Problem-Based Learning

Problem-based learning is an experiential learning approach organized around the investigation and resolution of current and real problems. The authenticity that accompanies problem-based learning helps learners relate to the task and become more invested in finding a solution. As a result, the process facilitates deeper and longer lasting levels of understanding.

At the Akron STEM School, problem-based learning is a foundation in the curriculum. To ensure its effectiveness for both learners and learning coaches, each PBL activity meets several standards.

- Problem-based learning activities integrate several content areas.
- Learners work with community experts to solve problems.
- The materials covered include the Ohio Content Standards.
- Learning coaches meet with the program specialist to plan and monitor status of projects.
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A hands-on approach

Problem-based learning often requires that learners get their hands dirty. After an initial coordinated effort and research by the learning coaches, the Akron STEM fifth grade class received an invitation to work directly on a regional wetland restoration project.

“Secret mission” videos and clues from Jessica Hopkins, biologist at the University of Akron, and Katrina Halasa, science learning specialist for the Akron Public Schools, initiated the activity that would take place in the Panzner wetlands in Copley Township. With the assignment in hand, the learners quickly defined the logistics of their visit, including identifying individuals, such as one learner, good with definitions, who became the vocabulary researcher.

On-location research consisted of scientific observation and measurement – such as collecting samples and recording water and soil temperature and acidity – as well as using art skills to sketch particular plants and discovering the history of the land during a talk with the property owners about the arrowheads, clam shells and other artifacts that had been found.

By the project conclusion and after several rounds of peer edits, the fifth graders had written and illustrated a kid-friendly field guide of the wetland that complemented a fully functioning and interactive website, designed and edited by the learners. And to justify the activity with required standards, the learners mastered the content in assessment methods.

Improving quality of life and learning

Problem-based learning is about understanding the problem and inventing solutions. At the Akron STEM School one problem was clear: the library, located adjacent to a public space, was being invaded by exterior noise. The learners had four weeks to invent a solution and design a proposal.

Just like any public construction or renovation project, the proposal had to be not only effective but also aesthetically pleasing and within budget constraints. One solution – fish aquariums that ran the length of the windows where the noise was entering – was presented to the learning coaches, parents and Jim West, inventor of the electric microphone.