Re-energising an innovative curriculum: reflecting on the Faculty of Medicine Universitas Indonesia (FMUI) experiences

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Introduction

The Faculty of Medicine Universitas Indonesia aims to provide infinite educational experiences for its students. The first competency based curriculum was developed in 2005 and we called it the 2005 FMUI Competency Based Curriculum (CBC). Five years afterwards, a comprehensive evaluation of the curriculum was performed and in 2012, FMUI published a revised CBC (the 2012 FMUI CBC). This paper reflects on the development of the revised CBC and how the faculty re-energizes what we already considered as an innovative curriculum. This paper will start from the overview of 2005 FMUI CBC and the program evaluation pertaining to it, and followed by some discussion about the 2012 FMUI CBC. The discussion will then arrive at some important lessons learned on curriculum reform.

Overview of the 2005 FMUI Competency Based Curriculum (CBC)

The FMUI 2005 Competency Based Curriculum divides medical education into three stages. First is the general education, in the first semester, comprises of generic modules which put forth the foundation of medicine through learning about study skills, empathy, professionalism and communication. In this stage, students are also introduced to basics of biomedicine; cells, genetics and also molecular biology. The basics of biomedicine serves as the base to study integrated medical sciences in the modules from semester two to six. There are in total 17 integrated medical sciences modules in 5 semesters. The integrated medical sciences modules, such as cardiovascular, respiratory, musculoskeletal, form the second phase of medical education, which we called Integrated medical sciences stage.

The modules in the second stage apply vertical and horizontal integration, combining basic medical sciences and clinical sciences, and provide early clinical exposure to students. There is also a longitudinal stream of empathy, research and basic clinical skills study. In every module, certain time slots are dedicated for students to learn empathy, prepare their undergraduate research and practice basic clinical skills in the skills laboratory. Learning materials in the second phase prepare the students to study in the clinical setting in the last stage of medical education, which is the clinical practice phase. However, prior to clinical practice, students undergo Foundations of Clinical Practice (FCP) module where students’ clinical skills and reasoning are refreshed.

During clinical practice phase, students rotate in 16 modules or clinical departments. Students are exposed to real patients, both in the hospital or in the community and they learn how to manage patients and their problems. Clinical teachers play crucial roles in facilitating and assessing students’ learning in this particular stage. Students are expected to apply the knowledge obtained in the previous phase when encountering and managing patients in the hospital or clinic. In addition to the regular programs, there is one elective module, where students are free to choose, from the available list, the most preferable topic/theme in the elective module.
The SPICES model from Harden, et al. (1984) underlies the development of 2005 FMUI CBC. SPICES stands for student-centered, problem-based, integrated, community-based, elective and systematic. Student-centered and problem-based principles are reflected on the application of student-centered active learning approach throughout the study, with real problems as the trigger or stimulant for learning. Modules developed are vertically and horizontally integrated so that students are exposed to clinical sciences from the very early stage of their study. Opportunities for students to learn and practice in the community is also increased, although it may still not be sufficient. The faculty offers elective modules for students to explore more about their topic of interest. And the last principle which is systematic is proven by the availability of curriculum book, guide book and all other supporting documents which become the guide to deliver a systematic educational program. The curriculum and guide books are developed in such a way to enable all students get relatively similar opportunities to learn.

The diagram below illustrates how the 2005 FMUI CBC stands in the SPICES continuum. It can be seen that some of the weak areas of the existing curriculum are related to community based and elective. This stems from the lack of opportunities for students to learn in the community and also choose their elective options.

