2009

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TEACHING ARCHAEOLOGICAL PRAGMATISM THROUGH PROBLEM-BASED LEARNING

Lynne A. Kvapil

Abstract: This article outlines the application of problem-based learning, or PBL, to a freshman-level course in Aegean prehistory. The project described demonstrates how PBL can be used to tap into college-level students' natural curiosity about the ancient world while training them to use practical, broadly applicable writing and research skills.

When I was offered a temporary adjunct teaching position at a small liberal arts school, I jumped at the chance to design a course in my specialty from scratch. My assignment for the 4-week term was to prepare a "sexy" (i.e. student-appealing) class on Aegean prehistory as a counterpart to a course on Homer and the Bronze Age offered earlier. With an alluring title and a compelling description for the catalogue, the only challenge that remained was to create a class on prehistoric archaeology that would appeal to a largely freshman audience of non-Classics majors. At the time, I was also participating in a program meant to groom young academics to be thoughtful, scholarly instructors, in which we were introduced to a teaching strategy called problem-based learning, or PBL. PBL is a pedagogical methodology in which students focus on solving problems or completing problem-based projects that simulate real-world situations, and are asked to seek solutions to problems that replicate real-world issues in a process that transforms students into active learners, and instructors into learned guides.

PBL as an educational strategy originated at medical schools in Canada and the United States as a way to train young physicians to use knowledge acquired through self-motivated study to solve patient problems.[1] Since its development, the use of PBL has branched out into other areas of the sciences, as well as into law, social work and administrative training, but has been slow to permeate the humanities.[2] Positive results from the use of PBL strategies in the sciences suggests that a problem-centered approach might be an exciting way to show how Classics courses can teach practical skills valuable to high school and college students preparing for a broad range of professions. It is with this in mind that I present the project from my 4-week course, which was conceived during a brainstorming session that explored ways PBL might be applicable to any field of studies, even Aegean prehistory.

There are myriad benefits for students participating in PBL oriented courses. Because the problems posed are supposed to be unstructured and messy, with no single correct approach or solution, a wide variety of skills must be applied to the problem-solving process. Newly acquired knowledge that is actively used is more likely to be stored in students' long-term memory. In a classroom environment where inquiry and risk-taking are promoted,[3] students seek solutions by utilizing known resources and become naturally proactive in acquiring new information. Instructors facilitate the process by providing wisdom and experience. Memorization by rote is deemphasized. The center of learning thus shifts away from the lectern, and the classroom becomes a student-centered environment. Proponents of the method note that students involved in classes employing problem-stimulated strategies are more likely to participate actively, interact more with their peers and use higher-level thinking skills than students in lecture-based courses.

Entire classes are often constructed around the PBL strategy, but I chose to start small, by exchanging the standard final exam and/or final paper for a PBL project to be completed in stages over the course of the four weeks. My aim was to emphasize the pragmatics of archaeology, the research and planning that happen before and after work in the field. The first step was to create a context simulating this practical side of archaeology, in which the students would assume the roles of scholars. The two primary skills I wanted my students to exercise were research and persuasive writing, skills that are marketable to a number of professions. The idea developed into a grant-writing project requiring teams of students to apply for funding to study prehistoric material culture in Greece. Information about prehistoric Aegean cultures disseminated though lectures and other classroom activities could be constructively applied to their proposals and serve as a starting point for deeper research. The team aspect would mimic the collaborative nature of archaeological projects and foster teamwork skills.

There are some drawbacks to the implementation of PBL projects. One is the amount of preparation required to carry them out successfully. In this case, scenarios had to be devised and portfolios of material assembled and tailored to each group. Precise guidelines for the completion of the projects and rubrics for assessment also had to be constructed prior to the beginning of the class. This was time consuming, but preparing these materials in advance freed me up during the term to communicate better with students—and even to do my own research. The advance construction of a rigid project framework including precise guidelines and staggered deadlines gave students the chance to practice time management and the efficient use of labor and materials. Trading broad familiarity with a subject for an in-depth understanding of a specific topic can also be seen as a drawback. On the other hand, one could argue that the widely applicable research, reasoning and writing skills exercised in completing the assignment are a fair exchange for blanket knowledge that might not be applicable beyond one particular course.

Changing from a disseminator of knowledge to a facilitator for thinking and learning was a challenging adjustment for me. Much of this change means providing a solid structure in which students can work through the problem-solving process. As a guide to the process, an instructor must set time constraints on group activities that determine the pace of the class, and keep students on task, forcing them to prioritize goals and making them accountable for completing them. As a knowledgeable tutor, the instructor can use personal experience to field inquiries and offer advice. As a facilitator, he or she must ensure that groups operate smoothly, by assisting them in setting appropriate, manageable goals; offering support and encouragement; fostering productive relationships within groups; and maintaining a non-threatening environment.4

In the months before the class began, I devised three hypothetical scenarios, each addressing a real-world archaeological problem: the publication of material before continued excavation; the necessity of studying looted sites; and the justification of excavation based on survey data. The objective of the groups assigned to the first scenario was to apply for funding to study unpublished material from a Neolithic site in northern Greece. The second scenario required groups to apply for a grant to research looted Mycenaean chamber tombs, while the third scenario called for them to request permission to excavate sites discovered during a surface survey on Crete. The students' aim was to construct a research design that would persuade a committee to fund or approve projects that showed a thorough and well-presented knowledge of

the material and demonstrated how the research would change the general understanding of Aegean prehistory.

