

Medical Education in Malaysia: The Evolving Curriculum (Part 2)

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THE MEDICAL CURRICULUM IN TRANSITION

In Part 1, we took us through the path of the early implementation of the traditional medical curriculum. Although it worked in the early stages of medical education in Malaysia, it was deemed necessary to continually evaluate the curriculum to ensure that it meets the needs of national development and to keep pace with global trends.

What were the triggers that initiated the global trend of curricular change in the 1970's?

THE RATIONALE FOR CHANGE FROM THE TRADITIONAL CURRICULUM

In January 1969, the General Medical Council of the United Kingdom (GMC) visited the Medical School of the University of Malaya and recommended recognition of the medical degree for a period till further review. A subsequent visit by the GMC Overseas Committee was done in May 1977. The recommendations were for the institution to make changes to the medical curriculum to meet the international trends [1].

The triggers and the "push" factor at that time were not only feedback from the medical students, but also the recommendations made by the GMC. Other factors were changes happening in the global arena of medical education, particularly in England; where the General Medical Council imposed a more structured medical curriculum with early clinical inputs.

Globally, the medical curriculum evolved as early as the early 20th Century, with the publication of the Flexner Report [2]. Frank J. Papa et al [3] illustrated the evolution of the 5 major curricular models over the last century; from the apprenticeship

model; to the discipline-based and organ-system-based model.

Then problem-based learning came into vogue globally in 1971 and is still current. In the mid 1970's with the global trend moving towards organ-system-based teaching, the development of problem-based learning and the "look back" at recommendations made at the turn of the 20th Century in the Flexner Report; also the recommendations by the GMC, the University of Malaya (UM) senior medical academicians felt it was necessary and crucial for a first curricular review at the Faculty of Medicine.

In Part 1, I highlighted the early introduction of clinical cases (Clinical Correlation Cases, CCC) as early as in the first year. Although UM started with the traditional didactic curriculum, the clinical inputs were introduced to trigger the interests of the students and to make basic science topics relevant to their medical course. Although the "spotty" introduction of clinical inputs started early at UM, it was not until the early 1980's, after the GMC visit, that UM decided to go through a process of a major curriculum review. This first major curriculum review was initiated in the mid-1980's at UM.

In Malaysia, then, major curricular changes had to go through a rigorous process which the faculty had to adhere to. That was one of the requirements of the University Senate. This rigorous process of curricular review had to go through many stages. Logistically, it had to be agreed by the Faculty Board and endorsed by the University Senate. Then the process of deliberations and discussions at the various levels: discipline, departmental, medical education committee, and the agreed document be presented to the Faculty. After the faculty's approval, it will then be

forwarded to the Senate for approval and endorsement. Only then can the Faculty be able to implement the new curriculum. Major curriculum reviews are a humongous task and has to go through this rigorous process to ensure that it is valid and implementable within the Faculty.

Thus a curriculum change is a major exercise by any university. At the University of Malaya, the need for the review was triggered by various factors: the survey done on the student's response to the ongoing curriculum; the views of the international advisors and global trends. By that time, the undergraduate medical curriculum had been running for two decades (1964-1984).

With 2 decades of academic experience in a local setting, with students primarily from local Malaysian schools, medical academicians felt that the students' learning capacity and capability was somewhat impeded by perceived "non-relevance" of learning basic sciences. This, together with the ripples felt from Western medical academicians who were also grappling with making basic sciences relevant to clinical medicine, was perhaps an impetus for change and modification of the curriculum to suit the needs of the time. The process of changing from the traditional curriculum to the integrated curriculum took almost 5 years for the deliberations done at department, faculty and faculty board before it can be presented to the University Senate. This was so because any changes in the curriculum will affect the teaching methodology; having qualified and competent teachers; infrastructure facilities and inputs from current students.

