REVIVING THE CURRICULUM: CHALLENGES AND ACHIEVEMENTS
COLLEGE OF MEDICINE, BAGHDAD UNIVERSITY


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Introduction:

College of medicine, Baghdad University, is one of the oldest medical schools in the Middle East. It was founded in 1927 with the first dean being a British scientist and physician to the Royal family of Iraq, Sir Harry Sanderson. It played a major role in the establishment of the
modern Iraqi healthcare system and provided a pipeline of physicians, some of whom became distinguished professors and consultants in their own right. During its glorious days, Baghdad College of Medicine was highly regarded among other medical schools in the region where students from countries like Jordan, Lebanon, Egypt, UAE and Sudan received their medical degrees. Its graduates were sought after for postgraduate training in many European and American Universities. Unfortunately its glory dwindled down in the early 1980s because of the tight international embargo and the successive wars that befell Iraq, leaving a major negative impact on the medical education in Iraq.

Since its inception, Baghdad College of Medicine implemented very few changes in its curriculum that was originally adopted from the University of Edinburgh some 80 years earlier. Reviving our curriculum became a must to be able to win the regional and the international accreditation required to train the next generation of knowledgeable, highly skilled physicians so direly needed in Iraq today.

Our story:

In October 2010, Professor Nigel Bax, Dean of Shieffield Medical School invited us to visit his school and review its system integrated curriculum as opposed to our subject based curriculum. We attended many teaching sessions, clinical sessions, medical school council meetings as well as group discussions with their medical students. It was so exciting to learn of the advances in medical educational strategies, instructional and assessment methods that it became the spark that triggered reviving the curriculum at Bagdad College of Medicine.

To be able to adopt such changes, we had to ask ourselves some difficult questions: How can we do it? Who will support such drastic changes? And who is going to fund the project? To our delight, we learned that the British council is able to offer such help through the Development Partnerships in Higher Education (DelPHE) Program. With the assistance of Professor Mohammed Al Uzry (consultant physiatrist, Leicester University) and through collaboration with Nottingham University, we submitted a proposal to receive a financial assistance in from of a grant, which was approved in November 2010. We launched the project in collaboration with the medical school of Nottingham University represented by Professor Najat Khifa (consultant psychiatrist), Professor Brigit Volm (consultant psychiatrist) and Professor Reg Dennik (head of medical education unit).

Baghdad College of Medicine represented by Assistant Professor Hilal Al Saffar (head of medical education unit), Assistant Professor Batool Ali Ghalib (medical education unit) Professor Waleed Mustafa (assistant dean for scientific affairs) approved a memorandum of understanding (MOU) that was finally signed by the respective universities. We had some objectives in mind: to modernize medical education at Baghdad University College of Medicine through the introduction of modern interactive, learner-centered education, adding a research domain to the curriculum, and by implementing changes to the evaluation system to include the use of competency-based assessments such as the Structured Clinical Examination (OSCE).

The project required frequent meetings between the UK and Iraqi clinical academicians and provides the opportunity for the Iraqi collaborators to visit Nottingham University to observe
teaching practices and meet relevant stakeholders, including academician, clinicians, students and school managers.

**Needs Assessment:**

A review of the current curriculum, educational methods and exam practices at Baghdad University College of Medicine and comparing them to those at the University Of Nottingham School Of Medicine were completed to include an outline of a medical ethics module as well as a research module as part of the curriculum. A two week workshop was held at Nottingham University for Iraqi faculty members (25% female) focusing on curriculum development, styles of learning, modern pedagogies for teaching, learning (e-learning, small group learning, problem based learning, etc.), exam assessment methods (OSCE), and health education policy. One other program (2 months) tackled research placement for an early career Iraqi doctor aiming at training one of faculty member on E-learning.

**Implémentation:**

Planning for implementation of changes was started by holding a foundational workshop in Erbil, Iraq in December 2010. It was attended by Dr. Hilal Al Saffar and Batool Ali Ghalib, (Baghdad College of Medicine) and Khlifa and Brigit Volm (Nottingham Medical School). During that workshop, a detailed discussion of the program, tasks and time table for the activities and events were plotted.
• **Nottingham Workshop:**

The first workshop was held in Nottingham University in April 2011. Sixteen faculty members form Baghdad College of Medicine attended the workshop. There was extensive exposure to the new concepts of teaching and learning, designing integrated curriculum, methods of interactive learning and e-learning. The team that attend the workshop represented all departments, 25% female, and 50% were below fifty years of age (Fig. 1).

