

The curriculum of a 21st century Medical College

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Over the past century the world in general, and medicine in particular, has seen two imperatives. First, science in general, and medical science in particular, has grown exponentially. This has resulted in a proliferation of medical fields or specialties ranging from molecular genetics to paediatric cardiac surgery. Second, human needs in general, and healthcare needs in particular, have diversified, giving rise to a need for more personalised, one-to-one, professional healthcare. This in turn has resulted in a new set of medically related fields such as behavioural therapy, psychological counselling, travel medicine and cosmetic surgery. Thus, it goes without saying that medical education in the 21st century needs to address both these imperatives. However, a medical education institute still has only the same time duration, as was in place during the early 20th century, to address all these growing fields of study. Anyway, extending the years of fulltime training cannot be the answer to the expansion of the medical know-how as the latter has no limit, though fulltime training cannot be limitless. This is the challenge that a modern Medical College has to face.

Fortunately, however, to meet this challenge medical education as a scientific specialty has also grown. How then has medical education addressed the issue of training a competent medical professional ready to deliver the highly technical science of medicine with a touch of personalised and professional care? The answer involves two components: meticulous planning and appropriate delivery.

PLANNING THE CURRICULUM

Outcome-based education

To do justice to the multifarious specialties and expanding medical sciences, the curriculum needs to be planned with the medical graduate that the Medical College needs to produce in mind. Thus the medical graduate needs to be clearly defined using the essential competencies that the graduate

should process at the point of graduation [1]. It is these competencies that determine which of the sciences and specialities, in which proportion should be learned as an undergraduate. Such competency-frameworks such as the Good Medical Practice outcomes of the General Medical Council in the UK, Accreditation Council for Graduate Medical Education (ACGME) outcomes in the USA, and CanMEDS competencies in Canada, have been around for more than a decade. Similar efforts can be traced in the Kingdom of Saudi Arabia in SaudiMEDS outcomes. An essential competency in all these competency frameworks is 'lifelong learning and continuing professional development'. This competency prepares the undergraduate to learn those that may be discovered after they graduate or whichever that could not be covered during the undergraduate period. So, competency- or outcome-based education is the major planning tool that has been used by medical educationalists to address the multitude of specialties and the growing medical sciences.

Integrated learning

Even when delivered as an outcome-based curriculum, the traditional disciplines will account for a lot of overlap and repetition. This may also consume time unproductively. More importantly, confining learning to tight compartments of disciplines will not prepare the students to apply the scientific principles learned in these disciplines holistically. The reason for this is almost always these principles are applied not in isolation, but in combination with the learning of other disciplines. Hence, to complement outcome-based education and thereby to bridge the theory-practice gap 'integrated learning' is used when planning a modern medical curriculum. An integrated curriculum exposes the students to experience medical sciences (including behavioural sciences) as they would be applied in the clinical setting. For example, cardiac cycle will not be taught separately as cardiac cycle, but will be taught in a

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way that will show how it can be used to diagnose a murmur of a patient with shortness of breath. Then, not only the principles of the cardiac cycle, but the principles of history taking and physical examination (i.e. clinical skills), communication skills, and professionalism (including ethics, attitudes and lifelong learning) can be learnt in a more clinically useful way. When planned this way, although it is true that the unnecessary overlaps and repetition can be avoided, planned repetition to fortify learning meaningfully is also possible using a spiral model of curriculum development. In a spiral curriculum, a topic (e.g. cardiac cycle) will be learnt first to learn the basic sciences (e.g. the structure of the heart and its valves, and the hemodynamic function of the heart as a pump) during the initial years, then again the same topic is revisited when learning history taking, physical examination and professionalism in cardiovascular medicine, where the anatomy of the heart and the cardiovascular physiology of the cardiac cycle will be revised. So, integrated learning while avoiding unnecessary repetition, promotes planned repetition that leads to useful conscious learning [2].

There are many ways to plan an integrated curriculum. In the early undergraduate years the most commonly used method of integration is to organize the curriculum based on body systems. In the later (i.e. clinical) years, however, entrustable professional activities (EPAs) provide an attractive framework to integrate and deliver multiple learning outcomes [3].

DELIVERING THE CURRICULUM

When delivering an integrated curriculum, planned using outcome-based education, a Medical College needs to utilize a wide range of methods based on the principles of student-centred, active, and adult learning theories. Although this short communication does not lend itself to a thorough treatment of all these principles, suffice to say that all these principles are complementary in that they serve the same purpose. The purpose is to enhance student learning. All the above principles advocate not to be confined to didactic, teacher-centred methods such as the traditional lecture, where the students become passive listeners. Rather these principles dictate that the students need to be actively involved in the learning process, not only by interacting with the teacher, but also with the learning material. Here,

the onus of learning is transferred from the teacher to the learner. Teacher thus, becomes a 'guide by the side' rather than a 'sage on the stage'. This shift of the teacher's role, however, does not make the teacher in anyway redundant. Rather teacher becomes even more important as a person who actively supports the learning process, by aiding the students to explore the unknown.

This means that the traditional lectures need to be converted to more interactive sessions of learning with the introduction of special techniques such as buzz groups, snowballing, and team-based learning. In addition, a significant proportion of small group learning sessions such as problem-based learning, small group discussions and project work, and self-learning especially to harness the power of technology such as in eLearning need to be introduced and sustained.

The single most important factor in the appropriate delivery of all the above methods and techniques is 'continuous staff development'. It has been observed that it is not so much the preparedness of the students, but the preparedness of the staff that determines the success of a modern outcome-based, integrated medical curriculum.

CONCLUSION

No curriculum will get right, the first time, all that has been recommended in this short letter. Hence, substantial experimentation is necessary to produce an ideal curriculum with the right balance of educational strategies and activities. To achieve this, continuous fine tuning of the curriculum using the results of the quality assurance techniques that evaluate the curriculum continuously and seamlessly is essential.

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