

Teaching Physics Using Problem Based Learning

Web site n/a

Description Problem-based learning is a pedagogical strategy for posing significant, context specific, real world situations, and providing resources, guidance, and instruction to students as they develop content knowledge and problem-solving skills. The students collaborate to study the issues of a problem as they strive to create viable solutions.

PBL is a method of teaching, that challenges students to learn by working co-operatively in groups to seek solutions to real world problems. These problems are used to engage students curiosity and initiate learning the subject matter. PBL prepares students to think critically and analytically, and to find and use appropriate learning resources. PBL is an active, discovery-based approach to learning, in which students work together on cases and problems to learn the content of a course.

For the last year I have been using PBL to teach mechanics to first year engineering and physics students. However the effectiveness of PBL depends greatly on the available resources, the enthusiasm of the tutor and the teaching philosophy of the course, i.e. whether it is content coverage that is important or the students learning experience.

The technique is proving successful at not only increasing understanding but also developing the skills need to learn and communication skills.

Type of activity or material Teaching physics to a class in a group learning environment

Content Mechanics

Skills developed Group learning, communication, problem solving, information retrieval

Intended academic level I use it at first and second year levels, but PBL has been used at both undergraduate and postgraduate levels

Maximum number of students supported 16

Duration (student hours, classroom hours) 2 hours a week for 28 weeks

Factors which ensure activity is effective Classroom suited for a number of small group (3-6 people) activities, high student attendance and participation, resources – books, internet , journals etc., tutor experienced in pbl, effective problems

Materials available, in what form and from where Information on PBL available in the literature and from many internet sites, including the [University of Delaware homepage](#) (under construction)

Further comments None

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