• **Activities in Baghdad:**

When we returned from Nottingham, there was a lot of work awaiting us. We started with establishing a medical educational unit (MEU) which was entrusted with all curricular reviving activities. The change was spanned over two phases, each lasted 3 years (Fig. 2). There was one curricular subcommittee for each phase that consisted of twenty faculty members (80% from clinical departments and 20% from basic departments) to ensure integration at all levels. Those two curricular sub committees worked diligently on daily basis to design the new Baghdad Medical College integrated curriculum, taking into consideration the new educational principles. During the first two years (2011-2013) there was great support from the Nottingham team (Professor Najat Khalifa, Professor Brigit Vollm and Professor Reg Dennick) as they organized two medical education workshops on how to design integrated curriculum in Iraq (Erbil). Additional subcommittees were established for; monitoring and evaluation, quality assurance assessment, feedback, faculty development, and integrative learning activates (ILA). The final draft of integrated curriculum was finalized by June 2013. It was revised with the help of international experts including Professor Nigel Bax (Past Dean of Sheffield Medical School, and Professor Deborah Bax) through a series of workshops and Skype conferences. The implementation of the new system integrated curriculum was launched in November 2013 after approval from the Iraqi Medical School Deanery Committee and Ministry of Higher Education.

**Taking a Leading National Role in Medical Education:**

Baghdad College of Medicine took the lead in modernization of the medical educational curriculum in other Iraqi medical schools. Seven medical schools (Dialah, Wasit, Al Kindy, Al Qadisyia, Al Iraqia, De Qar, and Al Mustansyria) requested our new curriculum or showed a desire participate in our faculty development program adopted by our medical school.

**Relationship with International Partners:**

We were successful in establishing good relationship with many international medical schools like Nottingham University, Sheffield University, North Carolina University at Chapel Hill, Sultan Qaboos University (Oman). MOUs were singed with these medical schools which enabled us to overcome some difficulties and train our faculty members. We feel obliged to acknowledge the central role for Professor Nigel and Professor Deborah Bax from Sheffield Medical School, UK, who ran more than six medical education workshops for faculty members from seven Iraqi medical schools in and outside of Iraq (Fig. 3). The International Medical Corp (IMC), a non-governmental organization (NGO) associated with the US Department of State played an important role in developing our new curriculum. An MOU was singed with IMC in 2013. IMC Sponsored workshops in and outside of Iraq and facilitated our collaboration with North Carolina Medical School at chapel Hill with whom we
signed a MOU for medical education development, and for their pivotal role in establishing our web based learning which is called the Iraqi network learning environment (INLE).

Faculty Development Program:
Since its establishment in 2012, the medical education unit (MEU) launched a faulty training program that included a series of workshops inside and outside of Iraq, as well as the creation of TOT team at our medical school. Thirty workshops were executed since 2013. They were attended by 812 faculty members, one hundred from seven Iraqi medical schools other than Baghdad College of Medicine.

Assessment: A Change in Concept:
The new system integrated curriculum, with its predetermined standardized learning outcomes, needs an alignment of its assessment processes with its objectives, teaching and learning in integrated fashion. The traditional assessment of the previous subject based curriculum cannot cope with the requirement of a new outcome based education paradigm.

A new concept of integrated assessment must replace the existing concept of assessment that is based on mere examinations. The new adopted assessment methodology has many characteristic features that differed fundamentally from the old traditional assessment methodology:
1. A broad-based leadership on assessment has evolved to assure the quality in a centrally conducted way to properly measure the learning competencies over the whole curriculum program.
2. Evaluators’ biases are minimized and clear cut lines are drawn to eliminate faulty overlap between the domain of learning in knowledge, skills and behavior and to ensure demonstration of all competencies.
3. Assessment became a continuous process rather than episodic examinations. Data were collected during all learning activities to ensure active attendance, engagement, work assignment completion, and monitoring professional behavior.
4. Formative assessment was conducted on INLE with feedback provided on each course and for all integrated learning activities. Retention test was done of the previous year at the beginning of each new academic year for general assessment in the whole program. Introduction of formative assessment as a tool for learning rather than assessment of learning was challenging since it did not account for the final scores of the student. Never the less, the enthusiasm of the students was encouraging in contrast to the initial opposition by some of the faculty members in the early stages of implementation.
5. Knowledge assessment was changed by elimination of long essay questions that have been replaced by short answer and modified essay questions. MCQs were reviewed according to new adopted guidelines. Assessment of higher cognitive level of critical thinking and problem solving were endorsed in the construction of questions and some attempts to elucidate creative thinking by assignments of research and other projects.
6. Skills were divided into practical, procedural and clinical skills. Mastery assessment was used for more than thirty practical skills during the six-year program. Communication skills have a specific place in clinical skill assessment to demonstrate student abilities. In addition, OSCE was revamped by introducing global assessment and detailed descriptive rubrics.
7. Attitude was not addressed in the traditional curriculum, nor emphasized in the current curriculum. Assessing the professional behavior and ethics according to a predetermined criteria of the student ethical conduct code is now in effect.