In 1979, the third medical school in Malaysia, the School of Medical Sciences, Universiti Sains Malaysia (USM) was established. At its outset, USM decided to implement an Integrated Curriculum with the student-centred problem-based-learning (PBL) and a structured early clinical skills training, setting up the Clinical Skills Laboratory (CSL). Thus USM became the first Medical School in Malaysia at its outset, to formally implement the Integrated Curriculum in 1981 with its first intake of medical students [4].

For effective implementation of new concepts in medical education, it is essential for the teachers to understand the benefits, not only to the students and future doctors, but also to be able to effectively

implement the program. These changes from the traditional teaching of medical undergraduates to the more integrated, problem-based learning had teething problems in these medical schools. The teachers needed to be re-trained; which was a humongous task. As medical academicians, they felt that: "*if it has worked over the decades, why change.*" The conversion of that mindset took time. Slowly but surely people tended to see the benefits of group learning and empowerment of the students to take responsibility for their learning as adult learners.

For any new program to be successfully implemented, it is crucial that teacher training takes top priority. This was seen clearly with the implementation of PBL-based learning in USM. In February 1981 the Faculty of Medicine, Universiti Sains Malaysia (USM) conducted a conference on "*Medical Education in the '80's*", where medical educators from the 3 existing medical schools congregated to discuss and understand the need for change from the traditional curriculum; to a student-friendly and student-directed learning model with the guidance of their learned teachers. By mid-1985, the PBL-based curriculum first implemented in USM in 1981, became one of the modalities of learning for the students in the medical schools in existence then, i.e. UM, USM and UKM.

WHAT NEXT IN THE EVOLUTION OF THE MEDICAL CURRICULUM?

Introduction of Clinical Skills in Preclinical Years

With the successful implementation of the PBL-based curriculum, it was felt that PBL without clinical-based scenarios was not enough to inculcate a culture of multimodal thinking and integrating basic sciences and *vice versa* to work out the pathogenesis of disease development. This is an important skill that students need to develop before graduating from any medical school in Malaysia. This skill is an essential tool for evaluating clinical competency level and ability to function in the remote areas of the country with limited resources.

To ensure that their learning is relevant and interesting, the decision to start introducing clinical skills early in their undergraduate medical curriculum became a reality. In 1985 the revised integrated

medical curriculum was implemented at the University of Malaya. This was with the idea that the students will have a better understanding of disease development and develop their deductive reasoning skills based on the clinical problem and use of prior basic science knowledge.

The changes that were decided then were to have early clinical integration proportionately (Figure 1) and this would go on through the 5 year program, with emphasis on basic sciences in the early years and inputs into the clinical years.

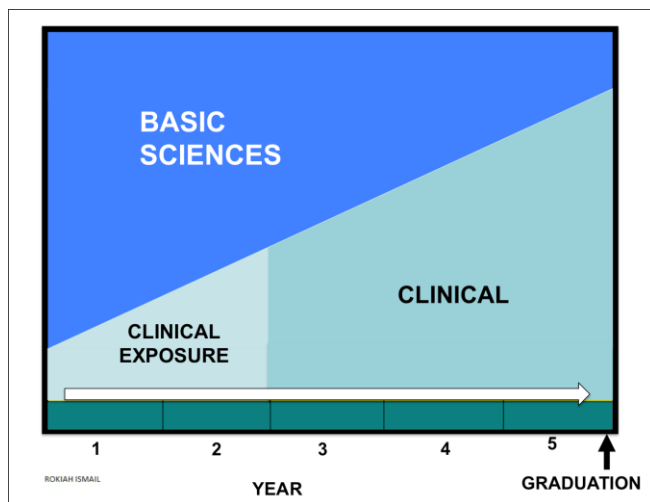


Figure 1 Integrating clinical teaching in early years

The next step was to incorporate clinical inputs into the basic science curriculum, to ensure that understanding of pathophysiology and disease development was the key to an undergraduate learning process. At the University of Malaya, although early clinical inputs began as early as the 1960s in the undergraduate medical curriculum, it only became structured and formalised in the mid 1980's with the revised curriculum. The idea then was to make basic science teaching more meaningful, less boring and therefore more relevant for the students.

