

Problem Based Learning

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Problem-Based Learning -better known by its abbreviated form of PBL- has a group of strong supporters and a strong group of doubters, with a large number of us caught in between.

In its present form PBL was first put together by Barrows in 1960's. In the PBL process small groups of students are provided a clinical problem and asked to find a solution/s. The group pools their existing knowledge (prior activation), identifies gaps of information needed to solve the problem, gathers more relevant information and then solves the problem through team work. Working in small groups was designed to enhance active student participation and enhance retention and recall of relevant information through deep learning as opposed to passive, superficial learning in the traditional system. It was also supposed to improve clinical problem solving skills.

PBL was first introduced at McMaster in Canada followed by Maastricht in Netherlands and Gezira in Sudan. Since then it has been adopted/adapted by a large number of medical schools/colleges around the world. In the process of adaptation a number of hybrid forms have emerged and according to Maudsley in many instances "The label is borrowed for prestige or subversion, adorning many narrowly-focused "PBL" single subject courses within traditional curricula that do not use PBL at all¹". The cognitive process of PBL is designed for small group work, where participants get to participate fully in the discussions and information gathering as a team. If the groups are large, say more than 10, then the group dynamics will be altered and many of the participants will be left out of the interactive process. Again, badly designed and poorly implemented PBL programmes are bound to fail. This provides an opportunity to the detractors to condemn the technique.

Leaving aside these poorly planned and poorly implemented programmes there are a number of studies which have highlighted the 'downside' of PBL. First and foremost is, that cognitive research has shown that clinical problem solving skill is not generic but case specific. and that some PBL trained graduates tend to solve problems using backward approach rather than forward thinking where hypothesis is generated from data². In other words the evidence is that the clinical problem solving skills of PBL trained graduates is no better than those from traditional programmes.

A recent critical review of the published literature on PBL done by Colliver has concluded that there is no convincing evidence that PBL improves knowledge base³. A study reporting on the performances of PBL graduates on an external qualifying examination (MCCQE Parts I and II of Canada) showed that there was no significant difference between them and the graduates of traditional programmes⁴.

However, a more recent study from Missouri shows that the mean scores of PBL students in step 1 and step 2 of USMLE were significantly better than those from the traditional curriculum⁵. More studies will hopefully clarify the question whether the knowledge base of PBL graduates is the same or better than the graduates of traditional lecture based programmes. At least one question has been answered, the knowledge base of PBL graduates is not worse than those trained in the traditional way- an apprehension which was expressed when PBL first started.

In response to Colliver's criticism, Albanese⁶ and Norman and Schmidt⁷ while conceding that the acquisition of basic knowledge and clinical skills by PBL, shows minimal difference over the traditional emphasis on the other significant advantages of PBL. These are "enhancing the work environment for students and faculty⁶" and "PBL does provide a more challenging, motivating and enjoyable approach to education. That may be a sufficient *raison d'être*, providing the cost of implementation is not too great⁷" Bligh in an editorial on PBL says "Evidence demonstrating strongly positive effects is beginning to appear now, that educational 'system' in which PBL is applied is

maturing⁸”. It is of interest that the last sentence of Colliver’s article reads as, “PBL may provide a more challenging, motivating, and enjoyable approach to medical education, but its educational effectiveness compared with conventional methods remains to be seen³”. For me providing ‘a more challenging, motivating and enjoyable approach to medical education’ is a laudable goal?

One of the major criticism of Colliver³ is that the theoretical basis of PBL is weak Albanese⁶ while agreeing that contextual learning theory is weak offers ‘four other theories that offer promise for better explanation and prediction of what elements of PBL are effective, including information-processing theory, cooperative learning, self-determination theory and control theory.”

Federman, Dean of Medical Education at Harvard Medical School, in his article on little heralded advantages of PBL found, that the PBL process has improved the interpersonal relationship between students and between students and tutors. The introduction to clinical problems from the beginning has enhanced the interest of first year students and has also provided an opportunity to explore moral and other issues related to the cases⁹. According to him “.. the whole is imbued with a regard for student that should instil both self-respect and dedication to the process of medical education.”

In Sudan, where the Faculty of Medicine of the University of Gezira adopted PBL from its inception in 1975, has its graduates are much in demand. They are considered to be better trained and give more time to patients. Four more medical colleges in Sudan have based their curriculum on the Gezira pattern.

In this issue of the Journal three articles relating to PBL are being published. First is by Zaman who while reviewing the pro’s and con’s of PBL cautions the policy makers to adopt this system only after careful deliberation¹⁰. PBL requires planning and commitment of Faculty and space for small group work. The Faculty has to be trained to properly and successfully run a PBL curriculum. If it is not done properly it is likely to fail and set back the whole programme.

The second article is a report of one intervention of what the authors call ‘PBLvariant’¹¹. The authors are proposing this variant as an interim step before proceeding towards what they call ‘pure PBL’ It is of interest, that even this single intervention within a discipline based course has shown such a positive effect on student motivation towards self study and the use of library and internet.

At Ziauddin Medical College a hybrid form of PBL was adopted from its inception in 1996. The curriculum of the first two years is integrated (Anatomy, Physiology, Biochemistry and Community Health Sciences), where one PBL a week spread over three two hour sessions is used to cover some course objectives while lectures/demonstrations cover the rest. Hopefully as the Faculty is gaining more experience in writing PBL cases the number of PBL sessions will be increased and the number of lectures reduced further. The input of Clinicians ,Pathologists and Pharmacologists in writing the PBL case histories is also gradually increasing. The major hurdle in implementing full vertical integration is the present regulation of subject based examinations.

The third article is by a third year student of Ziauddin Medical College¹². He feels that the PBL process has given him confidence in gathering information and stating his opinions. Group work has also made him understand the importance of teamwork and listening to others. Considering that in Pakistan, our premedical and medical education is mostly based on rote learning, and that there is a pressing need to produce self learners who can handle the rapid growth of new information, anything that can make the students take some responsibility of their own learning is a step forward.

We are living through a major paradigm shift in medical education. The ever expanding and changing database of biomedical sciences is decreasing the ‘shelf life’ of factual information, be it in the form of lecture notes or textbooks. This is particularly true for newly developing drugs and other forms of therapy. The Internet has eroded the importance of the teacher as the sole supplier of information. The medical student has to be equipped to handle incoming information, critically evaluate it and then use it for solving the problem at hand. As I see it. this is what PBL is doing. Doing well on memory testing examinations should no longer be considered the desired goal of medical education.

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