## INTERACTIVE TEACHING METHODS IN PEDIATRIC PROPAEDEUTICS EDUCATION FOR MEDICAL STUDENTS

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**Abstract.** This article explores the implementation of interactive teaching methods in the instruction of pediatric propaedeutics for undergraduate medical students. Emphasis is placed on the shift from passive to student-centered learning, highlighting various approaches such as simulation-based learning, case-based discussions, role-playing, small group work, and digital technologies.

**Keywords:** interactive learning, pediatric propaedeutics, medical education, simulation, case-based learning, communication skills.

**Introduction.** Traditional medical education has long relied on lectures and passive observation. However, the evolving needs of healthcare and educational paradigms demand innovative, active, and student-centered approaches, particularly in disciplines such as pediatric propaedeutics where practical exposure may be limited. Interactive teaching methods have shown promise in bridging this gap by fostering clinical thinking, communication, and practical skills among medical students [1].

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**Pedagogical foundation of interactive learning.** Interactive learning is rooted in constructivist educational theories, which posit that learners construct knowledge through active involvement and meaningful experiences. Vygotsky's theory of social learning and Kolb's experiential learning cycle are foundational to this approach, promoting reflection, problem-solving, and application in real-world contexts [2]. In pediatric propaedeutics, these theories support the integration of practical exercises, team discussions, and real-time feedback mechanisms.

**Simulation-based learning in pediatric propaedeutics.** Simulation-based learning (SBL) has emerged as a cornerstone in modern medical education, especially in disciplines where clinical contact with patients—such as infants and young children—is limited or ethically constrained. In pediatric propaedeutics, simulation serves as a bridge between theoretical knowledge and real-life clinical practice, allowing students to safely develop and refine their diagnostic and communication skills in a controlled environment. Simulation in pediatric education can be categorized into several levels of complexity:

- Low-fidelity simulators, such as anatomical models or task trainers, help students practice isolated skills like auscultation, palpation, or intramuscular injection techniques.
- High-fidelity simulators (HFS), such as computerized manikins (e.g., SimBaby or SimNewB), can simulate realistic physiological responses like heart and breath sounds, cyanosis, seizures, or changes in vital signs.
- Standardized patients (SPs) or actors trained to portray specific pediatric scenarios (e.g., anxious parents or adolescents with psychosomatic complaints) facilitate the development of communication and empathy.

• Virtual reality (VR) and augmented reality (AR) platforms provide immersive environments where students can interact with virtual pediatric patients and receive instant feedback on their actions [1].

**Educational Objectives of Simulation.** Simulation in pediatric propaedeutics is used to achieve several educational goals:

- Skill acquisition: Students learn and practice basic pediatric physical examination techniques without the risk of causing discomfort or harm to a child.
- Clinical reasoning: Simulation cases encourage the development of diagnostic algorithms and clinical judgment through scenario-based learning.
- Teamwork and communication: Simulated pediatric emergencies help students develop interprofessional collaboration and crisis resource management skills.
- Reflection and feedback: Post-simulation debriefings facilitate deep learning, reinforce correct actions, and promote self-assessment [2].

## Advantages in Pediatric Training:

- Safe learning environment: Students can make mistakes without endangering real patients, which reduces anxiety and encourages experimentation [3].
- Standardization of experience: Simulation ensures that all learners are exposed to rare or critical conditions (e.g., neonatal sepsis, respiratory distress) that may not be encountered during clinical rotations.
- Immediate feedback: Faculty and technology-driven systems provide realtime feedback, enhancing learning retention and confidence.

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• Ethical considerations:Especially important in pediatrics, simulation avoids subjecting vulnerable populations to unnecessary procedures [4].

**Case-based learning and clinical scenarios.** Case-based learning (CBL) engages students in real or hypothetical clinical situations, encouraging the integration of theoretical knowledge with diagnostic reasoning and clinical decision-making. In pediatric propaedeutics, CBL facilitates the understanding of common childhood conditions and promotes teamwork and critical thinking. Students analyze symptoms, propose investigations, and discuss management plans in guided discussions [4].

**Role-Playing and Communication Skills Training.** Role-playing exercises are vital for developing interpersonal communication skills, especially in pediatrics, where the interaction involves not only young patients but also their parents. Students may take turns playing the roles of physician, parent, or patient in simulated consultations, helping them practice empathy, counseling, and conflict resolution [5]. **Small group work and peer learning.** Learning in small groups fosters collaboration, accountability, and active engagement. Group discussions, peer teaching, and shared problem-solving have been shown to improve comprehension and retention of pediatric knowledge. This format also develops soft skills such as leadership and negotiation, critical in clinical environments [6].

**Digital technologies and E-learning Platforms.** The integration of e-learning platforms, virtual patient modules, and mobile applications has expanded the scope of pediatric teaching beyond classrooms and wards. Learning management systems (LMS) like Moodle, virtual case simulators, and online quizzes enable flexible, individualized, and interactive learning experiences [7].

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**Conclusion.** Interactive teaching methods offer significant pedagogical value in educating medical students in pediatric propaedeutics. They encourage deeper learning, critical thinking, and early development of essential clinical skills. Implementing a blended approach—combining simulation, case discussions, role-play, and digital tools—can greatly enhance the educational outcomes and prepare students for real-life clinical challenges in pediatric practice.

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