<table>
<thead>
<tr>
<th>Student centred</th>
<th>Teacher centred</th>
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<tbody>
<tr>
<td>Problem based</td>
<td>Information gathering</td>
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<tr>
<td>Integrated</td>
<td>Discipline based</td>
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<tr>
<td>Community based</td>
<td>Hospital based</td>
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<tr>
<td>Elective</td>
<td>Uniform</td>
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<td>Systematic</td>
<td>Opportunistic</td>
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Program evaluation of the 2005 FMUI CBC

Implementation of a curriculum is nothing without monitoring and evaluation. Therefore, it is important to conduct program evaluation of the 2005 FMUI CBC. The program evaluation framework we used is the Kirkpatrick’s level of evaluation (Kirkpatrick & Kirkpatrick, 2006) which consists of four levels from evaluating the reaction to impact evaluation. Stakeholders’ reaction of the curriculum was evaluated by evaluating the educational environment through the administration of DREEM (Dundee Ready Education Environment Measure (Roff et al., 1997)). The evaluation methods also include focus group discussions with teacher and student representatives.

Despite a relatively good score of DREEM which reflects a positive educational environment of FMUI, and also an increase in DREEM score for students in the new curriculum compared to that of the more traditional curriculum, there were some areas of improvement identified, such as:

- Length of study to be reconsidered
• Area of coverage during problem-based learning is too wide
• Relevance of biomedical sciences for clinical application, in some parts, may not be clear
• Ill-preparedness for elective component
• Relevance of some parts of general education stage is questionable
• Significant needs for faculty development program (e.g. for tutor, facilitator, clinical teacher)
• Faculty commitment needs to be increased

In the level of learning, there were some indicators which reflected students’ achievement or performance in their study. First is the positive correlation between students’ latest progress test scores with their national licensing examination scores (Wahid & Werdhani, 2010). Secondly, more than 90% of students graduated on-time with GPA average of 3.54 and there was an increased in the GPA average compared to that of students from the traditional curriculum. Another indicator is the passing rate of FMUI students in the national licensing examination which was 93% within the last 4 years. Therefore, in 2010 the faculty considered that it was necessary to develop a revised curriculum based on the above findings. The revised curriculum is aimed to maintain good practices of the existing curriculum and improve weak areas.

**Development of the 2012 FMUI CBC**

To start the curriculum revision, we need to first define the justifications for curriculum development. On the national level, the availability of the revised National Standard of Competency from the Indonesian Medical Council and also the Indonesian Qualification Framework serve as the basis for curriculum revision. The Indonesian Qualification Framework describes the attributes or qualities of graduates from each educational level, from diploma to postgraduate. Within the university itself, there are also some changes in academic regulations especially regarding academic calendar and calculation of of credit points. Since 2012, the university has also started the multiprofessional and interprofessional modules in the Health Sciences Cluster, which apply to students from all faculties in the health sciences. This change impacted the arrangement of modules in the FMUI CBC. Furthermore, the results of the 2005 curriculum evaluation, with some results have been mentioned above, along with the FMUI 2010-2014 strategic plans, are the justifications for curriculum revision at the faculty level.

Referring to the above, the process of curriculum development was started involving all stakeholders in the faculty. It took almost two years to complete the process and publish the revised curriculum. The following table describes the main differences between the 2005 and 2012 FMUI CBC.
When put into a diagram, the scheme of 2012 FMUI CBC can be illustrated as in the following\(^1\). Students are exposed to both biomedical and clinical sciences from the very early stage of their study, but with different proportions. Community based and oriented theme, and also ethics, moral and professionalism runs throughout the five and half years, as longitudinal modules. Within some parts in the curriculum, students undergo modules such as interprofessional education, research, evidence based practice and patient safety. Although those modules are not longitudinal, but it is expected that the principles extracted from those modules apply to their everyday learning and practice, especially in the clinical setting.

\[\text{Diagram courtesy of Dr Ardi Findyartini, Medical Education Unit}\]

Still using the SPICES model, we tried to look at whether the newly revised curriculum has changed the curriculum ‘position’ along the continuum. The black cross in the following diagram represents the 2005 CBC, and the red one for the 2012 CBC. The diagram below clearly illustrates that the new curriculum has successfully moved all crosses nearer towards to the SPICES standpoint.

\(^1\) Diagram courtesy of Dr Ardi Findyartini, Medical Education Unit
Our efforts to put more community based program and elective modules has managed to improve our community based and elective approaches. Elective modules are not only provided in the clinical practice stage, but also in the pre-clinical phase. The pre-internship module in the last semester will allow students to have more practice in the community, encountering real problems related to patients and their family.

