

# Problem Based Learning

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Khan's paper<sup>1</sup> in this issue provokes us to think of some of the issues and challenges that confront US today, in medical education in Pakistan.

Khan<sup>1</sup> describes the experience of implementing a "Problem-based learning variant" which utilized principles of PBL but designed instruction in the context of resources constraints. A resulting compromise was the large size of students groups. The model was tested in a phase of her College's transition in instructional strategy. This provided an opportunity (a) for faculty to practice their skills in teaching in a new manner; and (b) to the course designers to review what their efforts had achieved. An assessment -albeit a test of knowledge, perhaps memory - determined whether the intervention had produced better learning. Change in student learning methods was evaluated. She draws attention to the increase in time spent by students studying on their own, and consulting a variety of sources of information. She highlights the fact that students require free time to learn on their own, and reflect on what they have read. The cost-effectiveness of the lecture system in which the same material was covered in less time, is referred to. It is well known that PBL is faculty intensive<sup>2</sup>. Facilitator intervention during tutorials was necessary because this was the only course taught by PBL. An alarming decline in attendance was noted over the course of PBL sessions.

Khan thus touches on issues related to the curriculum, the student, field-testing, assessment and facilitation. Her efforts in improving medical education are one of a string of actions being implemented across the country, by many faculty.

## **The curriculum**

The process of creating a variant would be frowned upon by purists. But experts advise that it is better to cut the coat according to the cloth; and modify the rules to match strengths<sup>3</sup>. And that is important. Problem-based learning (PBL) can certainly improve the quality of learning achieved; and ingrain valuable attributes- an ability to read and listen perceptively; to search, comprehend and evaluate the basis and authenticity of information; work with team members; and above all determine what needs to be known. PBL curricula define core learning objectives and issues of relevance.

PBL allows construction of meaning by the student. It has been clearly shown that a problem-based learning experience with its hypothesis generation and cognitive processing provides a better structure in memory<sup>4</sup> and better communication skills and effect tolerance, a pre-requisite for empathic care<sup>5</sup>.

## **The advantages are clear**

However, it may not be feasible to introduce existing models of PBL into many of the medical colleges in Pakistan. But constant efforts should be made to elevate the standard of medical education from whatever level it is practiced today. Deans and principals need to actively promote a coordinated set of activities, which allow experimentation with variants of PBL and alternative models of active learning that would improve competence and conduct in practice.

In Pakistan we often attempt to leap at one go, the ever widening hiatus between the status of the world and our current achievements and state of development. Often, we forget that sustained development is dependent on an evolutionary process growing out of the determination to become better; and the willingness to test, evaluate, implement and change the directions for developing physicians for the coming decades.

In the continuum stretching from lecture based to problem based strategies, each college has to draw its bow and set its arrow to target achievements within its capacity to implement change. The arrow can progressively aim higher with time. It may be necessary to use a hybrid where blocks of instruction could be designed for PBL; or use concept lectures prior to a PBL case. Models of hybrid curricula

have been tried in South Asia<sup>6</sup>. The effort should be to envelop principles of learning into what is being done well, keeping in mind that students by and large are very capable of taking charge of their learning.

In the final analysis, an MBBS program should be able to produce a safe doctor practicing scientific, medicine. Much more than knowledge is involved: as examples - the honing of the power of observation, the sniffing out of the unusual, and the overriding of pattern recognition by the worry that the information from the patient does not all fit the initial hypothesis generated.

A combination of methods - research (another problem-based learning method), community service, active internship (and not observ-ship) prior to graduation, laboratory work, student presentations and other methods will be required to buttress learning through paper cases in a problem based curriculum. The production of a curriculum is not enough. It is the result that counts. The archer is not known by the arrow she owns, but by the skill in hitting the target<sup>7</sup>.

What is the target? What do we want to achieve through an MBBS programme? The competences required for safe practice are well known. In addition, Pakistan must endeavor to instill the disposition to apply highest levels -absolutely the highest levels - of knowledge, skills and attitudes to provide appropriate, culturally acceptable care.

And we must remember that it is the student who is being changed through the process of education.

### **The student**

As Patrick Coldstream<sup>8</sup> puts it “the world is our student”.