This included bimodal integration of clinical exposure in the preclinical years, PBL and the incorporation of basic sciences in the clinical years; in the form of case-based clinico-pathological case (CPC) discussions, student-directed learning modules, and group learning. With the successful implementation of the PBL curriculum at USM at its outset in 1981, this became a trend in the medical schools in Malaysia.

As mentioned above, UM implemented its first revised curriculum in 1985. After a 5 year cycle of implementing the integrated curriculum, and getting positive feedback from both students and staff, a curriculum review was done and a revised and improved curriculum called the “New Integrated Curriculum” (NIC) was implemented in 1991. The NIC became a realisation of a fully integrated curriculum at UM and it is still currently in vogue.

In any medical school, implementation of a curriculum is a dynamic process, whereby minor changes need to be reviewed and implemented so as to remain relevant and up to date. The gradual transition from the traditional curriculum to the fully integrated curriculum took almost 30 years to be fully realised by the medical schools in Malaysia (from 1960s to 1990s). A number of factors influenced this change: the global trends, the students' perception of separation of learning into packages of preclinical and clinical components, the GMC recommendations; and the experience of the medical academicians, who were Western-trained.

The Blended Curriculum

The traditional pedagogy of teaching, over the years evolved from face-to-face (one-way) teaching, to “hybrid learning”. With teacher guidance, the students are encouraged to initiate their learning through “self-directed” searches and group learning for relevant information from other sources. This was the initial stage towards fully blended learning.

Although the concepts of blended learning came about in the 1960's, its implementation was slow till the late 1980's. It was enhanced with the improvements in the connectivity of the Internet and ICT in the early 1990's [5]. As medical education continues to evolve, ICT became a tool for continuous learning and exploring.

Blended learning is a mix of classroom face-to-face learning with online independent learning. For the blended curriculum to be effectively implemented, the teachers have to understand the potential of these future student intakes and their willingness to be independent learners. Tutor guidance is necessary in the initial stages of the implementation. Subsequently, with well-structured study module guides, the students

will be able to explore more information from cyberspace.

The terms “blended learning”, “hybrid learning”, “mixed mode” or “technology-mediated learning” are used interchangeably. Albarrack [6] in his article referred to a faster pace of learning when it is more student-centred perhaps related to ease of repetitively accessing the information. This will improve their retention of facts. They acquire knowledge, skills and develop the right attitudes, better and faster, and are more motivated in their search for information. Another advantage is keeping pace with advancing information through ICT. Thus, keeping up to date with new information is faster than previously.

As early as 2003, Badrul H. Khan [7], in an interview, opined that e-learning has a great potential, as it allows learner access at any time and from any place. Before e-learning, teachers provided knowledge to students in a one-way process. E-learning changes the teacher’s role to that of mentor and motivator, guiding the students’ pursuit of knowledge. He states it can be used in a blended learning environment and for continuing medical education, as it can be accessed whenever needed.

This paradigm shift, if properly structured and implemented with care, is an effective learning tool especially in the undergraduate medical curriculum. In designing a medical curriculum, where e-learning is incorporated as an independent mode of acquiring information, the design of the study guides must reflect the desired outcomes. Therefore, in structuring the curriculum, the planning, design, developing, implementing and evaluation has to follow *pari-passu* with continuous content evaluation. This was the beginning of the development of study guides [8] for medical curriculums in Malaysia.

The 3-Dimensional learning process as described by the National Research Council (NRC) of the United States NRC [9] illustrates how this format and that outlined by Krajcik [10] can be easily adapted, modified and applied to teaching of medical undergraduates (Figure 2 and Figure 3).

Based on the multimodal learning (including e-learning), as illustrated in Figure 3, a detailed illustration of this concept is illustrated in Figure 4.