Curriculum reform: lessons learned

“Although curriculum design is an imprecise and arbitrary rubric, such a code is needed: systematic and arbitrary is somewhat better than capricious” (Jolly & Rees, 1998). The statement from Jolly and Rees underlies the necessity to ensure that curriculum development process is systematic and using the best-evidence available. There are eight principles of curriculum design, as listed by Grant (2010) which should guide the curriculum reform process. Each of these principles should be considered in developing curriculum, for example, according to theories of professional practice, there is a need to have vertical and horizontal integration of medical disciplines within the modules, along with patient safety and evidence-based practice as the norms in the clinical practice. The following are the principles of curriculum design according to Grant and a short description on how the FMUI applies these principles into practice in the 2012 CBC.

1. Theories of learning
   - Application of adult learning theory and student centered approach
   - Using problem based learning as one of the teaching methods
   - Application of deep and contextual learning

2. Theories of professional practice
   - Horizontal and vertical integration of medical disciplines
   - Multi- and Inter-professional education modules
   - Ethics and professionalism are taught in the longitudinal module
   - Patient safety and Evidence-based practice are continuously emphasized
3. Social value
   - Ethics and professionalism longitudinal module consists of cultural competence topic and also encourages students to involve in volunteer work in the hospital

4. Knowledge base expansion
   - Implementation of elective modules
   - Application of reflective practice

5. Professional
   - Implementation of ethics and professionalism module
   - Application of reflective practice through portfolio

6. Health service development
   - Community oriented approach through PBL (problem based learning) trigger, family and community medicine approach in clinical clerkship
   - Community based approach through the implementation of pre-internship module and primary healthcare module

7. Political
   - Consideration of relevant national regulations such as national standard of competency, Indonesian Qualification Framework
   - Consideration of relevant university regulations such as the formation of health sciences cluster, new academic regulations and calendar

8. Accountability and transparency
   - Curriculum developed based on data or information obtained from the evaluation results of the 2005 FMUI curriculum, the principles of competency-based curriculum, and also national and university regulations

Tyler RW (1949) describes four central questions in curriculum design. The principles applied in the development of 2012 FMUI CBC can be linked to each of these four questions, which proven that our curriculum development process was systematic and based on the best-evidence available. For the question of “what is the purpose of the educational program”, we can ensure that the graduates’ attributes reflect the national and university standards and also the FMUI strategic planning. “How will the program be organized?”, we can answer this by describing that the curriculum uses SPICES model. The curriculum is a spiral curriculum with longitudinal modules (for example, for ethics and professionalism theme, and basic clinical skills), early clinical exposure and pre-internship program. The third question is what experiences will further these purposes. To answer this question, the faculty applies student-centered active learning as the main approach. This approach is translated into small group learning method and contextual learning. A comprehensive clinical learning experience is also a way to facilitate students in attaining the learning outcomes. The last question is how we can determine whether the purposes are being attained. A good and systematic assessment system is arranged and applied to make sure that the students have achieved what they need to master.
Conclusions

Based on the above description, suffice to say that the 2012 FMUI CBC has fulfilled not only the SPICES model, but also the PRISMS principles (Bligh, Prideaux & Parsell, 2001) which consists of product focused, relevant, interprofessional, shorter/smaller, multi-site and symbiotic. What can then become the lessons learned from this curriculum revision process. At the macro level, the faculty has incorporated external and internal factors which influence the development of curriculum. The curriculum refers to the international standards, but still contextualized according to the national and local context and needs. We consider the curriculum fit for purposes and it has also taken into consideration the best-evidence available related to curriculum development. Main stakeholders which are students and teachers have been involved in the process, however we realize that patients’ roles in designing the curriculum is very limited. At the meso and micro level, it is a significant challenge for the faculty to ensure concordance between the planned, taught, learned and assessed curriculum.

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