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PRINCIPLES OF MEDICAL EDUCATION

FIFTH EDITION

Tejinder Singh • Piyush Gupta • Daljit Singh



Foreword
Janet Grant



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Chapter 2

Systems Approach to Instruction

LEARNING OBJECTIVES

- State characteristics of a system
- Describe systems approach
- Use systems approach for instructional design

Nothing ever exits entirely alone; everything is in relation to everything else.

Buddha

In the previous chapter, we introduced you to systems approach. Let us discuss it in little more detail. A system is an entity of inter-dependent components, which influence and get influenced by each other. *Input >> Process >> Output* is the simplest example of a system and is equally applicable to education. We also discussed that if we add a feedback loop in the system, it becomes a responsive system.

Systems Approach

Systems approach tells us that teaching, learning, and assessment are parts of a system and a change in any of them is bound to produce a change in others. Take the example of postgraduate entrance examinations. Since the future career of a student depends on *that* MCQ paper, students are likely to devote more time and energy in preparing for an MCQ test rather than learning clinical skills. However, we can also use this phenomenon in the reverse. If we design examinations, which require application of knowledge and problem solving, we can mold the students' learning toward that direction. Systems approach also tells us that instead of trying to focus on one aspect, we need to look at all the components of the system, especially looking for effects that will happen if any component was to be changed. This brings the importance of context in curriculum planning. At the same time, there

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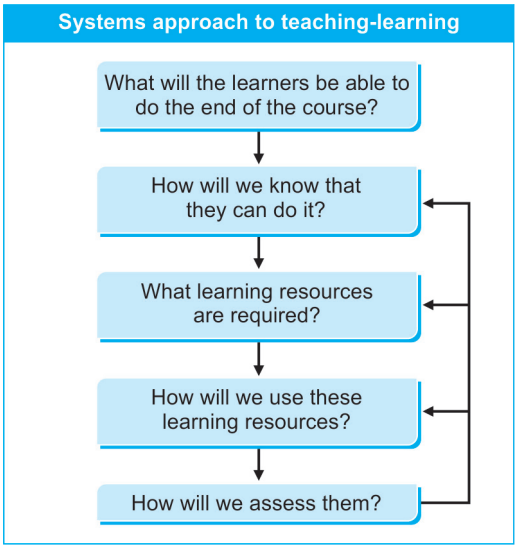
is a need to look at the linkages of education with other components of the system so that all components can work synchronously.

Application of Systems Approach

Let us now see how we can use this approach in designing an efficient teaching–learning process. The process begins with specification of the final product of the system. In other words, we are interested to know, what the graduates will be able to do after they successfully complete the MBBS course. Those of you who have had some earlier briefing to educational terminology would have rightly guessed that we are talking about learning objectives. This *beginning with the end in mind* (or *backward planning,* as some call it) is important because it allows us to produce graduates according to our requirements. In fact, some of the newer educational philosophies, such as competency-based medical education actually begin by first listing the competencies the graduates should have and then work backward on teaching-learning methods.

Once we have stated what we want the products of the systems to be, the next point to be considered is how we will know that the students have learnt what we wanted them to. Taking a very simple example, if our intention was that at the end of the course the students will be good doctors, then we have to think how we will know that they are actually good? You are very right in thinking that if we state the outcomes in measurable terms, then knowing if they have attained those outcomes becomes easy. Continuing with this example, it may be difficult to think of means to find out "good doctors", but if we had stated that the students will be able to manage common medical emergencies as one of the points, it would be easy for us to decide if they can manage common emergencies. It may come to you as a surprise that planning for assessment comes *before* planning for instruction.



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Once we have planned assessment, then we start thinking about what learning resources and methods are required to develop the qualities that we envisaged in our graduates. These learning resources may be in the form of teachers, hospital, field area, laboratories, books, journals, models, etc. Closely related to this is the issue of how best to use these resources. In other words, how many lectures, how many demonstrations, how many experiments, etc. need to be given a careful thought.

The final stage in this process is actually assessing the students to find out if they have attained the required objectives for that course. You will notice from the diagram above that the results of the assessment provide useful inputs to modify the type and use of learning resources as well as examinations.

Can you identify the components of an *educational system?* Yes, you are right—these are society, regulatory bodies, medical colleges, students, and teachers at the macro-level. At the micro-level, the components are educational objectives, teaching material and methodology, and assessment. At both macro- and micro-level, any change in one component is bound to induce a change or get affected by the other. Replacing lectures by small group teaching, for example, without adequate faculty training is going to fail. Similarly, by not having enough career opportunities for MBBS graduates will prevent them from paying attention to acquire the core competencies. The implication is to be aware of this phenomenon and address all components of a system when making a change. A number of times, our frustration with medical education is due to our inability to see the totality of the system.

Why follow Systems Approach?

