Transition from Conventional Curriculum to Problem-Based Learning at Faculty Of Medicine, Syiah Kuala University: Lessons Learned

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Abstract. In 2006 Faculty of Medicine Syiah Kuala University introduced an integrated, spiral curriculum, using problem-based learning (PBL) approach with a number of innovative features. The faculty of medicine now had four years experience of the curriculum. This paper describes the changes that have taken place in the curriculum over the four years. Evidence from internal and external reviews are used to identify the lesson learned from implementing the curriculum. (JKS 2010;2:117-122)

Keywords: problem-based learning (PBL), curriculum.

Introduction

The faculty of medicine at Syiah Kuala university, placed in Banda Aceh, Indonesia, a disaster-prone area. Most of the population in Banda Aceh has strong religious belief, also experienced various type of disaster, including flood, military conflicts, even tsunami. The faculty introduced a new curriculum in 2006. The curriculum combined idealism and pragmatism and various aspects of education such as spiral curriculum, educational strategies, the student assessment approach and organization and management of the curriculum. The faculty of medicine has gone through the tough time due to transition from conventional curriculum to competence-based curriculum using PBL approach. We look at how the curriculum has withstood the test of time and responded to change, which aspects of the curriculum are still in place, and what new approaches have been added. We reflect on the experiences of these four years and describe the lessons learned about curriculum change in higher education. This analysis is likely to be of interest and potential value to individuals and institutions involved in change in higher education.

The Faculty Of Medicine Undergraduate Medical Curriculum

The 2006 curriculum was implemented as the result of proposals by a working group named Medical Education Unit (MEU) for curriculum development, established four years before, in 2002. Higher Education Board from National Education ministry Republic of Indonesia (DIKTI) encouraged every faculty of Medicine in Indonesia to have MEU which function as a ‘think tank’ for curriculum improvement. Serials of training were conducted to encourage faculties of medicine to change their curriculum. The focus for implementation was a sophisticated blend of educational strategies, which underpinned the curriculum. These included a spiral curriculum with two phases, elements of PBL, community-based learning, student-centered approach to teaching and learning that encouraged students to take more responsibility for their own learning, and new assessment approach. An organizational and management structure and the allocation of resources were designed to support the educational philosophy.1

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Since the program was introduced, not unexpectedly, many details relating to the curriculum have changed. In 2007 we separate between tutorials and clinical skills laboratory management, in 2009 we changed the sequence of some blocks and 2010 we add a task of writing medical theses as mandatory qualification for graduation.

The Curriculum

1. The spiral curriculum

A spiral curriculum is one in which there is an iterative revisiting of topics, subjects or themes throughout the course. It is not simply the repetition of a topic taught. It requires also the deepening of it, with each successive encounter building on the previous one. The following are the features of a spiral curriculum: (a) topics are revisited, (b) there are increasing levels of difficulty, (c) new learning is related to previous learning, and (d) the competence of student’s increases. The curriculum of 2006 faculty of medicine Syiah Kuala university comprises 2 phases: bachelor and profession phase. The first’s duration is 3.5 years and the last is 2 whole years. The Bachelor phase consists of 21 blocks, divided by 6 themes: (a) the foundation of medicine (blocks 1st-3rd), (b) immunology (blocks 4th-6th), (c) human systems (blocks 7th-12th), (d) life cycle (blocks 13th-15th), and (e) comprehensive medicine (16th-21st). The profession phase consists of 14 blocks.