8. New optical scoring software is currently used for data analysis of the written examination. It adds to the objectivity of scoring and minimizes the time consumed by the process of manual scoring. It also reveals all necessary evidence for the quality of the items of the exams like difficulty index, discrimination factor, internal consistency and the efficacy of each distractor in MCQ type of questions.

9. Authentic assessment was demonstrated clearly in projects, research projects, portfolio and course-based work assignment.

10. Finally, a traditional episodic examinations are not sufficient enough to present a concrete evidence of learning of the desired and required competencies for a newly graduated doctor. This dissatisfaction and the requirements of accreditation necessitated the implementation of a new policy in student assessment and new rules that accommodate the whole principles of assessment rather than by the examinations only. New assessment rules were designed by Baghdad College of Medicine and a proposal was submitted to the Ministry of Higher Education. Approval was secured. The new regulations are now in effect by all medical colleges with the system integrated curriculum in Iraq.

**Feedback:**

Although feedback is one of the most powerful influences on learning and achievements, it was not generally offered in Iraqi medical schools before the design and implementation of the new curriculum was in effect in 2011. Therefore, it was one of the challenges that the curriculum committee and later the “Medical Education Unit” (MEU) faced before and after implementation of the new curriculum. The first and second feedbacks were received in 2011, after the establishment of the “Medical College Reviving Team (MCRT)” (composed of five faculty members and ten students, two from each level except the first year).

Once established, MCRT started to recruit students to take the first and to take a more detailed second survey under the supervision of the five faculty members. Both were done manually (hard copies). The first survey included 50 students, while the second one included 250 students (50 students/grade except for the first grade).

The outcome of both surveys revealed that 22% of the students attended lectures in the first three years while only 16% in the later years in the college. 87% of them attended lectures according to their perceived competency of the tutor. 98.4% attended the clinical sessions. They appreciated the importance and benefits of these sessions. 73.3% of the students preferred electronic learning while 70.6% preferred interactive lectures. Only 46% used reference books and 96.6% relied on lectures only. Moreover, a third survey which included 54 graduates of Baghdad College of Medicine in 2012, during their period of internship in the Medical City Teaching Hospital and Al-Kadimeya Teaching Hospital was conducted. The outcome of the third survey uncovered few striking observations:

1. The theory taught at medical college was discordant to the actual clinical practice.
2. The first three years of the curriculum was packed with lectures and lab assignments that were not related to clinical practice (for example medical physics and analytical chemistry).
3. Training on emergency cases was neither enough nor efficient.
4. They were not trained to manage administrative problems.
5. There is a real need for changing the curriculum, for training of the trainers and for improving teaching techniques.

After the implementation of the new curriculum in the academic year 2013–2014, surveys were done electronically (using INLE). For each module in the new curriculum, 8 – 10 surveys / year were done for each grade. These surveys were multidirectional. They included students and faculty members' opinions about the new curriculum. They include detailed questionnaires about every aspect of the modules. These surveys were reinforced by the outcomes of the OMR that manifested as crucial outcomes on the modules specifically and the new curriculum generally. Comprehensive review and suggestions on different aspects of the undergraduate curriculum for all modules were taken into consideration. Analyses of the student feedback for two consecutive years showed a great improvement and a promising success in our new curriculum implementation methods and techniques.

The questionnaire format consisted of two main focal areas; one focusing on the curriculum and the other focusing on the faculty members. The compiled data were then analyzed for further improvement of curriculum and staff development that were implemented respectively. We asked 6 questions regarding the modules:
1. Were the aims of the module clear and specific?
2. In general, did the tutors of the modules make the best efforts to deliver the ideas? Were the practical and small groups learning sessions crucial?
3. In general, were the modules organized without overlap?
4. Were the topics in the modules essential? Was the formative assessment essential?

