

Spring 2011

TTF Watershed Partnership
Implementation Stories from STEM PBL Field Testing Teachers

Institution/Grade level: College sophomores in Massachusetts

Course: Biology

Class size/group size: 20 students

Challenge level: Structured

Details of Implementation:

This was my first time implementing a STEM PBL Challenge, which I implemented over one 4-hour time slot. Students performed their research in the library and used multiple study rooms to break out into smaller group discussions. I gave the students a checklist of Challenge-related concepts with which they were to check off “Know/Don’t Know/Think I Know” prior to watching the Introduction, Organizational Overview and Problem Statement videos.

I showed the videos mentioned above and established the teams. I gave the students their Whiteboards and study rooms to work in, then circulated to ask and answer questions, though the students actually needed very little guidance/prompting from me.

We reconvened for the Discussion video after which I sent the students back to revise their work. Students were asked to use a different colored pen to revise their Whiteboards post Discussion. We ended the day with the students’ PowerPoint presentations.

During the next class I asked the students to go through the “Know/Don’t Know/Think I Know” checklist a second time once they completed the Challenge so they could self-evaluate what they learned. Students were also asked to create a concept link, rather than an entire concept map, during the first class (there was not enough time to complete an entire concept map). I asked them to revisit this concept link in the second class, so they could see what they learned. I also assigned an individual project report, which was due a few days later.

Overall, the teams worked well. I think the time crunch helped to keep students focused. Some students clearly did better quality research than others, but they all contributed. I allowed the students to use laptops with wireless Internet, the library facilities (though few used these), and reference librarians (no one accessed this service).

Assessment:

I graded the students’ individual project reports, but did not assess team participation. I plan to work team assessment into the next Challenge.

PBL Projects

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Instructor Comments:

My reaction was that students seemed to like problem-based learning! They were engaged in solving the problem, and most pushed themselves and their teammates to better understand the issues. I was impressed with the solutions the student teams developed. I taught these students zero environmental science. In fact, we had only met once when I introduced this Challenge.

Student Comments:

“Simply being able to come up with solutions and understanding how they work has definitely increased my confidence.”

“This has made me use my science skills to get at a conclusion and as a result has made me more confident in myself.”

“The experiment didn’t feel very scientific. Mostly, I looked stuff up on Google and discussed it, which I do a lot of anyway.”

“Seeing the research side of science helped me to remember that science is not just results. There is a lot of work put in before results are obtained.”