

Energizing Teacher Education and Professional Development with Problem-Based Learning

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Introduction

BARBARA B. LEVIN

TO MEET THE GOAL OF EDUCATING BEGINNING AND EXPERIENCED TEACHERS for 21st century schools, those of us who work as teacher educators must use active forms of pedagogy that match the needs of the adult learners in front of us. If we are to engage and retain the teachers we are preparing for U.S. schools, we must continually seek better ways to strengthen the knowledge, skills, and dispositions that they will need to be successful in diverse classrooms. Problem-based learning (PBL) is one tool designed to foster the kinds of active learning experiences that prospective teachers should be engaged in during their initial teacher preparation and that veteran teachers should experience throughout their professional lives.

What Is Problem-Based Learning (PBL)?

PBL is an instructional method that encourages learners to apply critical thinking, problem-solving skills, and content knowledge to real-world problems and issues. Instruction is more student centered and less teacher directed than in traditional classrooms. Students assume considerable responsibility for their own learning by locating much of the information they need to solve the problems at hand. Learning is active rather than passive, integrated rather than fragmented, cumulative rather than isolated, and connected

rather than disjointed. PBL is likely to include discussion, reflection, research, projects, and presentations. The instructor plays several roles, including lecturer, facilitator, foil, coach, and assessor. These roles entail offering guidance, instruction, and resources to help students acquire content knowledge and problem-solving skills. Evaluation is authentic, performance based, and ongoing.

PBL starts with an issue, case, or ill-structured problem that can be researched, studied, or even “solved.” “Solutions,” however, do not have one correct answer. Instead, many solution paths and several good answers may be possible. Different problem-solving techniques can be applied to the initial problem, and groups or individuals generally arrive at a reasonable or possible solution. Using PBL for teacher education and professional development, as presented in this book, comes in many forms, but in all cases it offers teachers opportunities to work together to solve complex problems and dilemmas related to students, teaching, learning, curriculum, and instruction.

Theoretical Rationale for PBL

Problem-based learning was originally used in the education of medical doctors in the hope that it would increase self-directed learning and improve their problem-solving skills (Barrows, 1983). It has also been applied in several disciplines in colleges and universities (Bridges, 1992; Camp, 1996) and in teaching most subjects in K–12 schools (Delisle, 1997; Stepien, Gallagher, & Workman, 1993; Torp & Sage, 1998). PBL has spread to other professions because it was found to foster growth in many areas:

- Ability to be critical thinkers.
- Skills to analyze and solve complex, real-world problems.
- Expertise in finding, evaluating, and using information resources.
- Ability to work cooperatively in groups.
- Skills to communicate orally and in written form.
- Interest in being lifelong learners and role models for students.

Problem-based learning is a good match for adult learning (Camp, 1996): It provides teachers with a variety of learning opportunities, acknowledges their personal beliefs and experiences, and expands their knowledge and skills as they engage in learning more about a problem from a multitude of perspectives. PBL is typically conducted in groups, allowing adults to work together, share their expertise, and learn from each other.

PBL is consistent with constructivist theories of learning that serve as foundations for many teacher education programs (Brooks & Brooks, 1999; Delisle, 1997; Fosnot, 1995). Teaching from a constructivist perspective, according to Brooks and Brooks (1999), means that we need to ask one big question; provide learners with time to think; and guide them to, not give them, the resources needed to answer the question. Constructivist learning is active learning and begins by eliciting and acknowledging what learners already know and believe about the task at hand. PBL, in whatever form it takes, includes all these features and honors adult learners and constructivist beliefs about learning.

Purpose of the Book

The purpose of this book is to provide a variety of field-tested examples that use PBL for teacher education in many professional development settings. The book describes PBL activities for pre-service, novice, and experienced educators at the undergraduate and graduate levels and in K–12 education. We include PBL units that can be used in a broad range of arenas—from courses on introductory education, educational psychology (and other foundations studies), and content area methods, to seminars used in field experiences, to offerings for schoolwide and districtwide staff development. Teacher educators in higher education, those who offer alternative licensure programs, and personnel responsible for the ongoing professional development of teachers in their schools and districts will find this book helpful.

We believe that if teachers are to use PBL effectively with their K–12 students, they need to personally engage in PBL at the

preservice and inservice levels. Both prospective and experienced teachers need to tackle authentic problems that require *them* to find, evaluate, and use appropriate learning resources, just as they expect their students to do when the teachers engage students in PBL.

Teachers also need to experience the challenges of working together effectively in groups, so they can use group work in their own classrooms. PBL provides genuine tasks for teachers to practice their oral and written communication skills—again, tasks that are similar to what teachers will engage students in.

Format for the Book

Teacher educators author each chapter in this book and describe their experiences in using PBL in their particular professional development setting. To help readers see commonalities and differences in approaches, we use the same main headings in the seven chapters:

- Context for PBL.
- Purposes for using PBL.
- Description of the PBL assignment.
- Instructor's role.
- Assessment.
- Outcomes.
- Problems.
- Suggestions and conclusions.

Each chapter is based on actual PBL units and activities that the authors developed and taught in teacher education and professional programs throughout the United States. We encourage our readers to use the PBL activities, adapting them to meet the needs of their own students.

Chapters 1–5 offer examples of how PBL can be used with teacher education majors in colleges and universities. Although these PBL experiences were central features in courses ranging