Answers were given in five grades (highly agree, agree, neutral, disagree, and highly disagree). Results are shown below:
Analyses of Feedback of Year 1:
By comparing the two pie charts in fig 4, we can see the improvement of the curriculum as reflected by the satisfaction of students. Only 47% voted (highly agreed and agreed) in year 2014-2015 as opposed to 63% in the following year 2015-2016. On the other hand the percentage of unsatisfied students was reduced. 35% voted (highly disagree and disagree) in year 2014-2015 as opposed to 20% in the following year 2015-2016. Overall there is a trend of high improvement in student satisfaction in most of the modules.

Analyses of Feedback of Year 2:
By comparing the figures 6 and 7, we see the improvement of the curriculum as reflected by the satisfaction of students. 62% voted (highly agreed and agreed) in year 2014-2015 as opposed to 67% in the following year 2015-2016. On the other hand, the percentage of unsatisfied students dropped from 17% in year 2014-2015 as opposed to only 9% in the following year of 2015-2016. As shown in figure 5, comparison of the percentage of questions answered: (agreed, disagreed or neutral) in two consecutive years 2014-2015 and 2015-2016 in each module, there is a trend of high improvement in student satisfaction in most modules.

Interactive Web-Based Learning (INLE):
The Moodle server was installed and launched in Baghdad Medical College and were functional on www (World Wide Web) on October 2014. The web address is http://inle.education. The eLearning site of Baghdad College of Medicine was called INLE (Iraqi Network Learning Environment), being inspired by the Nottingham eLearning system “NLE”. The server and basic installation was donated by IMC, USA. We are greatly indebted to this generous contribution. The basic idea of Moodle is to let professors run their own courses, hence a training workshop for module moderators is periodically provided. An online Moodle training course is available at the INLE now. Each of the trainee professors will have a user name and password for the INLE and is expected to manage his own online module, uploading teaching material and interacting with students. The INLE of Baghdad Medical College starts with the Research Methodology Module that was originally finished during the Nottingham project in addition to eLearning module for the first year students that was started on November 2014 (building skills necessary for effective and safe use of INLE). Furthermore it contained .pdf files and short teaching videos developed by the professors in information technology (IT) department team in collaboration with Assistant Professor Dr. Ahmed Sameer Al-Nuaimi.

**The Current Status of Online Learning (INLE):**

A total of 14 modules are available for first grade students, 16 modules for second grade students and another 15 modules for third grade students. One module is also available for Module training. The students can see a plethora of uploaded materials, ranging from .pdf files, power-point presentations, audio-books, voice lectures, video lectures and inter-active lectures. Other activities like glossaries, choices, database, assignments and workshops have been used to enhance the learning experience of students. “Discussion Forums” are attached to each module. News and notification are securely and timely delivered to enrolled students. An online bank of MCQ questions was developed for many modules available to facilitate formative assessments online using INLE for the first 3 grades of students enrolled in these modules. A possibility for a summative online exam at the end of eLearning course is being explored if we find a way to furnish the computer lab in the college soon. Module evaluation and feedback for each module is being used and data documented. A smart phone application is also used by students in this respect.

For the first time ever in Iraqi higher education system the curriculum is documented and made transparent for students, professors, managers and accrediting bodies. The interaction of students with learning materials and activities is recorded and can provide valuable data for portfolio of each student. The total log files (documenting any user activity online) for the last year is (27,907 pages x 100 activity per page) = 2,790,700. An almost 3 million user activity logs was documented by INLE server during the last year only.
What is on the Horizon?

Medical education, like other fields, continues to evolve. While excited about the changes we have so far implemented, we venture to reassess the outcome, and adjust our curriculum accordingly. We realize that new and exciting educational pedagogies are constantly added such as “the flipped class room” and “team based education”. Advances in technology also open new horizons, yet add new challenges for educational institutions that are not as privileged in terms of resources. To that end, we venture through our fortitude to address such challenges one at a time.

About College of Medicine, Baghdad University:
Our vision:
Being the pioneer medical college in Iraq, Baghdad College of Medicine is seeking to be a leader in medical educational and scientific research on the local and the international fronts.

Our Mission:
Prepare physicians of high quality who are capable of practicing medicine while conforming to high international practice standards and maintain a life-long learning and improvement.

Fig. 1
Baghdad College of medicine team during Nottingham University workshop 2011
Fig. 2
Medical education workshop, Prof. Nigel Bax, Deborah Bax and attendee from five Iraqi medical schools Istanbul 2015

Fig. 3
Medical education unit team, Baghdad College of medicine
Fig. 4
Percentage of questions answered: (agreed, disagreed or neutral) in two consecutive years 2014-2015 and 2015-2016

Fig. 5
Percentage of questions answered: (agreed, disagreed or neutral) in two consecutive years 2014-2015 and 2015-2016