Fall 2020 High-Quality STEM/PBL Training

The STEM Education Center at WPI develops and conducts professional development workshops for PK-12 educators, in person and online.

All programs offered by the Center are aligned with the Next Generation Science Standards (NGSS) or Massachusetts STE & math frameworks. The programs are designed as hands-on experiences and follow cooperative learning pedagogy in both in-person and online formats.

The Fall 2020 High-Quality STEM/PBL Training is open to school teams interested in expanding their knowledge and practice related to high-quality STEM/PBL experience for their students. The training will be conducted fully online, and is limited to 20 participants.

Goals for the training

Following all sessions, participating educators will -

1. Develop a definition of STEM education;
2. Increase their understanding of the components of high-quality STEM/PBL lessons;
3. Increase their knowledge the engineering design process (EDP) and their comfort level in embedding problem solving activities within their subject;
4. Increase their understanding of the science and engineering practices;
5. Explore and analyze a variety of technology tools that could be embedded in their lessons;
6. Develop a draft of a shared, standards-aligned STEM/PBL lesson.

Training Dates

This training series is offered as 6 half-day online sessions during fall 2020:

September 22, 23, 24 & October 5, 6, 7.

Session I: Introduction to STEM Education

- Opening & introductions
- Defining STEM Education
- Short design challenge
- Framework for quality STEM education
- Self-assessment on elements of quality

Session II: The Engineering Design Process

- Opening design challenge
- The EDP as problem solving approach/mindset for all subjects
- The steps of the EDP
- Creating classroom EDP visuals
- Following the EDP to solve problems in books/texts

Session III: Standards, Practices & Learning Targets

- Opening activity
- Unpacking 3-dimensional teaching
- Unpacking the 8 practices
- Comparing STE practices with math & ELA (Venn diagram)
- Creating learning targets for identified standards (knowledge, skill, and product)

Session IV: From Learning Targets to Real World (integrated) Problems

- Learning targets review and revision
- Adding a real-world connection
- Review resources for STEM/PBL challenge
- Create a draft rubric based on learning targets

Session V: Technology Integration

- Opening activity
- What is technology?
- Authentic incorporation of technology in STEM
- Review of different technology tools
- Identifying technology tools for STEM/PBL challenge

Session VI: Draft STEM/PBL challenge presentation

- Opening activity
- STEM resources
- Group work time
- Teams' presentations of STEM/PBL challenge + feedback
- STEM/PBL challenge revision based on feedback
- Closing