Bringing Problem-Based Learning to Higher Education: Theory and Practice

LuAnn Wilkerson  
*University of California, Los Angeles*

Wim H. Gijselaers  
*University of Limburg, Maastricht, the Netherlands*

Number 68, Winter 1996  
JOSSEY-BASS PUBLISHERS  
San Francisco
CONTENTS

EDITORS' NOTES  
LuAnn Wilkerson, Wim H. Gijselaers  

1. Problem-Based Learning in Medicine and Beyond:  
A Brief Overview  
Howard S. Barrows  
Problem-based learning can be used to accomplish a range of educational goals. Essential characteristics of this approach are described.

2. Connecting Problem-Based Practices with Educational Theory  
Wim H. Gijselaers  
Three principles based on research in cognitive psychology explain the potential power of problem-based learning. These principles are more likely to be activated when specific teacher behaviors and problem types are used.

3. Tutors and Small Groups in Problem-Based Learning:  
Lessons from the Literature  
LuAnn Wilkerson  
A model developed by Hertz-Lazarowitz for analyzing learning in groups is used to review research on teacher, student, and task interactions in problem-based learning.

4. Problem-Based Learning in Business Education:  
Curriculum Design and Implementation Issues  
John E. Stinson, Richard G. Milter  
The planning of a problem-based learning curriculum in business education begins with the identification of desired outcomes. Reasons that students may not accomplish the desired goals are presented, including poor problem design, lack of skills for self-directed learning, and inappropriate teacher roles.

5. The Power of Problem-Based Learning in Teaching  
Introductory Science Courses  
Deborah E. Allen, Barbara J. Duch, Susan E. Groh  
Problem-based learning can be applied to medium to large introductory science courses through the use of a roving facilitator and a combination of small group and whole class discussions. Three examples from the University of Delaware are described.

6. Problem-Based Learning in Leadership Education  
Edwin M. Bridges, Philip Hallinger  
Leadership education is intended to teach strategies for getting results through others. The authors describe their use of complex problem-based learning projects in which students are required to develop a solution and a mode for presenting that solution as they might be called on to do in an actual school setting.
7. Twenty-Up: Problem-Based Learning with a Large Group
P. K. Rangachari
Learning how to identify and analyze societal problems is a central goal of the general education courses at McMaster University. The author describes his use of problem-based learning in a large class to provide opportunities for students to identify and practice skills in inquiry.

8. Time Expenditure, Workload, and Student Satisfaction in Problem-Based Learning
Arthur J. Kingsland
The design project, one component of traditional architectural education, is used by this author as the organizing construct for a problem-based curriculum at Newcastle University in Australia.

9. An Active Approach to Calculus
Stan Seltzer, Steve Hilbert, John Maceli, Eric Robinson, Diane Schwartz
Calculus can be taught in the context of meaningful problems and active participation through the use of provocative problem situations and large-scale projects. Specific examples from a course at Ithaca College are described.

10. Problem-Based Learning for Large Classes in Chemical Engineering
Donald R. Woods
Nine issues in implementing problem-based learning activities as part of a traditional curriculum are described in the context of undergraduate engineering education.

11. Concluding Comments
LuAnn Wilkerson, Wim H. Gijseelaers
This chapter suggests that although the details of particular applications may differ, problem-based learning is characterized by common features across multiple disciplines.

INDEX