Three groups of three to four students apiece were assigned to the scenarios, each of which had three required components. The first was the written grant proposal or request to excavate, including a bibliography of all sources consulted. Then, a budget outlining the group's estimated expenses was necessary; this served to encourage students to consider financial and other practicalities of carrying out the proposed research. The final part of the project was an oral presentation, during which each group explained its objects, sites, research proposal and budget to the rest of the class. In addition, a portfolio of background information was distributed to each group. Below are the description and background particulars from the first scenario:

Description

Dr. X has been excavating the Neolithic site of Meze Magoula in Northern Greece for the past several years with a permit from the Greek government. However, a law passed in November 2007 by the Greek Ministry of Culture requires that, in order for her permit to be renewed, Dr. X must fully publish all her excavated material. Dr. X has also learned that the Institute of Aegean Prehistory, her primary source of funding, will not renew her excavation funding if she loses her permit. While she has published preliminary excavation reports for every dig season, she has not had time to study and publish several bodies of material that require special attention. You have worked with Dr. X at Meze Magoula for the past two summers, and she has asked you to help her publish a burial found in one of the rooms on the site. But because her funding has been cut until her publications are up-to-date, your group must apply for outside grants to study the material in Greece. Your goal is to write a competitive grant application that outlines your unique approach to this material and places it in the perspective of the rest of the site and the Neolithic period.

Background

Meze Magoula is a mound site located in the Thessalian Plain in Northeastern Greece. According to the stratigraphy and the finds, the site was occupied from the Early Neolithic to the Final Neolithic period, after which it was abandoned. When the mound was excavated, archaeologists uncovered a village made of close-packed rectangular houses and open courtyards (lower case "c" on the plan) surrounded by a wide circuit wall. The housewalls and the circuit wall were made of mud brick. The mound was formed as the inhabitants continually built new mudbrick houses over the ruins of older ones. The buildings that were best preserved, those that are shown in the plan, are from the Late Neolithic period.

During the excavation of Room A (see site plan), a human burial was discovered. The individuals had been contracted and deposited in a storage pit beneath the floor of the room. On the floor above the pit burial were scattered seeds, a cup and a sherd. No grave goods were included in the burial. So far, no work beyond excavation has been done on this material. It is still unknown, for example, how many individuals were buried, how they died or how they lived. Neither the pottery nor the seeds have been analyzed.

Fellowship

The Northern Greece Fellowship in Neolithic Studies is a grant of $5000 toward the study and publication of Neolithic material from Northern Greece.

The scenarios were wholly hypothetical. Meze Magoula is a made-up site, and the Greek government has not passed a law regarding the publication of excavation materials. Still, specificity, even in invented details, is a key element for simulating reality. The photographs of objects from the supposed site that were incorporated into the portfolios were specific to the period covered in the scenario, but represented a pastiche of previously published material from a number of sites. A site plan and mock notebook pages recording the discovery of the objects and preliminary observations were also included. The finds were intended to be reminiscent of

material culture made familiar to students through textbook readings, classroom lectures and discussions, but were not meant to be immediately identifiable. I was careful to choose objects from a variety of places so that students would be unlikely to discover the original publications and develop a biased view of the finds. In the end, the scenario was detailed enough to convince them to play along.

The portfolios were rich in clues intended to stimulate the investigations and place students in the role of real archaeologists who must justify their project to a mixed audience of specialists and nonspecialists. Situations in which scholars are asked to study material and provide their own funding are common, and researchers working on the same project must sometimes even compete for support. The problem for each group was thus not only to make a convincing argument that their research was important enough to be funded, but to persuade the committee that they were the only group that deserved the fellowship.

During the first meeting, students were divided into groups based on criteria such as major and levels of experience. The groups were then assigned their scenarios by lot. After each group was given its portfolio of material, the students' first task was to ask two questions. What did they know, and what did they need to learn? These questions helped provide a framework for their proposals, by initiating a process of inquiry. The process also gave them a chance to survey the pool of knowledge within the group.5 This exercise should ideally be repeated several times over the course of the project, so that groups can reassess their data and refocus their goals as they learn more about the subject matter.