2. Competence-based curriculum

Competence is the integrated performance-oriented capability of a person or an organization to reach specific achievements. These capabilities consist of clusters of knowledge structures and also cognitive, interactive, affective and where necessary psychomotor skills and attitudes and values, which are conditional for carrying out tasks, solving problems and effectively functioning in a certain profession, organization, position and role. The 2006 curriculum based on 7 areas of competency described by Indonesian Medical Council, which are: (1) effective communication, (2) clinical skills, (3) evidenced-based medicine, (4) problem-solving skills, (5) information management skills, (6) self-development, and (7) professionalism.
3. Problem-based learning (PBL) approach

PBL is an instructional method characterized by the use of problems as a context for students to learn problem-solving skills and acquire knowledge about the basic and clinical sciences. It was originated at McMaster University in Hamilton, Ontario, Canada, the mid-1960s. Since then it spread like wildfire to numerous medical schools. Now several hundreds schools profess to offer some form of problem-based learning. PBL was adopted by our school as an attempt to solve our problems found when we evaluate our prior conventional curriculum with the stakeholders on health services provider, which are:

a) Our medical doctor seems to have very limited communication skill.

b) Poor problem-solving and clinical skills.

c) Inaccurate diagnosis.

d) Lack of collaboration capability.

e) Inadequate self-development capability.

We found the reason to choose most suitable instructional format for our school, from many literatures addressing the pros and cons on PBL. The pros admitted that PBL may be able to give some advantages: (1) high motivated learner, (2) better problem-solving skills (3) self-directed learning skills, (4) better ability to learn and recall information, (5) better ability to integrate basic science knowledge into solution of clinical problems. From student perspective, it was mentioned that PBL also contribute to produce: (5) ability to see the relevance of material being learned, (7) better interactions between student, (8) in-depth researching of concept related to a case, (9) more interesting way to learn because of the opportunity to integrate and apply basic science issues to patient situation, (10) the opportunity to take an active role which helped to maintain interest.

The literatures also made us aware of several potential disadvantages of PBL: (1) uncomfortable feeling from student that was used to subject-based learning (2) it would take longer time to learn the same subject content, (3) limited acquisitions of basic knowledge, (4) resource-intensive. Sometime PBL also (5) be difficult to be aligned with the medical school governance system, (6) not designed to achieve efficiency.

The Challenges in Transition and Lesson Learned from Them

There are several challenges along with the transitions:

1. Priorities in Curriculum development.

Higher education requires ongoing curriculum development to incorporate new knowledge and competencies. The intended result of curriculum development is that the graduates produced will be better equipped to meet the needs of the community which they will serve. Since most faculty in academic medical centers have no instruction in education of curriculum development, curricula produced are suboptimal and do not follow curriculum principles.

Lesson learned: focus on faculty development before working on student's curriculum development. Creating a curriculum for faculty development was another challenging task. We use 6 steps model of curriculum development include: (1) problem identification and general need assessment, (2) need assessment of targeted learners, (3) goals and specific measurable objectives, (4) educational strategies, (5) implementation and (6) evaluation.
and feedback. \textsuperscript{10} We implemented the faculty development curriculum long before the implementation of students' curriculum (four years before). By the time student's curriculum was ready to be implemented, the faculty development program continue to be improved.

2. Conflicts on organization and management
Many medical schools are primarily governed by departments. A centrally governed curriculum like PBL often conflicts with the governance of the medical school due to its interdisciplinary nature. Resolving that conflict is no small problem. \textsuperscript{8} Realizing the problems from the beginning, we tried to have some expert on PBL from McMaster University, Canada, and Maastricht University, The Netherlands, to have a review before we change the curriculum. Based on their suggestion, supported by the literature review as well, we tried to create new governance by creating functional unit which integrate the persons in one department with another. There are 8 functional units: (1) Medical Education Unit, (2) Curriculum Development Unit, (3) Tutorial Unit, (4) Clinical Skills Unit, (5) Assessment Unit, (6) Quality Assurance Unit, (7) Information and Technology Unit, and (8) Faculty Development Unit. Although we still struggle to conduct a harmony in working together with all of the units, we continuously reflect on what we have done. We also created faculty reward system, to avoid feeling inadequately rewarded for efforts devoted to small group instruction.

Generally speaking, a curriculum governance system that is not aligned with the faculty of medicine governance system will require additional resources devoted to overcoming incompatibilities.