We should follow systems approach in medical education for many reasons. It allows us to develop clarity of objectives of the course being offered. It allows us to decide on appropriate assessment methods to find the attainment of these objectives. It allows us to select the most appropriate resources for teaching, and lastly, it allows us to use the assessment to modify the system. As you would have noticed, assessment is decided even before we decide about teaching methodology and is not used as an add-on, which comes in the end. Assessment becomes a part and parcel of educational design.

In the chapters that follow, we will retain the discussion around these three components. In Chapter 4, we will elaborate further on this concept.

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PRINCIPLES OF MEDICAL EDUCATION

Principles of Medical Education, now in its fifth edition has been an all-time favorite of medical teachers, both at entry level as well as for those conducting faculty development programs. Written in the form of an instructional manual, this edition retains the conversational style to take the readers through the basic requirements of becoming a good teacher and makes them think about their teaching strategy. Many chapters have been updated to help the teachers effectively deliver the new competency-based curriculum.

Contents

Teaching and Learning; Systems Approach to Instruction; Group Dynamics; Curriculum; Integrated Teaching; Educational Objectives; Taking a Lecture; Teaching Clinical Skills; One Minute Preceptor; Student Assessment; Essay Type and Short Answer Questions; Objective Type Questions; Question Banking; Assessment of Clinical Skills; Workplace-based Assessment; Assessment of Noncognitive Abilities; Internal Assessment; Coaching and Mentoring; Innovative teaching-learning methods; Managing the learning needs; Microteaching; Teacher Evaluation and Faculty Development.

Reviews

Fourth Edition "...Strength of this book is the simplicity of its style. The analogies and illustrations reflect the wit and wisdom of the authors. ... The design and formatting are impressive."
—*National Medical Journal of India*

Third edition "...Effectively covers educational theory and practice for the novice as well as experienced teachers."
—*Indian Pediatrics*

Second edition "...Fills an important niche in medical education. The book effectively carries educational theory and practice."
—*The Meducator (USA)*

First edition "...Welcome addition to the books on medical education. A number of examples make the text understandable even for the uninitiated reader."
—*Indian Journal of Pediatrics*

Tejinder Singh MD DNB MSc HPE MAMS FIMSA FIAP is Professor, Department of Pediatrics and Medical Education, SGRD Institute of Medical Sciences and Research, Amritsar, Punjab, India. He has earlier served as Acting Principal and Dean, Professor and Head, Department of Pediatrics and Medical Education, Founder Director, CMCL-FAIMER Regional Institute, and Convenor, MCI Nodal Center at Christian Medical College, Ludhiana, Punjab. He is the National Convener and National Consultant for Advanced Course in Medical Education run by Medical Council of India as well as a member of the Expert Group for the new curriculum and Curriculum Implementation Support Program. He is a recipient of Dr BC Roy National Award for Eminent Medical Teacher, National Board of Examinations Award for Eminent NBE Alumnus and IMA Medical Education and Research Award for Young Graduates amongst others. He has also been awarded Dr PN Krishnamoorthy and Dr APJ Kalam Orations in medical education. He has been conferred Fellowships by Indian Academy of Pediatrics, International Medical Sciences Academy, FAIMER (USA), IFME (The Netherlands) and SIDA (Sweden). He has authored 4 books, 45 chapters and over 250 papers. Fondly called TS by his colleagues and students, he has conducted numerous training programs over last 30 years on basic education methods, student mentoring and student assessment in India and abroad.

Piyush Gupta MD FAMS FIAP FNNF FAAP is Professor and Head, Department of Pediatrics, University College of Medical Sciences, New Delhi, India, and National President, Indian Academy of Pediatrics 2021. A renowned academician, teacher, researcher, author and editor, he has published more than 200 papers and edited/authored 35 books. He has served as Editor-in-Chief of 'Indian Pediatrics', for 6 years and conferred fellowships by the Royal College of Paediatrics, UK; Indian Academy of Pediatrics; National Neonatology Forum, India; National Academy of Medical Sciences, India, and awarded by the American Academy of Pediatrics. Received the Teacher of Excellence Award by Vice-President of India and KL Wig Oration in Medical Education by National Academy of Medical Sciences, India. He has been elected as National President of the Indian Academy of Pediatrics for the year 2021.

Daljit Singh MD DCH FIAP FNNF FAMS FIMSA is Vice-Chancellor, Sri Guru Ram Das University of Health Sciences, Amritsar, Punjab, India. Earlier, he was Principal, Dean Academics and Professor & Head, Department of Pediatrics, Dayanand Medical College and Hospital, Ludhiana, Punjab, and Professor, Department of Pediatrics at Christian Medical College, Ludhiana. Apart from a brilliant academic record, his active professional and scientific contribution is evident from the authorship of 5 books in the area of pediatric practice and education and over 120 other national and international publications. He has been awarded Fellowship of Indian Academy of Pediatrics, National Neonatology Forum, Academy of Medical Sciences and International Medical Sciences Academy. He received a Visiting Fellowship of Royal College of Pediatrics and Child Health (RCPCH), London, UK in 2003 and FAIMER Fellowship of Foundation for Advancement of International Medical Education and Research Institute, Philadelphia, USA in 2004–2005.

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