

AMEE GUIDE SUPPLEMENTS

Problem-based learning: Where are we now? Guide supplement 36.2 – Viewpoint¹

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Abstract

The educational principles of self-directed, collaborative, and life-long learning can be effectively inculcated into the curriculum where PBL is adopted as a major learning strategy instead of PBL as a whole-curriculum-concept. In developing countries, where the entry level of the majority of students is at the high-school leaving level, a guided discovery model may well be the answer. A curriculum that introduces students to carefully constructed problems sequenced according to a matrix design ranging from simple to complex conditions and according to a logical progression of anatomical and/or physiological and/or pathological and/or pharmacological concepts makes learning easier. Centralized curricular governance, conceptualization and management have a very strong impact on the kind of curriculum, or more specifically which variant of PBL, an institution is able to implement. However, decentralized empowerment of a large number of faculty members is crucial for faculty ownership. A curricular change, especially to PBL from a traditional curriculum, demands adequate preparation time of at least 2–3 years. The time between proposing the change to introducing the change should focus not only on faculty development and training, development of the curriculum and its policies, but also on resource development and preparation of the student body.

In the AMEE guide no. 36 “Problem based learning: where are we now?”, Taylor and Mifflin are to be commended for taking the reader through the historical conceptualization, the philosophy and the evolution of PBL over the past 40 years (Taylor & Mifflin 2008). They highlight in detail the concepts and features of the PBL innovation introduced by Barrows as a carefully planned and highly structured curriculum aid. PBL underpins the educational philosophy of learning knowledge, skills, and attitudes in the clinical context (which includes all domains including social aspects and ethics), inculcating clinical reasoning and a will to find out for oneself (self directed learning), collaborative learning, and fostering life-long learning.

The evolution of variations of PBL in different institutions, different countries, and different continents, has been dependent on problems in implementation. The problems described range from the variable understanding of PBL, scarcity of resources, and amount of resistance encountered to the educational level of entering students. In developing countries, all of these may prevail in varying degrees and add to the challenge of curricular change. However, the most important factors remain scarcity of resources – the three “F”s – trained faculty, facilities, and funds.

The Guide also clearly differentiates between the three entities, the true PBL-as-a-whole-curriculum model as introduced by Barrows, PBL as a Learning Strategy, and Using the Educational Principles of PBL in a variant of your own curriculum albeit labeled PBL. This should decrease some of the confusion around PBL, and give us an understanding of

why PBL in different institutions looks so different. This should also explain some of the equivocal or diverse research results of evaluating the effectiveness of PBL, if apples and oranges were both being called PBL.

The Guide also clearly outlines, or provides references for, the essential components of PBL, each of which, as seen in Box 1, can have an impact on the kind of “PBL” Curriculum that will eventually be implemented at any institution.

The key messages found in the guide are:

- PBL is a whole-curriculum-concept and not a teaching modality. If it is not feasible to implement the whole concept, implementers may use it as a major learning modality or improve their traditional curriculum by incorporating the educational principles underlying PBL, that is, learning in context, self-directed learning, and collaborative learning. However, neither of the latter two strategies constitutes a PBL Curriculum, and this should be clearly stated.
- Different norms, beliefs, values, and external factors definitely give PBL a different flavor and may change it outright.

In addition to the principles seen in the Guide, some other critical points also deserve consideration.

The educational principles of self-directed, collaborative, and life-long learning can be effectively inculcated into the curriculum where PBL is adopted as a major learning strategy instead of PBL as a whole-curriculum-concept. In developing countries, where the entry-level of the majority of students is at the high-school leaving level, a guided discovery model may

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Box 1. Factors influencing PBL “types.”

- Student selection, either graduate entry or school leavers, must take into consideration criteria other than academic achievement
- Younger students may need more structure initially
- Class size, especially the small group size with five to six students for individualized attention
- Development and sequencing of the PBL cases, and designing their complexity to match the level of the students in that stage of the curriculum
- PBL Curriculum focusing only on the first 2-years rather than the whole curriculum
- Development of resources around the cases and for the curriculum, including lectures, study guides, and clinical and virtual resources
- Faculty and student understanding of the concepts
- Faculty selection of generalist medical doctor as PBL tutors (expert vs. non-expert),
- Faculty training and continued support
- Resource identification and development, including finances

well be the answer. A curriculum that introduces students to carefully constructed problems sequenced according to a matrix design ranging from simple to complex conditions and according to a logical progression of anatomical and/or physiological and/or pathological and/or pharmacological concepts makes learning easier.

Centralized curricular governance, conceptualization, and management have a very strong impact on the kind of curriculum, or more specifically which variant of PBL an institution is able to implement. However, decentralized empowerment of a large number of faculty members is crucial for faculty ownership.

A curricular change, especially to PBL from a traditional curriculum, demands adequate preparation time of at least 2–3 years. The time between proposing the change to introducing the change should focus not only on faculty development and training, development of the curriculum and its policies, but also on resource development and preparation of the student body.

It is extremely important to address the problem of scarcity of resources. Funds may not be available, facilities may have to be improvised, but it is the faculty that is the backbone of any change and gives it the staying power. At the Aga Khan University (AKU) medical college, we dedicated all meeting and conference rooms as PBL rooms on selected days and time, till we were able to construct purpose-built PBL rooms. We had cupboards built under the counters in the Dissection Hall, which then doubled as the Skills lab with careful scheduling.

As PBL is faculty intensive, ensuring the required number of facilitators for small-group learning can be quite a challenge in developing countries. As an improvisation, fresh medical graduates can be hired as teaching assistants and trained (Khan et al. 2006). In our experience, they have done very well indeed.

One of the important causes of curricular failures is faculty resistance. For faculty buy-in and ownership, they must be made responsible for different aspects of the curriculum being developed, and then trained for their specific required tasks through Retreats and Workshops. Expert relevant faculty must be involved in module/course/clerkship development, and/or its delivery, student remediation, implementation of assessment, monitoring and quality assurance strategies. Once faculty ownership and buy-in is achieved, lack of funds or facilities is relegated to secondary importance.

When Maastricht, McMaster, and others changed to the PBL Curriculum, the seven jump, the progress test, and the critical reasoning tests were simultaneously introduced. It is not clear

how other institutions changed their assessment systems when they adopted the “PBL Curriculum.” Moreover, a major drawback has been that national licensing examinations assess basic sciences and clinical sciences separately and in different years. Thus, students learn medical (both basic sciences and clinical) in an integrated fashion and were being assessed with pre-clinical and clinical partitions. Recently, licensing examinations are changing to assessing basic science knowledge in the clinical context, which is in congruence with the principles of assessment, PBL curricular philosophy, and future practice. AKU changed its entire assessment system to be in line with PBL in 2002, from a discipline-based assessment to assessment of integrated concepts and clinical reasoning. AKU also introduced performance-based assessment, increasing in complexity from Year 1 to 5.

Additionally, a system of quality assurance with close monitoring and immediate trouble-shooting as well as annual reviews and in-course modifications is invaluable and should be identified at the time of curricular planning. Monitoring must take into account faculty and student feedback, as well as student achievement in all domains and be relevant to the stage of study. A good Learning Management System is useful for PBL implementation and its quality assurance.

Program evaluations by external survey teams must be included. The external survey teams must also be clear regarding what is PBL and must verify to what extent PBL (or its variant) has been implemented in that particular institution.

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