

PROBLEM-BASED LEARNING (PBL) OVERVIEW & PRACTICAL TIPS



PBL DEFINITION & CRITERIA

PBL is a series of authentic and carefully-design problems (patient cases) that prompt learners to identify learning needs that they seek and fill.

PBL criteria:¹

1. Learners encounter problem (patient case) before any study/preparation has occurred.
2. The problem is revealed as it would present in real life and common clinical settings.
3. Learners work with the problem to reason and apply knowledge.
4. Needed areas of learning are identified and guide individual study.
5. New skills and knowledge are applied back to the problem.
6. Learning is summarized and integrated.

REFERENCE(S)

1. Barrows, H. S., & Tamblyn, R. M. (1980). *Problem-based learning: An approach to medical education* (pp. 191–192). Springer.
2. Neville, A. J. (2009). Problem-based learning and medical education forty years on. A review of its effects on knowledge and clinical performance. *Medical Principles & Practice*, 18(1), 1-9. <https://doi.org/10.1159/000163038>
3. Choon-Huat Koh, G., Hoon Eng Khoo, Mee Lian Wong, Koh, D. (2008). The effects of problem-based learning during medical school on physician competency: A systematic review. *CMAJ: Canadian Medical Association Journal*, 178(1), 34-41. <https://doi.org/10.1503/cmaj.070565>
4. Ludmerer, K. M. (2004). Learner-centered medical education. *New England Journal of Medicine*, 351(12), 1163-1164. <https://doi.org/10.1056/NEJMp048112>



BEST PRACTICES & KEYS to SUCCESS



Selection & Design of Cases

- Curricular blueprint guides case selection so learners can identify learning needs
- Simpler cases precede complex problems
- Cases are presented stepwise; more data revealed sequentially to allow processing by learners and to simulate real clinical practice/workflow



Student Groups & Teacher Facilitation

- Ideal group size: 6-10 students
- Student-centered and student-led
- 1 clinician and 1 basic scientist serve as facilitators and observers
 - Support group process and emerging self-directed learning skills
 - May redirect learners to identify learning needs or search for resources with answers
- Teachers do not serve as content expert – i.e., no explanation or answers given for content questions



Support of Self-Directed Learning (SDL)

- Learners build skills in:
 - Self-assessment
 - Independent identification of learning needs
 - Appraisal of resources
 - Teaching to contribute to group learning
 - Receiving feedback on SDL skills
- Well-designed PBL curricula train teachers to reinforce the above SDL skills/elements during group work or through submitted learning activities



FACULTY CHECKLIST

- Is there an overall integrated, multidisciplinary, and comprehensive blueprint that guides the selection of cases/problems across the curriculum?
- Are cases/problems logically sequenced from simple to complex?
- Are cases/problems presented so the planned sequence of revelation mimics reality?
- Do assessments of learning align with student-generated learning objectives (i.e., identified learning needs)?
- Is the rationale and benefit, as well as expectations of learners and teachers clearly communicated to the teachers and learners?
- Do teachers facilitate PBL groups in a way that appropriately maintains student-centricity and supports SDL?
- Are activities and assessments built into the curriculum to support all elements of SDL?



COMMON CHALLENGES

- ! **Incomplete or ineffective implementation of PBL**
 - PBL term often misapplied to case-based teaching
 - Teachers struggle with loss of role as expert and delivering content
- ! **Effort needed to design & maintain cases and assessments of learning**
 - It takes work to design and maintain cases, monitor effectiveness of students interacting with cases and identifying learning needs
 - Assessments are based on student-generated learning objectives and require ability to adapt from predicted content blueprint
- ! **Time and skill demanded of teachers**
 - Different skillset to facilitate PBL group and foster SDL (vs. lecture)
 - Overextended faculty resources when assigning pair of faculty teachers to PBL (e.g., 6 hrs. face-to-face time each week)