\textit{Lesson learned:} collaboration with experts will prevent us to repeat same mistakes. Collaboration it self is a soul of PBL. Delegating the task will enhance good collaboration.

3. Limited educational facilities
Self-directed learning nature of PBL requires sophisticated facilities. This is including computer with internet access, books and journal, equipped clinical skills laboratory. Especially for clinical skills training, recent studies report that early introduction of clinical skills was viewed to be beneficial, as these skills may take a significant time to develop. Moreover, early introduction of these skills will facilitate the integration of clinical and basic knowledge. Although resources are limited, curriculum designer can still create an enjoyable program. \textsuperscript{11} We realized the importance of facilities in PBL, especially in clinical training. We took good opportunity by collaborating with humanitarian organization (AUSAID) working right after the 2004 tsunami in Aceh to set up a well-equipped clinical skills laboratory. Looking to what we have achieved and how the students enjoyed the clinical training, the humanitarian organization agreed to build the laboratory for us. The first year implementing PBL we did the clinical training by using the same room for tutorials, but on the second year we have the brand new clinical skill laboratory.

\textit{Lesson learned:} making efficient use or resources and promote the good works will be attempts that attract supports.
4. New Assessment methods
Previous undergraduate curriculum used very limited models of assessment comprises paper-based multiple-choice question, simple practical session examination and oral examination. Implication of implementing competence-based curriculum with the approach named PBL, accompanied with clinical skills training, was introducing new ways of assessment. Two years before changing the curriculum, we found big questions surrounding us: how we will assess the competencies achieved by the students? Do we stick to the MCQ’s or move to different kinds of new method? What is OSCE, Patient Management Problem, key feature case, mini-Clinical Exercise? How do we learn to use them?
Those so many questions encouraged us to conduct trainings on assessment. We collaborate with medical education centre in Gadjah Mada University, Indonesia.

Lesson learned: Assessment method involves context-dependent compromises and it is not a measurement problem but an instructional design problem. Different instructional design will need different kind of assessment. The consideration on what kind of assessment we need to use depend on: classical criteria as (1) reliability and (2) validity, also (3) the acceptability of the method to the stakeholders and (4) the investment required in terms of resources. Finally we design specific assessment tools, formative and summative, for each instructional format we used, using specified resources according to our capability.

5. Financial problem
Medical education is costly and students pay only a fraction of the cost of their education. Changing the curriculum adds the cost by implementing the parallel track to previous curriculum at the same time. Although our faculty of medicine considered “rich” school, owned by the government and had stabilized income from taxes, but actually the procurement process is no easy to control. All or the financial and procurement matters is still governed centralized by the rector not by the dean. Sometime it would take a year from procurement plan to get the actual procurement process take place.

Lesson learned: we had a very difficult problem to solve, but we also had a good leader with strong situational leadership from our dean. He assure that every faculty had their rewards every end or the month and the additional rewards regarding the additional reward to run a parallel track (PBL and conventional curriculum at the same time) at the end of each semester. This strong leadership maintains the commitment of the faculty to serve for the whole year, although in various level of satisfaction. We realized this is not an ideal case but we learned what the best to practice is.

Conclusion
The curriculum introduced at faculty of medicine Syiah Kuala proved to be supported by evidenced-based research. It has stood the test of time and the best of all it encourage the faculty to develop themselves more and more. The 3C’s spirit of PBL: constructivism, collaborative and contextualize is not
working just for the student, but also for the faculties. We learned that curriculum is a dynamic process that needs to respond to circumstances: the change in society, medical practice and educational thinking.

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References

1. Albanese, M. Problem-based learning: why curricula are likely to show little effect on knowledge and clinical skills. Medical Education. 2000(34):729-738.


5. Harden, RM, Stamper, N. What is a spiral curriculum?. Medical Teacher. 1999(21): 142-144.


