

Solving a Real-World Problem in Science Class—how students can use a laptop over time:

*Students are given a targeted research task in the form of a “real-world” problem that requires a variety of interdisciplinary skills to solve successfully. They are charged with acting as the administrators of government (EPA)-funded grants, and they must determine how to prioritize grant money intended to clean up the environment. They are given a host of possibilities—from potential enhancements to air quality, such as emissions reductions equipment on cars and industrial air “scrubbers,” to water quality initiatives, such as enhanced water treatment and litter removal strategies.*

To learn more about how all of these factors affect the environment so that they can make an informed set of grant-prioritization decisions, students could read about each option in a textbook and answer some questions about each. OR they could take control of their learning, using their laptops to:

- Look online at the local DEP (Department of Environmental Protection) site to determine what measures are currently being taken in their area and what their effects are on the environment
- Consult available data online through additional sources such as NOAA (the National Oceanographic and Atmospheric Administration) and USGS (the United States Geological Survey)
- Use Excel to create relevant data tables and share those tables using an online data sharing site
- Comment on and ask questions about each other’s graphs through the comment option in the online data sharing site
- Conduct a collaborative background literature search for research that indicates the effectiveness of different environmental controls by tapping into the MKA library databases and online science journals
- Record individual research notes using NoodleBib, an online tool for students to create virtual notecards that they can tag for future searches, cluster and use for synthesizing ideas. They can electronically “share” these notecards with their teacher for feedback on their evolving thinking, which is apparent in the “My Ideas” sections on the cards.
- Post their most recent thinking in a forum on Moodle, MKA’s online course management system, to share suggestions for how the synthesized data can be interpreted to yield best practice priorities and to respond to the teacher’s comments on their thinking. Teachers can also check the participation record in Moodle to inform their feedback on students’ collaboration/communication skills.
- Using ePals, collaborate with a class somewhere on the other side of the globe that is facing a similar problem, and see if their class has similar priorities. If not, why not?
- Collaborate on a Moodle wiki to write the text for a short public service announcement designed to convince others of an important environmental clean-up priority based on the available research and data. The teacher can also provide feedback to guide revisions in the wiki.
- Create a short, convincing, multimedia public service announcement using the text generated on the wiki to create an iMovie or a flyer in iWork Pages to be posted online.
- Use Word to track changes as they write individual policy statements to guide grant funding decisions in this area. The teacher’s feedback in “track changes” also guides the revision process.
- Publish their individual policy statements to the class Moodle site for peer review.
- Reflect on learning by using a Moodle journal throughout the unit of study to track progress in understanding concepts, skill development and effectiveness of their learning strategies. The teacher can provide individual feedback in the online journal to help the student decide how best to adjust learning strategies.