### **All the learning has to be done by the student.**

High academic performers do their “learning” well, given instruction in any form. For other this is not true. We can take the horse to water, but cannot make it drink. Some will not learn, no matter what the curriculum, no matter how exciting the course; specially if their intent is to simply use the MBBS degree to increase chances of employment in unrelated fields. Such students will not participate in education. Khan<sup>1</sup> draws our attention to what happened in her large class-114 of 249 students attend lectures; only 40 remained at the end of an experimental large group PBL course. This brings to fore the necessity of having appropriate criteria for selection of students prepared for higher education. Even when selected well, the meritorious motivated students will come from diverse background. As significant learning occurs in PBL settings through dialogue, students who interact in their daily lives with their societal members in a civil manner, will have little difficulty in adjusting to learning in groups. For others, careful guidance may be required<sup>9</sup>. In either case much will be learnt by the process of making mistakes, reflecting and searching for ways to avoid them, leading ultimately to the development of a greater understanding of people and subject matter. Kha& makes no mention of the language of discussion. In our bilingual student population, conversation normally ululate between English and Urdu. Studies should note the flow of languages during student to student conversations in PBL sessions. Switching mid-sentence to another language destroys one of the great advantages of PBL: the expression of thought clearly and succinctly. Language is important<sup>10</sup>.

### **Testing faculty’s skills, adequacy of cases and assessing students**

Khan’s experiment gave opportunities to faculty to work through the experience of facilitating students and reviewing whether the learning material was adequate. No amount of work in a workshop setting can substitute for action.

And having implemented PBL, how will we know that it has resulted in valued learning? Surely student assessments will need to include assessment of whether the student has acquired an understanding of common problems in Pakistan and whether they have acquired ability to address unfamiliar problems. Khan<sup>1</sup> assessed knowledge; content is only one facet. Just as the PBL curriculum includes the learning of skills, which will be needed to manage common problems, so also should their skills be tested; as also the process of learning.

### **Facilitation and Faculty**

New competences are required of teachers for PBL<sup>11</sup>; as much as evolving attitudes. Teachers will need to demonstrate a willingness to set aside time from clinical for set period of time (if a clinician); learn new science outside their discipline; learn applications to clinical medicine (if a basic scientist); and devote much thought to development of cases.

Above all faculty need to develop artful facilitation. Steel<sup>12</sup> states this in a forthright manner: "Facilitation is crucial. A weak facilitator may lead to students taking shortcuts detrimental to their learning." While faculty should intervene minimally, uncorrected misconceptions can have fatal consequences in medical practice. But students do need to construct their own understanding, and misconceptions will correct themselves as they move through the five years of medical college. The facilitator will need to judge when intervene and when to keep silent. "It is in the link represented by the teacher's ability as a tutor that the strength or weakness of the PBL chain lies<sup>2</sup>".

Excellent physicians have emerged from curricula which deployed didactic methods of transfer of information, when that was supported by excellent, superior, thoughtful and provocative mentor-ship. There is much to be said about one-on-one dialogue where a teacher takes the student through a process of reasoning towards the construction of meaning. Any new method must therefore be introduced with the understanding that we cannot allow a deterioration of the ability to understand scientific basis of health and illness, and rational basis for treatment and prevention of disease.

Somehow as we implement PBL, we should provide opportunities for the highly charged interactions that can take place between teacher and student in a dialogue of minds. Faculty would need to keep an open door policy and act as a resource for specialized information when the student seeks better understanding of what seems to her/him as a complex issue.

### **University support**

Space is another big issue which together with limited faculty could result in large group size. Ultimately group size will have to be reduced to under 10 students per group. In large groups, discussions are even more unpredictable, and groups have difficulty in defining a few objectives for learning. The result could be a superficial cover of a large number of objectives. Each college needs to think through as to its strategies for assisting large groups, if teacher or space constraints limit the number of groups.

The provision of adequate computers to access learning resources is another major investment, as is teacher education.

Among all the effort required to implement change, improvement is most needed in teacher education which will come relatively free of major additional cost if done mostly in-house (using the cascade effects of invited expertise from institutions in Pakistan). Developing the teachers sense of responsibility to and caring for the students so that they change into physicians for the future generations of Pakistan. will ultimately safeguard the Nation's health. This is an ethical obligation on each teacher physician/scientist.

Gradual introduction of mandatory certification of competence to teach is on the cards.

Today the issue at stake is not "Can PBL be implemented" but "Can PBL be sustained in Pakistan in large medical colleges in the government sector where an overwhelmingly major chunk of the budget goes to paying salaries?" Is there a risk that the efforts of a large number of dedicated individuals working towards implementing PBL across Pakistan will be lost?

If PBL is at risk, so is education at risk of remaining archaically cemented in its old halls and museums of thought. I am confident that the rising suns, flooding the educational scene in Pakistan today, with the enthusiasm of their ideas will carry the day. The enthusiasm suggests that PBL will be implemented successfully. Anyone making serious efforts at improving education in Medical Colleges, deserves the support of the Patrons of that institution.

## References

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