TASK-BASED LEARNING SYSTEM AND ITS ROLE IN MEDICAL EDUCATION

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Received: 05.01.2026
Revised: 06.01.2026
Accepted: 07.01.2026

Key words:
Task-Based Learning, meaningful tasks, knowledge, skills, language points, medical education, critical thinking, practical skills.

Ключевые слова:
Task-Based Learning, осмысленные задачи, знания, навыки, языковые аспекты, медицинское образование, критическое мышление, практические навыки.

Kalit so‘zlar:
Task-Based Learning, klinik vazifalar, bilim, ko'nikmalar, til ko’nikmalari, tibbiy ta'lim, tanqidiy fikrlash, amaliy ko'nikmalar.

Abstract. Task-Based Learning (TBL) is an instructional approach where students engage in authentic, meaningful tasks to acquire knowledge and develop skills. Instead of focusing on isolated language points (as in language learning, where TBL originated), in medical education, the "task" is a clinical problem, scenario, or procedure that requires students to apply their knowledge, critical thinking, and practical skills.

Аннотация. Обучение на основе задач (Task-Based Learning, TBL) — это педагогический подход, при котором студенты выполняют аутентичные, значимые задачи для приобретения знаний и развития навыков. Вместо того чтобы сосредотачиваться на отдельных языковых аспектах (как в изучении языков, где зародился TBL), в медицинском образовании «задача» представляет собой клиническую проблему, сценарий или процедуру, требующую от студентов применения своих знаний, критического мышления и практических навыков.

Annotatsiya. Task-Based Learning (TBL)– bu talabalarning bilim olish va ko‘nikmalarni rivojlantirishi uchun haqiqiy, mazmunli vazifalarni bajarishga jalb qiladigan o‘qitish yondashuvidir. Tibbiy ta’limda “vazifa” – bu talabalardan klinik muammolarda, vaziyatlarda o‘z bilimlarini, tanqidiy fikrlashlarini va amaliy ko‘nikmalarini qo‘llashni talab qiladigan yondoshuvdir.

Task-Based Learning (TBL) is an instructional approach where students engage in authentic, meaningful tasks to acquire knowledge and develop skills. Instead of focusing on isolated language points (as in language learning, where TBL originated), in medical education, the "task" is a clinical problem, scenario, or procedure that requires students to apply their knowledge, critical thinking, and practical skills.

Life-long education and throughout one's life is the basis of continuing medical education. Without achieving continuing medical education and continuing professional development, achieving goals such as lifelong education and excellence in medical education will not be possible. There are several definitions for this term in the educational literature: "All lifelong learning activities aimed at improving knowledge, skills and the competence of individuals that are flexible, diverse and accessible at multiple locations and times." Nowadays, the definitions of continuing medical education as well as continuing professional development are associated with concepts such as learning throughout life or lifelong learning. Life-long learning focuses on formal education (holding a course and assessment with a test and end-of-course certification), and informal education (training while working with expected educational outcomes).

Considering the nature of continuing medical education and its continuous development, perhaps, it can be regarded as a kind of lifelong learning; on the other hand, lifelong learning, being effective for physicians, is continuous and endless. In this type of education, the community and physicians are learning collaboratively and continuously. Considering these concepts, continuing medical education and professional development are both considered lifelong learning. Life-long education is described by several techniques such as continuing education, self-directed learning, self-learning approach, self-initiating learning, active learning, and field-dependent learning. [8] Continuing medical education refers to educational activities that are used by a member of the medical community to maintain, develop, or promote knowledge, skills, professional performance as well as communication in the delivery of services to patients in the community or profession. [9] Continuing education of medical community refers to postgraduate activities that are developed to enhance the knowledge, professional skills, or promote the quality of the medical activities. [10]. Continuing medical education is defined as educational activities that help maintain, develop and enhance the professional knowledge, skills, and practices as well as the communications that a physician uses in serving patients, his community, and his careers. Continuing education is vital for all health care providers in order to expand knowledge and new techniques and provide new directional guidance.[11] Medical Education Methods Lectures: Lecturing is a traditional teaching method. In the lecturing method, professor speaks more or less in class without interruption. Students listen to the professor's notes or copy them; then, they think about his/her words, but they do not talk to him. Ultimately, a few questions and answers may be exchanged between students and the professor; however, these questions and answers are meant to clarify the point and are not discussed. [12] Usually, in the traditional method, most students do not refer to more resources, including reference books and magazines, because there is no incentive to do so, and on the other hand, due to the large amount of material to be learned, the opportunity to use other resources for students is rare. The traditional method of lecture has advantages and disadvantages for both students and professors; one of the advantages of this method for professor is that in this method, only one time, in the early years of teaching, he collects the material from

