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36 Victoria Road London N59 7LB

EDUCATION IN FUNDAMENTAL SUBJECTS MEDICAL INSTITUTES

Rasulova Mokhidil Tursunaliyevna,

PhD docent Fergana Medical Institute of Public Health

Abstract: Medical education is not merely about delivering up-to-date medical knowledge and extensive clinical training—it encompasses much more. It involves developing a curriculum that is tailored to meet the future needs of society. Such a program is designed based on a comprehensive assessment of public health demands and has the potential to shape the future of healthcare services. Graduates of this system will play a crucial role in addressing complex challenges within health systems. Transforming conventional approaches to these systems is a fundamental aspect of medical education, yet this shift often encounters resistance and opposition. Successfully managing change is vital to overcoming obstacles and sustaining motivation to improve future healthcare.

Educational science offers valuable insights into designing an effective program. Key elements include exemplary mentors, an environment that models professional and organizational excellence, hands-on learning, simulation-based training, digital learning tools, structured assessments, continuous feedback mechanisms, and a portfolio for tracking and discussing professional development. Achieving excellence in medical education requires a strong commitment to continuous quality improvement. Given the complexity of medical education, quality enhancement must also be multifaceted. Although mastering the art of medical education is challenging, it is essential to ensure the best possible healthcare for future generations.

Keywords: Medical education, curriculum development, change management, experiential learning, role models, implicit curriculum, quality enhancement.

Introduction. In many countries, medical education—particularly in clinical settings—is undergoing significant transformation and restructuring (Scheele et al., 2008). These changes are guided by current knowledge, yet much remains to be discovered in the future. This ongoing evolution presents a valuable opportunity to deepen our understanding of medical education within clinical practice. In this article, rather than focusing on classical educational principles in detail, we offer a broad, impressionistic perspective on the art of medical education. The goal is to explore potential future developments in clinical medical training.

Strategic Planning. Medical education is not an isolated endeavor; it is designed to serve the future needs of healthcare systems. This raises important questions: What will health systems look like in the years ahead? What are society's expectations of medical professionals? What challenges exist in daily medical practice, and how can we develop solutions for the future? Striking the right balance

in various aspects is crucial. For instance, should training emphasize general practitioners or specialized physicians? Should there be a stronger focus on specific patient populations, such as the elderly? Should education prioritize advancements in fields like information technology? Moreover, what type of professionals do we need—highly creative individuals who thrive in uncertainty, or disciplined team players who excel within structured protocols and guidelines?

Medical education should be acknowledged as a key instrument in shaping and governing healthcare systems (van der Lee et al., 2011). The objectives guiding healthcare governance should serve as the foundation for medical schools and clinical training programs. However, these objectives may vary across high- and low-resource settings, cultural contexts, and even among different stakeholders within a single country (Wallenburg et al., 2010). Additionally, as societal needs evolve, these objectives must be continuously reassessed and refined. Ongoing discussions about the governance goals of healthcare systems are essential to ensuring that medical education remains relevant and effective.

Addressing Complex Challenges. Defining the challenges within healthcare systems and establishing clear objectives is a highly complex process. Healthcare can be examined through multiple scientific perspectives, each offering unique insights. In many countries, healthcare represents a significant financial burden. However, efficient preventive measures and timely interventions can have substantial economic benefits by maintaining workforce productivity.

Medical professionals often form organizations that safeguard their autonomy and professional interests. Traditionally, medicine has been centered on scientific advancement and the pursuit of better treatments for individual patients. A key question arises: Can professional autonomy be aligned with broader healthcare governance objectives? Finding a balance between professional independence and systemic goals requires collaboration with a diverse range of stakeholders. Representatives of patients, as well as experts from disciplines such as ethics, social sciences, economics, and information technology, should be actively involved in shaping the future of healthcare (Caron-Flinterman et al., 2005).

Single-discipline approaches are often inadequate for solving complex healthcare problems. Instead, interdisciplinary collaboration tends to produce more effective and sustainable solutions (Rosenfield, 1992). While strategic planning and the development of tactical solutions for these challenges demand significant time and resources, they are essential for advancing the art of medical education and ensuring the long-term effectiveness of healthcare systems.

Managing Change. Once the governance objectives for healthcare systems are clearly defined, the next crucial step is developing a strategy for integrating medical

education into this framework. While generating innovative ideas is relatively easy, turning them into reality presents significant challenges (Grol & Grimshaw, 2003). The discipline that focuses on transforming ideas into action is known as change management. This field provides essential insights into setting priorities, identifying key stakeholders, leveraging societal trends to facilitate progress, and recognizing factors that can either contribute to success or lead to failure. Effective change management involves strategic timing, careful planning, process oversight, and an awareness of financial risks (Gale & Grant, 1997). A common pitfall in educational reform is the failure to implement appropriate change management strategies. Experts focused solely on content often assume that quality will naturally gain acceptance. However, quality alone is not enough—it must be actively promoted through well-structured change management initiatives. Fortunately, while managing change effectively can be challenging, promoting a high-quality program is typically easier than trying to justify poorly executed reforms.