Facilitating learning, as opposed to relying solely on traditional instruction, was challenging, considering the short time frame of the course and the subject matter, which was entirely unfamiliar to the students. During one in-class activity, each group was required to write an exhaustive description of one assigned object, while keeping a list of missing data that could only be acquired by studying the piece first-hand. The follow-up exercise was to propose possible interpretations based on the descriptions paired with classroom acquired knowledge of prehistoric cultures and the basics of archaeological theory. This was an ideal arena to practice guiding students toward constructive means of approaching their materials. One group, for example, initially interpreted an anthropomorphic ceramic figurine with preserved painted lines as primarily the product of religious practices. The figure was seated and held a smaller, formless figure in its arms. Rather than writing an objective description of what they saw, the group described the object as a female figurine holding a child and as a votive offering to a mother goddess. The painted decoration was interpreted as the outlines of female genitalia, emphasizing the figurine's fertility. Assumptions made without exploring alternative options led to overly-broad cultural generalizations. It was hard to watch the group head down this path, and challenging to find a way to steer them away from a simplistic answer without telling them outright to consider multiple interpretations. I questioned them about their choices. How did they know the figurine was a woman? What about it was religious? If the figurine represented a male, how might that change their interpretation? The leading questions compelled the students to explain and reexamine the reasons for their choices, but did not necessarily change their assessment—which turned out to be a fatal flaw in their final proposal. The situation emphasized that problem-solving exercises must be balanced with lectures and readings rich in background

information, especially in the case of an introductory class, as opposed to a graduate seminar in which advance knowledge of the topic is required.

The final products of the project were assessed by both the students and myself. I wrote rubrics for evaluating the written proposals (which I assessed) and the oral presentations (which the students assessed).6 I gave the students the rubrics for the written proposals and oral presentations in advance, so that the criteria being evaluated would be explicit, and so that they could fine-tune their proposals and presentations accordingly. Peer assessment and competition increased their motivation to produce high-quality products.

The completed final projects showcased the creativity of the class in their use of resources and range of inquiry. Because few institutions are equipped to support in-depth research projects on Aegean prehistory, the students mined the library for useful resources, became familiar with sites such as JSTOR and discovered other useful online resources. The questions they addressed ranged from problems of chronology, to daily diet, to craft and agricultural production. Budgets set aside funds for activities such as radiocarbon dating of seeds, calipers for measuring bones and sherds, and even hiring specialists. The groups competing for excavation funds budgeted for equipment including picks, trowels and shovels, as well as hotel rooms and meals for a team of researchers and diggers. Some groups cut costs by choosing to camp, setting aside money for tents and sleeping bags instead of booking hotels. Each item on the budget was carefully researched so that the most economical choices could be made.

On the days set aside for the presentations, students who were not presenting assumed the role of the committee and were asked to decide which projects deserved to be funded. Only one project per scenario could be chosen. The students took their job seriously, rating each group according to criteria such as organization, knowledge, division of labor and professionalism. After all the presentations for each scenario were complete, the students who had presented left the room, while the rest of the class debated which group should be awarded the grant. I did not actively participate in these surprisingly intense discussions, but instead guided the discussion and helped organize thoughts and opinions so that a fair and timely decision could be reached.

Facilitating these discussions was one of the most rewarding experiences of the class. The students meticulously analyzed each aspect of the proposals to ensure feasibility, asking for clarification of details from the written proposals and closely examining budgets. A lengthy argument arose when students debated whether radiocarbon dating proposed by one group was applicable to the material to be tested. In this case, the possible misapplication of scientific testing disqualified the group from receiving funding, despite their otherwise strong and well-presented argument. Although I was forced to witness an occasional misstep, it was gratifying to watch the students apply their newly acquired knowledge of prehistoric cultures, archaeological procedures and grant-writing skills, all learned during the course of their own research, to assessing their peers.

The hard work the students displayed in completing the project and the generally positive assessment of their peers assured me that the experiment in PBL had been successful. Still, it was by no means perfect. Upon reflection, I realized that pre-assigning permanent roles such as leader, discussion facilitator and liaison for sharing information and resources with other groups

in the same scenarios would have given the groups a sturdier structure. Asking students to create and assign their own roles within the group was overly difficult for those new to intensive group work. If roles are preassigned, the groups should be responsible for writing job descriptions, in order to ensure that the responsibilities for each position are realistic. A revised version of the project would also include more opportunities for reflexive assessment. Regular debriefing sessions provide a forum for instructors to solicit immediate, candid critiques of their performance and the project's procedure, while giving students the opportunity to evaluate their own participation and discuss suggestions for changes or improvements to the class format.

I strongly recommend the PBL method to instructors of classical languages and classical civilizations.7 My experience shows that the method can be applied to introductory or advanced classes at various levels of intensity. PBL pushes students to apply knowledge and skills to realistic problems, and challenges instructors to go beyond their comfort zone, encouraging them to transform themselves from disseminators of knowledge into guides in the learning process. The result is to make the experience of the ancient world more meaningful and relevant to students and teachers in the modern world.

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