

# EVOLUTION IN TEACHING METHODOLOGIES IN MEDICAL EDUCATION AND TRAINING

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With the introduction of the concepts of curriculum integration, contemporary educational methodologies, assessment tools, and the teaching methods in medical education, both undergraduate and postgraduate, have transformed significantly in the last 2 decades in Pakistan.<sup>1</sup> Traditional long lectures, blackboards/whiteboards, lecturing at the bedside, true false MCQs, long essay questions, and traditional viva were part of the assessments in those years. There was no concept of a structured teaching and assessment method.<sup>2</sup> Due to innovation in teaching methodologies and assessments, these methods are either vanished or towards that fate. The next sections will highlight the transition of these teaching tools, teaching methods, and assessment techniques from an archaic design to a contemporary one.

**Teaching tools:** Before the introduction of computers and the internet, in the late 20<sup>th</sup> century, an overhead projector, a manual slide changing machine, and a white screen hanging over the wall in front of the students were used to be the teaching tools in a classroom.<sup>3</sup> Even those gadgets are considered to be modern if one recalls the use of 'recitation' as a way of teaching and learning in front of the whole class. Students would sit in silence, while one student after another would take turns to recite the lesson until each one had been called upon. The teacher would listen to each student's recitation, and they were expected to study and memorize the assignments. At the end of the session/module, a written test or oral examination would be conducted; this process was called an Assignment Study Recitation Test.<sup>4</sup> It was followed or coincided with chalkboards which are still used in many classrooms especially by teachers with traditional mind-sets.

Then came the era of overhead projectors and slides. When PowerPoint was introduced in 1987, presentations changed forever.<sup>5</sup> It wasn't long before the presentation software took over and tools like overhead projectors and slide carousels became storage room trash. Before slides were designed on computers, they were made by hand. It used to take several days to design a slide deck and it was really expensive. Back in those days, presentations were visualized with tools like paper flip charts and slide projectors, and these were used in classrooms and meeting rooms

all over the world. In the modern world, one cannot think of a presentation without a PowerPoint or other electronic medium.

**Teaching methods:** The modes of teaching included the model of apprenticeship, where a more learned teacher teaches less learned students through hands-on training or indirect teaching and observations.<sup>6</sup> This mode is still prevalent in many disciplines in medicine, arts, industry, and others. The information thus gained is applied by the students in practice.

There came the era of lecture-based teaching which is considered to be one of the more cost-effective and convenient methods and is prevalent throughout the world in undergraduate medical education and other disciplines. However, some of the limitations of this form are; lesser interest of students, least retention of knowledge in the minds of students, and passive way of transferring knowledge.<sup>7</sup> The world in the late 20<sup>th</sup> century moved to small group teaching in the form of problem-based learning, team-based or task-based learning techniques. Although more effective in terms of knowledge retention and skills acquisition, these techniques require more expertise and resources.<sup>8</sup> The undergraduate medical education in Pakistan, going through curriculum reforms, is transforming its shape from archaic, traditional, and mostly lecture-based teaching methods to one of the small group teaching methodologies.

**Workplace-based teaching and learning:** In the past, bedside teaching in medical training at the undergraduate level and even postgraduate, used to be transferring a lot of information, and enforcing rote memorization by the teachers. The teacher used to stand at the bedside for hours and used to teach students the theoretical and practical aspects of a topic. However, with the inculcation of new bedside teaching techniques, the concept of one-minute preceptor and SNAPPS model of teaching was introduced, which has transformed the teaching methodologies from one with rote memorization to the contextual one, case-based and using the techniques of critical thinking and clinical reasoning abilities of students.<sup>9</sup>

**Online teaching and learning:** Although, this form of teaching remained prevalent in the western medical institutions for the last 2 decades, but became more im-

portant recently in the era of Covid-19. The challenges of lockdowns, fear of waste of educational time of students and pressure of the society and government, the medical teaching institutions in the country started this form of teaching through web-based educational platforms like Zoom, Google Meet, MS Team and others.<sup>10</sup> It is expected that even without Covid-19 pandemic, this form of teaching will become universal even in third world countries in a decade or two, and will surpass the time taken for face to face teaching in the colleges and universities.

**Assessment techniques:** With the advances in assessment methodologies, drastic reforms have been introduced in the curriculum and assessment. Some of the examples are, conversion of long essay type questions into small short answer questions, true-false MCQs to one best answer MCQ, extending matching questions (EMQs), and Key feature format questions to enhance the clinical reasoning and clinical decision-making skills of students.<sup>11</sup> The students, instead of waiting for months for their results to be announced, get their results in a few hours, or maximally days. The traditional viva, where the unfortunate first comers in the viva used to be grilled a lot, has been converted into a more structured, task-oriented assessment of skills, traditionally called OSPEs and OSCEs.

In the era of curriculum reforms for undergraduate medical education and training, progressively, intentionally, or unintentionally, the methods of teaching and learning and assessments of medical students are undergoing a paradigm shift. These transformations are not without challenges. The most important stakeholder in these reforms is the teacher and student who are the end-users of these technologies. Another one is a challenge to the curriculum designers and policymakers, where the lack of expertise, facilities, and equipment as important frame factors, cannot cope with the demand. The mind-sets of teachers, students, and even society will need time to shift from the old teaching and learning and assessment techniques to contemporary ones.

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**Dr. Farooq Ahmed**

Director of Medical Education,  
Khyber Medical College, Peshawar, Pakistan  
Cell: +92-313-3799901  
Email: drfarooq.ahmed@kmc.edu.pk