

Connecting What We Know and What We Do Through Problem-Based Learning

by Claire H. Major



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The way we think about teaching and learning in higher education is changing. Our rhetoric illustrates this fact; we make assertions that undergraduate education is undergoing a paradigm shift, that the “learning revolution” has begun. Contributing to this change in perception is the cognitive research about the nature of learning. We know that students construct their own knowledge, that they benefit from working together, and that they do not all learn in the same way.

New powerful pedagogies, such as project-based learning, inquiry-based learning, case-based learning, research-based learning, situation-based learning, context-based learning, and problem-based learning (PBL), indicate that our techniques have, in fact, changed. Our actions are keeping pace with our words.

Definition and History

PBL is an approach to learning in which problems serve as a stimulus for students to gain course concepts and content as well as metacognitive skills. Generally PBL problems are ill-structured, based on real situations, and have more than one “right” answer. In the PBL environment, students confront a problem *before* they receive all of the information necessary to solve it. Students work in teams to define the nature of the problem, to identify what additional resources they need, and to find viable solutions. Faculty members act as facilitators by asking questions and monitoring group processes as students actively pursue viable solutions. Faculty members also guide students to resources. Students must generally reapply the new knowledge to the original problem and communicate the results of their findings. Among the anticipated outcomes of PBL are

enhanced critical-thinking and problem-solving skills, research skills, communication skills, and content knowledge.

PBL has appeared in a variety of settings and has had many different applications. It has served as a framework for programs and curricula, as a guiding concept for entire courses, and as an instructional strategy in specific courses. PBL emerged as a curricular framework in medical institutions in the 1960s, in answer to criticisms of the inapplicability of memorization during the “information explosion,” the fragmentation of the curriculum, and the lack of prepared graduates. The first institution to implement PBL was McMaster University in Canada, which designed the curriculum of its newly created medical school around PBL. Soon Maastricht University in The Netherlands and University of Newcastle in Australia developed programs in their new medical schools on the basis of the McMaster model. Some medical schools, such as University of New Mexico, developed parallel PBL tracks for small groups of students. Other medical schools redesigned traditional curricula to follow an adapted version of the PBL model: Harvard University is one example. Howard Barrows of the Southern Illinois University School of Medicine is among the leaders of PBL in the medical school setting, continuing his groundbreaking work in the field.

After its emergence in medical schools, many professional schools adopted PBL, responding positively to medical school findings about outcomes such as increased faculty member and student satisfaction and increased retention of content. The professions also recognized the need to improve critical-thinking and problem-solving skills among their students. In addition, PBL, with its focus on “real world”