate their learning and knowledge-building activities. For this, students are encouraged to make creative suggestions, even if these proposals seem unrealistic; all thoughts and suggestions, however unusual they may seem, are written down; time is set, and suggestions created by each group are shared. This method has yielded good results in developed countries.

The interactive teaching method describes a specific action in such a way that it ensures the most effective learning. For example, a teacher chooses “debate” as the main method and builds its logic, while also using “brainstorming” to develop students’ thinking abilities during the debate, which brings the expected results. The next important condition for selecting interactive teaching methods is to consider the most suitable criteria for combining them. The criterion for selecting interactive methods is their focus on solving educational and developmental issues. This criterion is introduced by evaluating the capabilities of various methods to solve problems within a particular context, as their potential to assimilate social experience differs. All interactive methods ensure students’ independent thinking, eliminate monotony and standardization in teaching, and increase the role of theoretical knowledge in mastering educational materials. The forms of implementing interactive methods can vary, such as brainstorming, critical thinking, mind maps, menus, oral speech, textbook reading, cinema or television, and other visual tools. Methods like clustering, cinquain, and finding one’s place in the classroom require the teacher to repeat the activity methods previously demonstrated.

Interactive methods, by their nature, achieve a certain level of effectiveness in fulfilling educational or developmental objectives. However, each of them has different potential for ensuring productivity in the educational or training process. Therefore, when choosing interactive methods, teachers should focus on the subject being studied, the problem, or the issue that needs to be addressed. Furthermore, the effectiveness of interactive methods increases when the age, psychological characteristics, worldview, and life experiences of the students are taken into account. This requires teachers to possess professional skill, competence, knowledge, sensitivity, and intuition.

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