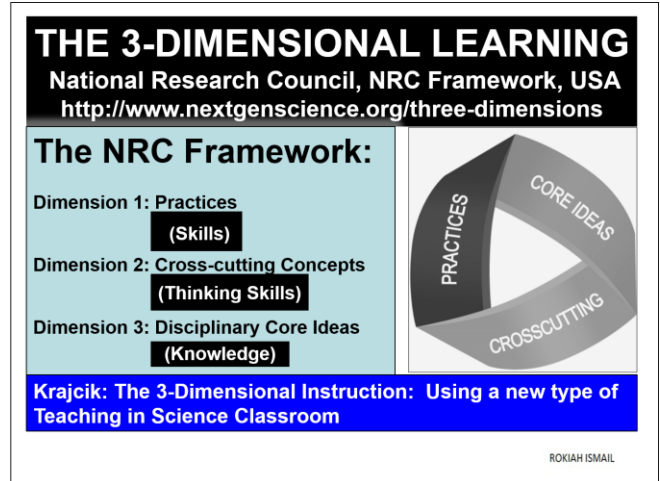


Figure 2 3-Dimensional learning (Adapted from NRC framework)

Students will be able to come to a reasonable conclusion regarding the patient’s clinical problem based on symptomatology, use of basic science knowledge, deductive reasoning, analysis of symptoms based on pathophysiological changes in the body and aided by use of ICT to search for newer information. This involves an interactive process of communicating, understanding, analyzing, evaluating, formulating and eventually solving the clinical problem. With the use of ICT and other modalities of technology, each experience will enrich the students’ learning and therefore will provide an impetus for their continued learning.

To facilitate life-long learning, institutions of higher learning need to ensure that internet connectivity is of the highest quality, to ensure that learning is seamless and easy for the students. Ajay Singh [11] described how blended learning and e-learning can enhance medical education, including for continuing training of medical graduates.

WHAT DOES THE FUTURE HOLD FOR MEDICAL EDUCATION IN MALAYSIA?

In Malaysia, the change from traditional teacher-directed learning to a blended curriculum began gradually from the mid 1980’s. This change was focused on the integration between the basic sciences and the clinical components of learning. The innovation were to transform the perceived “boring” basic science topics with simulated clinical scenarios to blend in the basic science curriculum.

