



Problem-Based Learning Approach

Entirenet was asked to summarize its approach to the Problem-Based Learning (PBL) style. The following overview illustrates our approach to designing a custom plan that meets the needs of your organization and your customers.

Problem-based learning is an instructional strategy that involves simulating real work contexts and limits, not the tidy problems of textbooks. Used with inquiry learning methods, this is good technique for moving learners to higher levels of expertise, such as investigation, diagnosis, negotiation, and problem-solving in risky or uncertain contexts.

Some common applications include training project managers to handle more complex projects and in processes where frequent variations from the norm are likely to present themselves, such as escalation engineers, and contexts where the individual must take a high degree of initiative, such as sales engineers.

Approach and Methodology

Entirenet's approach employs the content analysis of Dr. Ruth C. Clark's familiar taxonomy for identifying information structures, sequencing, and performance levels. The specific strategies include the following:

- Leveraging the metacognitive resources of the students themselves through the use of inventories and assessments that are designed to determine work styles (DISC), multiple intelligences (MIDAS), and adaptive styles (Kolb).
- PBL techniques that provide problem-solving, reflective, and evaluative activities. These activities help students integrate practical information they have absorbed from a wide variety of sources, including previous training, research, and job experiences.

Methodology

1. Review the performance objectives provided.
2. Analyze and sequence the cognitive and affective requirements.
3. Identify clusters of behaviors and processes in the workplace that focus attention on the learning requirements.
4. Research and write compelling problem scenarios that require the use of these behaviors.
5. Organize the scenarios into a set of sequenced activities to be performed within and between classroom sessions.
6. Acquire and develop tools to help the students assess themselves and others.
7. Acquire and develop tools and practices that encourage effective team-building.
8. Provide a continuous series of evaluations—formal and informal, oral and written, self, peer, team, facilitator-to-student, student-to-facilitator—that promote the metacognitive (“self outside the self”) awareness necessary for managers in stressful, high-priority environments.

Some key factors in PBL methodology

Key factor 1: Problems must be problems!

- *Develop real problems:* In the real world, problems do not present themselves in tidy ways that make it easy to identify and resolve issues. Instead they present with insufficient information, with poor specifications, with conflicting goals and trade-offs where there is no single right answer. At lower levels of expertise, learners are provided with optimized problems that allow learners to grasp basic principles, and “worked examples” where they can anticipate solutions. In problem-based learning, teams are presented with “ill-structured” problems that require the learner to impose structure to solve the problem.
- *Develop the right attitude toward problems:* People like solving problems and puzzles—this activity lies at the heart of many kinds of entertainment! While on-the-job problems are not necessarily “fun,” problem-solving is an essential part of job satisfaction. Developing compelling, relevant, valid ill-structured problems that have a clear need to be solved is a key to success.
- *Maintain tight focus:* Problems must be designed to foster the acquisition of critical knowledge, problem-solving skills, self-directed learning skills, and team skills.
- *Develop thought-provoking questions:* Problems must trigger curiosity and a series of questions. Early exercises will include specific questions that help students understand the problem. As the course progresses, creating intriguing and useful questions becomes a key part of the team’s responsibility.

Key factor 2: Students must become aware of how they learn and how they evaluate themselves and others.

- *Self-assessment:* Early activities should foster an assessment of one’s own learning style, emotional intelligence, and intelligence types.
- *Continual evaluation:* We will provide on-going and varied forms of self, peer, and facilitator evaluations.

Key factor 3: Students must be directed and disciplined.

- *Provide a methodology for self-direction:* By following the classic PBL five process—ideas, facts, learning plan, action plan, and evaluation—students will learn a self-directed methodology for tackling complex problems.
- *Goal setting:* An important part of the evaluations mentioned above will focus on creating and implementing a personalized plan that reflects each student’s own learning style and intelligence.

Key factor 4: Students must solve problems in a variety of modalities.

- *Vary outputs:* Individuals and groups will have to engage a broad variety of activities that range from cognitive exercises such as brainstorming and discussion to physical events such as demos and role-plays.
- *Vary inputs:* Input may include presentations, articles, and brief lectures—requiring listening, reading, and visualizing. Output will range from writing to speaking to performing.

Key factor 5: Mastery takes practice. Practice takes time.

- *Set a workable rhythm:* PBL techniques create a learning rhythm that differs from that of lecture-based classrooms. Whenever possible, we prefer to “pulse” classes—that is, to intersperse intensive workshop days with out-of-class work periods. These pulse periods might range from several days to several weeks, depending on the content and on the constraints of the target audience.

Key Factor 6: Appropriate assessment.

- *Grading:* Formal assessment is determined by client policies, but Entirenet prefers pass-fail assessments for PBL classes. The evaluation system has a profound impact in adult learning situations, particularly in PBL environments.
- *Facilitator assessment:* This may include a mid-term and final evaluation of the student's progress.
- *Rewards:* Students should be recognized for completing a course that is more demanding and time-consuming than conventional class.