various books and other sources, and in the following semester, the same stuff is usually repeated; therefore, the professor only extracts the main and general material from the sources and only adds new items or removes the content in some cases. One of the advantages of this method to students is that, in this way, a large amount of content is taught to students, which, in contrast to other educational methods, is not comparable to other methods in terms of the volume of knowledge. In addition, in the lecture method, the student learns only a socalled full and brief pamphlet, and before the exam, students can be able to gain an acceptance mark by reviewing it once. One of the drawbacks of the traditional method for professors is that throughout the teaching hours only the professor is focused and the responsibility of the entire class's time is on him, while the students are only recorders and do not have any contributions to teaching; one of the drawbacks of the lecture method for students is that students in this way have to attend classes for which they sometimes are not ready for various reasons and are only presenting themselves in the classroom; perhaps, at other times of the day, the student has a lot more preparation to learn, but it is not possible for him to attend the class in such times of the day. [7]

Clinical education: Clinical education is one of the most important parts of the training of physicians, which forms a major and vital part of educating skilled and professional people; the value of an ideal clinical education is in the role played by personal and professional development as well as clinical skills of students. In this regard, the promotion of clinical education is one of the main concerns of medical education science. [17] Studies conducted in medical colleges have shown that clinical education is an essential part of education in medical sciences, without which it would be difficult or impossible to educate competent people. The main concern of medical education's authorities, both in Iran and outside of it, is to provide all medical students with theoretical knowledge as well as the field of work experience. [4] In medical education, courses are divided into two parts: Basic Sciences and Clinical Sciences. One of the important issues of medical education in the country is the effective communication between basic and clinical education. Among the continuous stages of medical education, internship or clinical education is the most important stage in which students enter the practical stage leaving the theoretical stage behind and feel as future physicians; the more is the practical and scientific point of view of medical students, the better they are prepared to enter this stage and the better they will be able to carry out their duties regarding the treatment of patients. Basic sciences have a theoretical aspect; however, they are necessary for the clinical education in the hospital environment and treatment of patients; in fact, the therapeutic arenas of the educational hospitals vary greatly in comparison with other fields of education. Students in an educational hospital can enjoy the full potential of the patient's presence in promoting their knowledge; but, at the same time, they must learn the art of using this therapeutic and educational background. Educational hospitals that integrate medical education and treatment of patients should also be combined with e-learning, in order to educate students in an actual and updated manner. [6]

Evidence-Based Medicine: Evidence-based medicine is one of the new approaches for physicians to combine clinical experience with the best available evidence to enable them to make accurate, informed, and fair decisions about their diagnosis and therapeutic decisions. In the world of information and communication, where human data is increased more rapidly each day, the ability to criticize, recognize and select the best evidence and scientific documentation is important. Given the scientific nature of medicine with the modernization of science on the one hand, and the advent of technology on the other hand, the importance of this matter becomes twofold. Thus, doctors are increasingly involved with understanding and criticizing modern medical literature. Medicine and clinical decision making need to be able to recognize, analyze, refine, and deduce the correct medical knowledge from the mass of generated information. Today's doctors treat patients in a situation where the amount of evidence is doubled in a few months. A committed physician who wants to keep up with the up-to-date knowledge must choose among medical evidence from thousands of articles published each year in hundreds of reputable medical journals; such an important decision is not feasible without knowledge and skills in identifying and grading the evidence in terms of credibility and validity. [18] In the process of medicine, including the diagnosis, analysis and treatment of a disease, a physician is bound to make decisions and choices. In a clinical decision-making, a set of factors influence the type and the quality of doctors' choice; such as signs and symptoms of a disease, medical content knowledge, previous experiences, patterns that a physician has learnt from his/her own professors, or even speculation, emotions and immediate feelings; but, considering the importance of decisions, medicine and its effects on the health and quality of life of patients, what is the best way to identify and analyze the problem and make a decision? Or which information sources as clinical experiences, reference books or the latest medical articles may provide the basis for the best clinical decision making?