When working with clinicians, one of the most critical factors in successful change management is ensuring a balance between professional autonomy and structured guidelines (Maravelias, 2003). Medical professionals tend to perform best when given the freedom to innovate within carefully defined boundaries, and their contributions often play a vital role in determining the success of new initiatives. Over-regulation can stifle creativity and undermine the essence of medical education. Instead of imposing rigid rules, change managers should focus on cultivating shared visions and compelling narratives that illustrate the principles of effective medical practice. These guiding concepts serve as the foundation of the change management process, establishing broad but flexible parameters that allow professionals to exercise their expertise while working toward a common goal.

Learning Through Experience. Strategic planning helps define the essential competencies—knowledge, skills, and attitudes—that future doctors must acquire. These competencies should be seamlessly integrated into the medical education curriculum. A well-balanced program effectively combines theoretical knowledge with hands-on experience, ensuring that practical learning is supported by both simulation training and classroom instruction. Learning by doing is one of the most effective educational strategies (Teunissen et al., 2007). A blended approach, incorporating e-learning, simulation exercises, and workplace-based learning, enhances the educational process. Digital tools such as webinars and interactive educational games are increasingly valuable for workplace learning (Cook et al., 2010). Simulation-based training is particularly beneficial for developing complex or infrequent skills, as well as for fostering teamwork. While theoretical education alone may be more cost-effective, it is less impactful than experiential learning, which

should be prioritized. Excellence in medical education requires careful management to align clinical activities with trainee needs, optimize the use of simulation training, and integrate e-learning within time and financial constraints.

Structured Clinical Exposure Throughout Training. One of the key challenges in medical education management is ensuring that trainees receive appropriate clinical exposure at different stages of their training. Medical students should be introduced to clear and common clinical cases, while those training in obstetrics, for instance, must first master normal deliveries before handling more complex cases. In later stages, trainees should focus less on routine procedures and more on advanced techniques, such as operative deliveries and emergency triage. Organizing clinical training in a way that exposes students to a progressively challenging range of cases is essential. Ideally, trainees should be continuously exposed to cases that range from moderately difficult to nearly overwhelming. Every three months, supervisors and trainees should assess the trainee's learning trajectory to ensure steady progress.

The Role of Mentorship. Role models play a significant role in shaping professional identity. They should receive regular feedback on the messages conveyed through their actions and behaviors (Lombarts et al., 2010). When role models actively demonstrate the values and objectives of healthcare governance, medical education successfully prepares doctors for the future. However, if professional culture conflicts with intended educational goals, role models may send unintended messages. Addressing this issue requires ongoing discussions and persistent efforts. Faculty development programs should emphasize the responsibility of being a role model and the importance of reinforcing key professional values in clinical practice.

Shaping the Hidden Curriculum. The structure of the learning environment should reflect the intended educational outcomes and future healthcare objectives. This necessitates continuous monitoring of the implicit messages conveyed by the system (Hodges & Kuper, 2012). Key considerations include: Does the structure support effective teamwork? Does it encourage ethical decision-making? Does it provide adequate feedback on individual and group performance? Are patients involved in shared decision-making? Does it promote patient safety? Does it ensure that trainees perform tasks appropriate to their level? Is there a system in place for maintaining quality standards? These and many other questions should be regularly addressed to refine the educational framework. The learning environment itself can be one of the most influential teachers. By consistently evaluating and adjusting its structure, medical education can have a profound impact on both learning outcomes and healthcare quality—provided the chosen goals are well-founded.

Utilizing Educational Tools. Advancements in educational science have significantly improved medical training by integrating adult learning principles with practical application. A well-designed curriculum should combine experiential learning, simulation-based training, and technology-supported theoretical education. Transparency in the learning process is crucial, ensuring that strategic objectives, curriculum design, and implicit learning elements align effectively. A supportive learning environment (Boor et al., 2011) should be cultivated, with input from education specialists in curriculum design, simulation training, and e-learning strategies.

Faculty development is essential to ensure that clinical educators uphold professional values and apply effective assessment and feedback techniques (Schofield, 2010). Additionally, active learning courses help trainees maximize their educational experience and navigate the training system efficiently.

