Use of Problem-Based Learning (PBL) in US and Canadian Medical Schools

Nearly 50 years ago, Howard Barrows and other leaders introduced problem-based learning (PBL) at McMaster’s new, upstart medical school. This was an innovative and disruptive pedagogy which has impacted most medical schools around the globe. My apologies for the apparent audacity of this statement. Lest I be labelled a PBL zealot (yes, the term is used in the mainstream medical education literature), let me explain. Whether a medical school ultimately adopts PBL as a core or auxiliary instructional method, most medical schools have asked the questions: (i) “Should we convert to PBL?”; (ii) “Should we include PBL?”; and (iii) “If not PBL, should we be including other learner-centered pedagogies?”

In this edition of *Curriculum Inventory in Context*, the PBL instructional method will be explored by focusing first on its definition and subsequently on the application of the Curriculum Inventory to provide additional context. The effectiveness of PBL and other critical aspects of its inclusion in curricula, such as resource utilization and the role of tutors, are reviewed extensively elsewhere (Hartling et al., 2010; Neville, 2008).

There are several reasons to spend some time on the definition of PBL: pedagogically, to provide a sense of the essential elements of the PBL instructional method and its evolution over 50 years; critically, exposing some controversies surrounding the method; and, taxonomically, enabling the most accurate labelling of the method in the Curriculum Inventory, for all the benefits that would provide. At the highest level, the first element of the definition is whether PBL is a philosophy, an
overarching curricular model, a course or an instructional method (Maudsley, 1999). Focusing on the latter, Barrows (1986) defined the essential elements in his taxonomy: cases used for context, activation and application of prior knowledge, learner-centered and -driven, application of clinical reasoning skills, self-directed learning, and re-application of new learning to the case. In this context, the case is used to stimulate student attention to the domains of future learning which are established by the learners with guidance from the tutor. The ultimate responsibility for establishing the learning objectives and determining the resources for learning are placed with the learner (Barrows, 1986; Maudsley, 1999).

The Curriculum Inventory allows for the definition of both primary and non-primary instructional methods in a given learning activity. The MedBiquitous Curriculum Inventory Standardized Vocabulary (2012) defines PBL as “The use of carefully selected and designed patient cases that demand from the learner acquisition of critical knowledge, problem solving proficiency, self-directed learning strategies, and team participation skills as those needed in professional practice.” It is likely that the phrases “problem solving proficiency” and “as those needed in professional practice” would generate the most discussion (Norman, 1988; Norman & Schmidt, 2000).

In the Curriculum Inventory Chart above, PBL is noted to represent less than 2% of all instructional methods. In 2015, this compares to other learner-centered instructional methods: case-based learning (4.4%), small group discussion (5.5%), and team-based learning (1.8%). All of these are dwarfed by the 55% of lecture-based activities. We undertook a deeper interrogation of the database, revealing that of the 131 schools reporting in 2015, 76 reported using at least one PBL activity. Only five schools reported more than 10% of events with PBL as an instructional methodology; and an additional nine schools reported 5% or more but less than 10%. Of the schools reporting less than 10%, 10 schools reported at least 50 primary PBL events; while 15 schools reported at least 50 PBL events when both primary and non-primary tags were considered.

The deeper data analysis from the Curriculum Inventory paints a fascinating portrait of PBL in Canadian and US medical schools. It demonstrates significant use of some PBL (58% of schools). It illustrates the PBL continuum from a single activity to a predominant pedagogy, subsuming the tensions between these. One can presume that the importance of landing on a sound and implementable definition also underpins the data and its interpretation. At the very least, the Curriculum Inventory enables further exploration of PBL in our medical schools, something that would give Barrows and others tantalizing intrigue.
About the Author

Dr. Rob Whyte is the Assistant Dean of Undergraduate Medical Education at the Michael G. DeGroote School of Medicine, McMaster University. He works clinically as an anesthesiologist with Hamilton Health Sciences. Dr. Whyte studied Kinesiology at the University of Waterloo before entering Medicine at McMaster University. His Master’s in Education at the University of Toronto focused on the intersection of culture, medical education, medicine, and healthcare. As such, he has been involved with work on several initiatives within McMaster’s Faculty of Health Sciences including interprofessional education, professionalism, and work on new curricular models in clinical education.

References


Maudsley, G. (1999). Do we all mean the same thing by “Problem-based learning”? A review of the concepts and a formulation of the ground rules. Academic Medicine, 74, 2, 178-185.


