1997

Center for Problem-Based Learning

Illinois Mathematics and Science Academy

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Photos courtesy of John Thompson and Linda Torp

Problem-based learning (PBL) is
an educational approach that
organizes curriculum and
instruction around carefully crafted
"ill-structured" problems. Students
gather and apply knowledge from
multiple disciplines in their quest for
solutions. Guided by teachers acting
as cognitive coaches, they develop
critical thinking, problem solving,
and collaborative skills as they identify
problems, formulate hypotheses,
conduct data searches, perform
experiments, formulate solutions and
determine the best "fit" of solutions
to the conditions of the problem.
Problem-based learning enables
students to embrace complexity,
find relevance and joy in learning,
and enhance their capacity for
creative and responsible real-world
problem-solving.

The Illinois Mathematics and Science Academy is
an educational laboratory for designing and testing
innovative programs and methods to share with
other teachers and schools in Illinois and beyond.
Included in the laboratory is a three-year (grades
10-12) residential educational program for 650
Illinois students talented in mathematics and science.

The Academy’s mission is "to transform
mathematics and science teaching and learning
by developing ethical leaders who know the joy
of discovering and forging connections within and
among mathematics, science, the arts, and the
humanities by means of an exemplary laboratory
environment characterized by research, innovative
teaching, and service."

To advance IMSA’s mission, the Academy
established the Center for Problem-Based Learning in 1992.

The Center for Problem-Based Learning
engages in PBL professional development,
research, information exchange, curriculum
development and networking in K-16
educational settings.

The goals of the Center for Problem-Based Learning are:

- To mentor educators in all disciplines as
  they design and develop effective problem-
  based learning (PBL) materials and become
  skillful coaches in K-16 classrooms and
  other educational settings.

- To explore problem-based learning (PBL)
  strategies as the context in which knowledge
  is acquired, ethical decision-making is
  nurtured, and problem-solving skills are
  developed with learners of all abilities.

- To connect problem-based learning (PBL)
  educators through numerous networking
  options designed to meet a variety of needs.
To Mentor...
PBL is most meaningfully learned through intensive professional development programs that include elements of discussion, demonstration, and immersion for teachers and administrators interested in transforming teaching and learning. For this reason, the Center:
- presents at state and national conferences throughout Illinois and across the country.
- convenes the Neison and Bette Harris Institute for Problem-Based Learning annually to provide an introductory experience that features demonstrations, active problem design opportunities, and practice with coaching strategies and authentic assessment.
- offers mutually supportive professional development partnerships with schools committed to problem-solving and higher order thinking across the curriculum.
- customizes advanced programs for experienced problem-based educators which focus on fine-tuning classroom problems, microteaching opportunities for refining coaching skills, and exploring critical thinking techniques to enhance the teacher's problem-solving "tool kit."

To Explore...
PBL and its effects on students' acquisition of knowledge, development of decision-making processes, and refinement of problem-solving skills within and across disciplines are of prime interest. To advance PBL research, the Center:
- raises critical questions about PBL.
- studies the nature of PBL itself.
- examines the outcomes of PBL — both from the perspective of teacher and student.
- reports its findings to the educational community.
- encourages informed research by teachers.
- collaborates with other institutions in broad-based research initiatives.

To Connect...
The Center encourages teachers to share ideas, test new strategies, and refine them. This requires a sense of connection and community. Numerous networking opportunities have been designed to build an active, world-wide network of PBL practitioners.
- promotes interactive dialogue around PBL issues that encourages creativity, provides support for innovation and resources for development, and builds learning communities.
- moderates an Internet listserve linking PBL partners and enabling dialogue about critical issues and concerns.
- designs and maintains an interactive World Wide Web site to provide another source of support for educators developing PBL materials.
- facilitates ASCD's (Association for Supervision and Curriculum Development) PBL Net, a member network.
- publishes The Problem Log newsletter.
- coordinates the Illinois Problem-Based Learning Network for the Illinois State Board of Education.
- develops and supports Teacher Associates and Fellows able to assist the Center in its activities.
- arranges PBL classroom observation opportunities.
- encourages PBL educators to submit their exemplary materials to expand the work of PBL.

The initiatives of the Center have been showcased in numerous publications including Educational Leadership, Teacher Magazine, Leadership News, The Executive Educator, IASCD Update and the Journal for the Education of the Gifted.

"We had one set of kids making recommendations about district policy to two school board members and a superintendent and a principal. And they walked away from that saying, 'We could say something. We had something to say and adults listened to us.'"

Teacher
PBL Partnership

Some Closing Thoughts...
Following the 1992 Wingspread Conference on Problem-Based Learning in which nationally prominent educators met to explore the nature and potential of the approach, one curriculum specialist said, "Problem-based learning is a strong paradigm... through which many topics and skills can be learned... Wonderful things can happen."

Problem-based learning programs in school systems throughout the country are demonstrating that when students and teachers are actively engaged in real-world problems, teaching and learning are transformed, and "wonderful things" will indeed happen. We invite you to join us in this promising and exciting venture.

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"I'm a straight A student, but it's mostly because I know how to find answers in the textbooks. I've never had to defend my own answers — I think this is the first time I've ever had to think! Cool..."

Student
Summer Sleuths
IPBLN