STEM PBL Project Overview

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NEBHE

SustaiNext Summit
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NEBHE

- Represents 260 colleges in New England
- Mission – to promote greater educational opportunities and services for residents of New England
- Goals are to promote
  - Education policies of regional significance
  - Efficient use and sharing of educational resources
  - Collaboration between higher education and the economic well-being of New England

Curriculum & Professional Development

- FOTEP 1995 – 1998
- PHOTON 2000 – 2003
- PHOTON2 2003 – 2006
- PHOTON PBL 2006 – 2009
- STEM PBL 2009 - 2012

STEM Problem Based Learning (PBL) Goal I - Recruit STEM Instructors

- Select 25 high school and college instructors across the U.S.
- Additional funding from CT RCNGM for 6 more.

Alliance Model

- Alliance is a collaboration between secondary and postsecondary instructors
  - Geographically proximate
  - Can lead to educational pathway for students
  - Builds students' higher educational aspirations
  - Opportunities for high school and college students to work together
  - Provides networking and professional support for educators

STEM PBL
Goal II - Develop PBL Challenges

Six "industry-based" multimedia Challenges

- Collaboration with industry
- Authentic "real-world" problems
- Uses Problem Solving Cycle for Critical Thinking
  - Problem Analysis
  - Independent Research
  - Brainstorming
  - Testing Solutions
- Web-based – www.pblprojects.org

STEM PBL
Goal II - Implement Challenges

Three levels of presentation

Level I — Structured – Instructor led

Level 2 — Guided – Instructor guided

Level 3 — Open-ended – Instructor as consultant

STEM PBL
Goal II - Develop Challenges

- FloDesign – Wind Power
- RSL Fiber Systems - Lighting
- Cape Cod Cranberry Assoc. – Sustainable Agriculture
- TTF Watershed Partnership – Stormwater
- City of Tucson – Solar Power
- Johnson & Johnson – Green Chemistry
- www.pblprojects.org

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Goal III Professional Development

- Summer 2010 workshop at Boston University Photonics Center
- Develop and deliver 15-week distance-learning course for STEM educators
- Field-test Challenges in participants' classrooms

STEM PBL
Goal IV Pre-service PBL Course

- Adapt pre-service Technology Education course at Central Connecticut State University to include PBL

STEM PBL
Goal V Research

- Conduct research on the efficacy of PBL in STEM education

STEM PBL

PROBLEM BASED LEARNING PROJECTS
Initiatives of the New England Board of Higher Education Organization

Problem Based Learning (PBL) is an educational method that engages students in inquiry-based "real world" problem solving. It has been used extensively in medical education since the early 1970s. While already adopted in other fields including business, law and education, it is only beginning to emerge in engineering and technology education as an alternative to the traditional lecture-based approach. The New England Board of Higher Education has been developing PBL Challenges for high school and college STEM classrooms since 2006.

For further information contact Fenna Hanes.

PHOTON PBL CHALLENGES	PHOTON PBL An optics/photonics curriculum and professional development project funded by the Advanced Technology Education program of the National Science Foundation
STEM PBL CHALLENGES	STEM PBL Curriculum and professional development in PBL for sustainable technology, funded by the Advanced Technology Education program of the National Science Foundation
PBL HOW-TO VIDEO	Video illustrating the use of the PBL Challenges in the classroom
IMPLEMENTATION GUIDE	Download a complete guide to using the challenges in a variety of classroom settings
PHOTON PROJECTS	Web site of the PHOTON Projects including PHOTON PBL
STEM PBL	Web site of STEM PBL, Problem Based Learning for Sustainable Technologies

PROBLEM BASED LEARNING

SCIENCE TECHNOLOGY ENGINEERING MATH

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Thank You

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