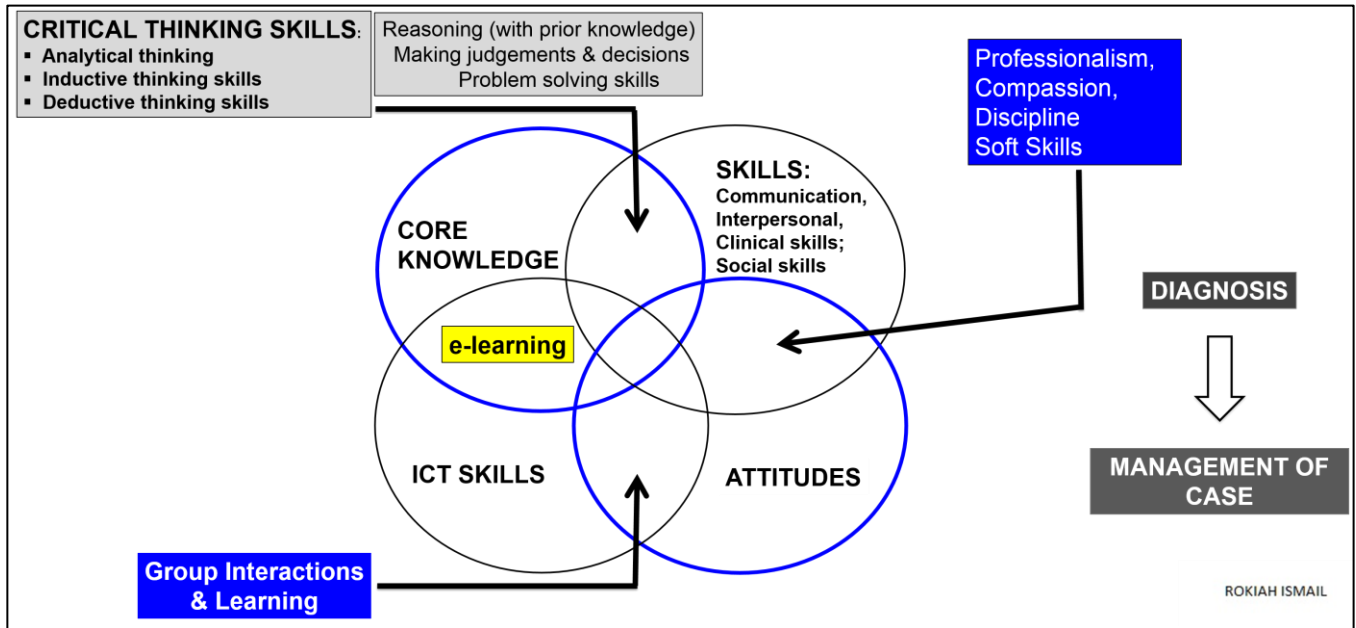


Figure 3 Blended learning: As applied to medical undergraduate education

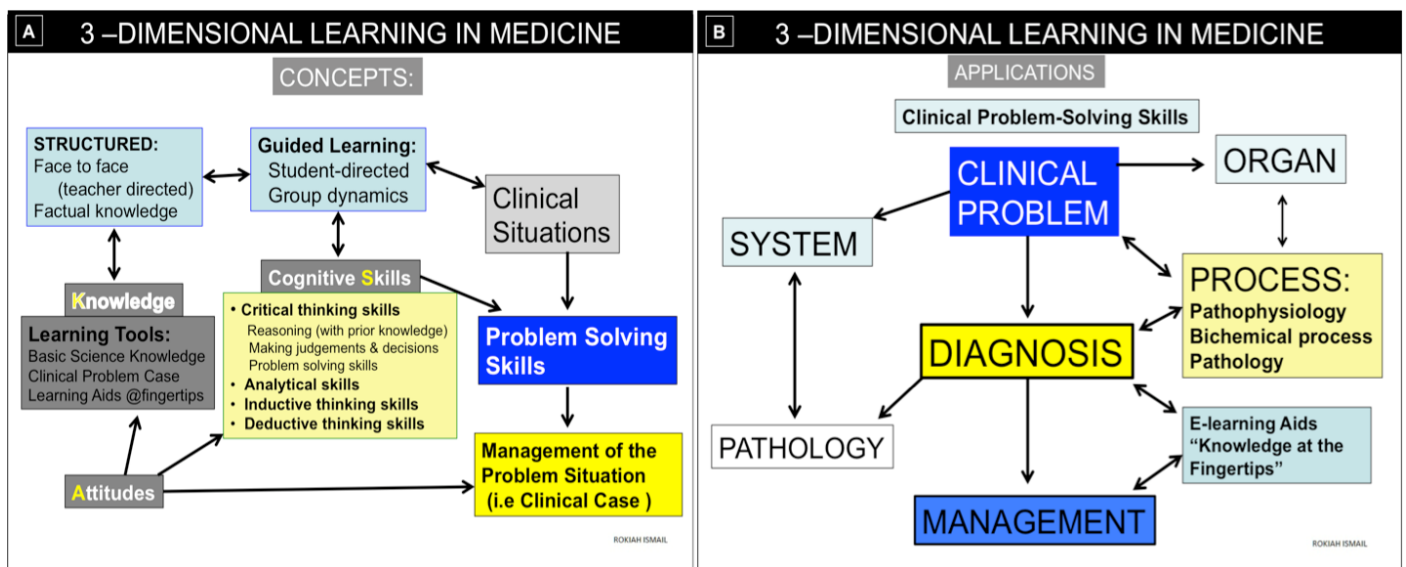


Figure 4 An illustration of a 3-Dimensional learning in clinical medicine (A) Concepts (B) Applications

This was the beginning of problem-based “student-directed” learning with teacher guidance.