A structured assessment and feedback system is critical for tracking trainee progress and identifying learning needs (van der Vleuten et al., 2010). Clearly defining levels of responsibility helps assess competence and ensures patient safety. As trainees gain experience, they should be granted increasing clinical responsibility, ultimately preparing them for independent practice (ten Cate & Scheele, 2007).

Portfolios serve as valuable tools for documenting and evaluating training progress (Driessen et al., 2007a). They should include assessment summaries, records of simulation training and coursework, research contributions, competency milestones, and reflective analyses of the learning journey. Regular discussions—ideally every three months—between the program director and trainee ensure that progress is on track. These meetings confirm competency development, establish new learning goals, and define strategies for achieving them in the next training phase. Digital portfolios are particularly useful for integrating assessment data and enhancing transparency in training outcomes (Driessen et al., 2007b). By reflecting both trainee performance and the overall quality of the training site, portfolios provide a comprehensive overview of the educational process.

Ensuring High-Quality Medical Education. The quality of medical education can be evaluated from multiple perspectives (Barnett, 1992). From a professional standpoint, the effectiveness of training programs can be assessed through peer reviews conducted by professional societies. Senior trainees, who have firsthand experience at different training sites, can also provide valuable insights into the strengths and weaknesses of various programs.

From an educational perspective, quality can be measured through assessments of learning environments, evaluations of individual clinical educators, and trainee feedback collected at the end of each rotation. Internal audits and structured

improvement systems help maintain high educational standards. External evaluations, such as the EBCOG visitation system, can provide additional feedback on institutional support structures, including access to e-learning resources, skills labs, mentoring programs, and collaborative learning communities.

A societal perspective on quality examines whether training programs address broader healthcare challenges. Key considerations include preparing doctors to care for vulnerable populations, promoting cost-effective and safe healthcare practices, and fostering ethical decision-making. Involving patients as active partners in medical training and healthcare delivery further enhances quality. A well-structured quality control system, coupled with an effective improvement strategy, represents the pinnacle of excellence in medical education.

Conclusion. The true mastery of medical education emerges in environments where clinicians and educators collaborate to provide a well-rounded, multi-perspective approach to teaching. A strong focus on setting future healthcare goals, managing change effectively, and applying educational science to real-world learning spaces is crucial. A commitment to quality care drives continuous innovation and improvement, ensuring that the medical education system evolves to meet the demands of modern healthcare.

References

1. Barnett R. *Improving Higher Education: Total Quality Care*. Bristol, UK: Open University Press; 1992. [Google Scholar]
2. Boor K, Van Der Vleuten C, Teunissen P. Development and analysis of D-RECT, an instrument measuring residents' learning climate. *Med Teach*. 2011;33:820–827. doi: 10.3109/0142159X.2010.541533. [DOI] [PubMed] [Google Scholar]
3. Flinterman J, Broerse J, Bunders J. The experiential knowledge of patients: a new resource for biomedical research? *SocSci Med*. 2005;60:2575–2584. doi: 10.1016/j.socscimed.2004.11.023. [DOI] [PubMed] [Google Scholar]
4. Cook D, Garside S, Levinson A. What do we mean by web-based learning? A systematic review of the variability of interventions. *Med Educ*. 2010;44:765–774. doi: 10.1111/j.1365-2923.2010.03723.x. [DOI] [PubMed] [Google Scholar]
5. Driessen E, van Tartwijk J, van der Vleuten C. Portfolios in medical education: why do they meet with mixed success? A systematic review. *Med Educ*. 2007;41:1224–1233. doi: 10.1111/j.1365-2923.2007.02944.x. [DOI] [PubMed] [Google Scholar]
6. Driessen E, Muijtjens A, van Tartwijk J. Web- or paper-based portfolios: is there a difference? *Med Educ*. 2007;41:1067–1073. doi: 10.1111/j.1365-2923.2007.02859.x. [DOI] [PubMed] [Google Scholar]

7. Gale R, Grant J. Managing change in a medical context: guidelines for action. AMEE Medical Education Guide No 10. Med Teach. 1997;19:239–249. [Google Scholar]
8. Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. Lancet. 2003;362:1225–1230. doi: 10.1016/S0140-6736(03)14546-1. [DOI] [PubMed] [Google Scholar]
9. Hodges B, Kuper A. Theory and Practice in the Design and Conduct of Graduate Medical Education. Acad Med. 2012;87:25–33. doi: 10.1097/ACM.0b013e318238e069. [DOI] [PubMed] [Google Scholar]
10. Lombarts K, Heineman M, Arah O. Good clinical teachers likely to be specialist role models: results from a multicenter cross-sectional survey. Plos One. 2010;5(e15202) doi: 10.1371/journal.pone.0015202. [DOI] [PMC free article] [PubMed] [Google Scholar]