

The Definition of Problem-Based Learning

Problem-based learning (PBL) is focused, experiential learning (minds-on, hands-on) organized around the investigation and resolution of messy, real-world problems.... PBL curriculum provides authentic experiences that foster active learning, support knowledge construction, and naturally integrate school learning and real life; this curriculum approach also addresses state and national standards and integrates disciplines....

Students are engaged problem solvers, identifying the root problem and the conditions needed for a good solution, pursuing meaning and understanding, and becoming self-directed learners. Teachers are problem-solving colleagues who model interest and enthusiasm for learning and are also cognitive coaches who nurture an environment that supports open inquiry.

Source: From *Problems as Possibilities: Problem-Based Learning for K-16 Education*, 2nd Edition (pp. 15-16), by L. Torp & S. Sage, 2002, Alexandria, VA: Association of Supervision and Curriculum Development.

What is essential for problem-based learning?

Narrator: Creating the right design calls for finding the right ill-structured problem.

William Stepien: The ill-structured problem is what really makes a problem-based unit hum. An ill-structured problem is a problem that we really can't make much of when we first meet it. The issues are fuzzy and messy. The content is incomplete. We don't know all that we need to know about it when we first meet it.

How do teachers design a situation map?

Narrator: To determine a problem's suitability, a brainstorming or situation map is created. With the initial situation as a starting point, teachers identify the possible issues or concepts that could be encountered.

William Stepien: Once we're done with the brainstorming, we step back and ask ourselves, Is there good content? Is it fitting for our curriculum? Is it appropriate for our kids, and do we think we can design a good problem to take the kids to that content on the map?

What are the ways to assess students' progress?

William Stepien: In a PBL environment, we look at the building of a portfolio or a problem log, rather than waiting to the end of the problem, looking at a test result and then saying that unit didn't work. In PBL we're trying to collect information about the students' progress from observation or from written work or from projects. Frequently, we use it as feedback, then, to the students to help them make corrections as the problem is unfolding in the class.

How can teachers hook students on problem-based learning?

Narrator: Teachers use a variety of creative hooks to introduce a problem situation to the students—from actors, like Dr. Workman, who represent fictitious companies to real letters from community and business groups.

George Mocek, teacher: With the right design kids buy in; with the right hook kids buy in.

Teacher: "What do we know now, based upon what you've just received as your mission from Dr. Workman?"

Student 1: "We'll be in competition with other companies."

Student 2: "What we need to know is, we need to make up a new government and a new society, so that people will get along."

How do students' roles change in problem-based learning?

Narrator: For this space station unit, students take on the roles of engineers from aerospace corporations.

Nicholson: There is more than one view in any problem, and you want to put the students in a role where they realize or they would be able to get information from all the different points of view. You try to set the students up in a role that is very natural to the problem: Who would be making that final decision? And that is the role the students take on.

Do teachers feel that problem-based learning is a worthwhile endeavor?

Kinsman: The most important thing with problem-based learning is that we're trying to teach them how to think and how to go from point A to point B—and ultimately to point C or D—with their information. What we're looking for is to see that they have changed, that they have really worked through a thought process where they've come to the best conclusion, where they've brought in all the information available, where they've looked in as many places as possible, and [where] they've used the scientific method to determine what is the best course of action.

Problems as Possibilities: Problem-Based Learning for K-16 Education, 2nd Edition

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