According to experts, good physicians use both clinical experience and the most appropriate documentation and evidence for scientific support and confirmation of their experiences, and none of these two sources can alone address the complexity of medical decisions regarding the patients; Because the mere use of research evidence without getting the benefit of sufficient clinical experience increases the complications of diagnostic and therapeutic activities; in addition, the emphasis on experience and the lack of using the best and most recent evidence sometimes leads to the use of methods for diagnosis and treatment that have been there for many years or have negative consequences on patients. [19] By definition, evidence-based medicine means the combination of the clinical experience of a physician with the best available evidence; in other words, evidence-based medicine is the application of the best objective evidence for accurate, informed, and fair decision-making for patients.

This approach to medicine attempts to improve the quality of clinical decision making by enhancing the ability of questioning, searching skills, selecting the best available evidence and documentation, critically evaluating them, applying the results

of analysis and criticizing evidence, improving objectivity of decisions based on valid and up-to-date scientific evidence, reducing the impact of mistakes due to subjective judgment, obsolete information or linear and non-critical inferences of medical knowledge; furthermore, evidence-based medicine is a powerful educational tool or strategy that provides a lifelong learning environment for students and learners who can compensate for the gap between theory and practice in medical science to achieve the highest quality. Medical students now need more than ever to be able to apply the knowledge they need in diagnostic and therapeutic decision making using a wide range of published articles; thus, they must have the ability to criticize the validity of resources and data and analyze them.[19] Evidence-based medicine is the standard used by pediatricians to provide optimal clinical care. Evidence-based education requires that an educator be up-to-date on the current literature on educational strategies.[20]

Group discussion:

Core Principles of TBL in Medical Education:

1. Authenticity: Tasks are designed to mirror real-world clinical situations, making learning highly relevant.

2. Meaningful Engagement: Students are actively involved in solving problems, making decisions, and performing actions, rather than passively receiving information.

3. Focus on Process and Product: Both the journey of completing the task (e.g., clinical reasoning, teamwork) and the outcome (e.g., diagnosis, treatment plan, successful procedure) are important.

4. Collaboration: TBL often involves group work, fostering teamwork, communication, and interprofessional skills, which are crucial in healthcare.

5. Learner Autonomy: Students take ownership of their learning, identifying knowledge gaps and seeking information as needed to complete the task.

6. Reflection and Debriefing: A critical component where students and instructors analyze the task performance, identify learning points, discuss alternative approaches, and consolidate understanding.

The Role of TBL in Medical Education:

TBL plays a pivotal role in medical education by bridging the gap between theoretical knowledge and practical application, preparing students for the complexities of clinical practice.

1. Development of Clinical Reasoning and Problem-Solving Skills: Medical practice is inherently problem-based. TBL forces students to analyze complex patient scenarios, synthesize information, formulate hypotheses, and make evidence-based decisions, mirroring the diagnostic and therapeutic process.

2. Integration of Knowledge: Instead of learning subjects in isolation, TBL encourages students to integrate knowledge from various disciplines (anatomy, physiology, pharmacology, pathology, ethics) to address a holistic patient problem.

3. Enhancement of Practical and Procedural Skills: Through simulations and hands-on tasks, students can practice clinical procedures (e.g., suturing, IV insertion,

physical examination) in a safe, controlled environment, receiving immediate feedback.

4. Improvement of Communication and Teamwork: Many medical tasks require effective communication with simulated patients, colleagues, and other healthcare professionals. TBL fosters these essential interpersonal and interprofessional skills.