With the IT system put in place, it facilitated the development of learning materials for the students. Learning took a 3-dimensional form instead of just “face-to-face” learning, which developed into a portion of the learning strategy in medical education. With study guides and instructions, learning was facilitated by inter-group and intra-group student interaction. This interactive process further enhances student learning; the teacher facilitates as a mentor and provides guidance. This facilitates student exploration of

knowledge and independent learning through access to the Web.

Educational transformation is essential in tertiary education, where students are encouraged to be thinkers and learn to analyse available information and make reasonable conclusions during the thinking process. This is an essential requirement for medical graduates to be life-long learners who can function with limited resources.

We have come a long way from being a very rural society with very minimal healthcare in the early 1940’s; to presently an era of a well organised health-

care system and high tech facilities; the advances in technology have helped a great deal in diagnostic medical services. To some extent these services have reached some less urban areas; but a greater portion of the rural society have not had the privilege of these services. Thus, when training medical students for Malaysia, it is always necessary to understand the limitations in the more rural areas, where healthcare may not be as sophisticated.

Medical schools should explore the feasibility of online learning with minimal tutor guidance and teleconferencing between the teachers and the student groups. For the most part this can be done in their early years in the medical school; some clinical components can be done through a simulated environment during the first 2 years of the undergraduate training. Clinical experience with real patients is still crucial in the training of medical students. This experience with real life patients will assist them to learn to be caring doctors.

The use of ICT in medical education is becoming a norm. However, this needs the students to have an inquisitive mind and desire to explore new knowledge. These qualities need to be inculcated very early on in a child's education. Thus for medical education in this country to produce thinking doctors who will be able to function in adverse situations, critical thinking and analytical skills have to be inculcated very early on in the education system.

REFERENCES

1. General Medical Council Overseas Committee Appendix VII: GMC Archived materials: IAT/ME/F16/8614; Personal Communication with Mark Ellen. 27 Jan 2017.
2. Flexner Report: Medical education in The United States and Canada: a report to the Carnegie Foundation for the advancement of teaching: Abraham Flexner: Bulletin No. 4 (1910) Reproduced in 1972; 437 Madison Avenue New York City.
3. Papa FJ, Harasym PH. Medical curriculum reform in North America, 1765 to the present: a cognitive science perspective. *Acad. Med.* 1999; 74(2): 154-64.
4. Zabidi H, Fuad AR. Medical education in Universiti Sains Malaysia. *Med J Malaysia.* 2002; 57 Suppl E: 8-12.
5. Blended Learning: https://en.wikipedia.org/wiki/Blended_learning Accessed 10 Jan 2017.
6. Albarrak AI. E-learning in medical education and blended learning approach; education in a technological world: communicating current and emerging research and technological efforts; Méndez-Vilas (Ed.): 147-53.
7. Khan BH. http://technologysource.org/article/global_elearning_framework/ Accessed 09 Feb 2017.
8. Harden RM, Laidlaw JM, Hesketh EA. AMEE Medical Education Guide No 16: Study guides-their use and preparation; *Medical Teacher.* 2009; 21(3): 248-65.
9. The 3_Dimensional Learning: The National Research Council (NRC) Framework: <http://www.nextgenscience.org/three-dimensions> Accessed 22 Feb 2017.
10. Krajcik J. (<http://www.activatelearning.com/3-dimensional-learning/>) Accessed 15 Feb 2017.
11. Ajay S. Blended learning for medical professionals. https://hms.harvard.edu/sites/default/files/assets/Sites/OGE/files/Blended_Learning_for_Medical_Professionals.pdf Accessed 10 Feb 2017