5. Cultivation of Critical Thinking and Decision-Making: Students must critically evaluate information, weigh different options, and justify their decisions, often under simulated pressure, which is vital for patient safety and effective care.

6. Increased Motivation and Engagement: Active learning approaches like TBL are generally more engaging and motivating than traditional lectures, as students see the direct relevance and impact of their learning.

7. Preparation for Real-World Practice: By simulating authentic clinical challenges, TBL helps students develop the confidence, adaptability, and resilience needed to navigate the unpredictable nature of healthcare.

8. Facilitation of Feedback and Self-Assessment: The debriefing phase allows for constructive feedback from instructors and peers, as well as opportunities for self-reflection, leading to continuous improvement.

Examples of TBL in Medical Education:

- Case-Based Learning (CBL): Students work through a clinical case, diagnosing the patient, developing a management plan, and discussing the underlying pathophysiology.
- Problem-Based Learning (PBL): Similar to CBL, but often more open-ended, requiring students to
- Clinical Simulations: Using high-fidelity mannequins or standardized patients to practice managing medical emergencies (e.g., cardiac arrest, anaphylaxis), performing surgical procedures, or delivering difficult news.
- Objective Structured Clinical Examinations (OSCEs): While often used for assessment, OSCE stations can be designed as TBL tasks where students perform a specific clinical skill or interact with a patient.
- Interprofessional Education (IPE) Tasks: Students from different healthcare professions (medicine, nursing, pharmacy) collaborate on a patient care plan, learning to work effectively as a team.
- Clinical Rotations/Placements: The ultimate form of TBL, where students perform real tasks (taking histories, performing exams, presenting cases) under direct supervision in a clinical setting.

Challenges and Considerations:

Despite its benefits, implementing TBL effectively in medical education requires:

- Significant Resources: Development of authentic tasks, access to simulation facilities, standardized patients, and appropriate technology.
- Faculty Training: Instructors need to be trained as facilitators rather than just lecturers, guiding students through the learning process and providing effective feedback.

- Curriculum Integration: Careful planning is needed to integrate TBL seamlessly into the existing curriculum, ensuring coverage of essential learning objectives.
- Assessment Design: Developing robust assessment methods that accurately evaluate both the process of task completion and the acquired knowledge and skills.
- Time Commitment: TBL sessions can be more time-consuming than traditional lectures, requiring adjustments to the academic schedule.

Conclusion Summing up the results, the method of discussion in small groups is more influential than the traditional method of lecturing in terms of the level of learning, interest and satisfaction of students, encouragement for participation in discussions and dialogues; thus, with the tremendous advances that have taken place in the information systems of today's world; this issue is exposed to changes day by day or every hour. Educational methods that are solely teacher-centered and based on prior knowledge of instructors do not meet the needs of today's students and instructors should use new methods of teaching. [7] Traditional teaching practices such as teacher-centered classes - for a large number of students- are time consuming, costly and hard to train. In e-learning, learners have 24-hours access to training courses, they study at their own pace, don’t need to go to classes, do not interfere with the work schedule of physicians; in addition, the time of learning is reduced by 25 to 30%; needless to mention that, e-learning saves teachers' time, educational activities and training costs, because in this way, the materials are edited once and used repeatedly in different places; numerous studies have shown that e-learning is at least as effective as traditional teaching and sometimes even more efficient and more conducive to learners. [25]

Problem-solving training is a challenge to education. A collaborative pattern and group discussion are group tutorials. The mentioned methods, except for clinical, evidence-based medicine and medical-based simulations, are specialized for medical teaching; however, other educational methods are common to all academic disciplines. The purpose of educational technology is to facilitate learning and improve performance. In this regard, educational simulations will well serve this goal. The application of simulation is more effective when basic principles and concepts are taught by other methods and then used to simulate practical skills.

If the guidance is given to the student during the simulation training, the result will be better. In general, it should be mentioned that the use of simulations is more effective when used in conjunction with traditional methods; that is to say, simulation is complementary to traditional methods; also, patient safety and ethical issues related to it, are the main reasons for the use of simulations for training health professionals.[21]

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