

EKU SEEing Science in Appalachia

Serving, Engaging, Exploring

Martin Brock and Bill Staddon
Eastern Kentucky University

Overview: All Honors Program non-science majors are required to take HON 216, SEEing Science in Appalachia. This is a 6-credit-hour course embracing both the physical and biological sciences and is team-taught with a limited enrollment. We have taught this now for 6 semesters. It is a combination of place-based science instruction with an inquiry pedagogy and a set of service-learning components. We use local resources and questions to drive science instruction. There are three versions of this course: The Bee Sustainability Project, the Tates Creek Watershed Project, and the Mystery of Moore's Branch. In each case, effort is made to tie together regional dependence on coal, community support for environmental issues, and our gen ed goal of developing critical thinking skills in a science-teaching context.

Impact: Our classes have directly impacted 120 undergraduates, and we have engaged over 500 middle school kids over the past 3 years. In focus-group settings following our courses, our external evaluator sat down with three groups: Our students, sets of middle school kids, and their middle school teachers. Uniformly, all of these groups had strongly positive perspectives on the interactions between the kids and our students. For our own students, there were complaints about the 6-credit-hour and lack of clarity about how various components of the course came together. On the other hand, several of our non-science majors continued with science in choosing science-related undergraduate independent study projects, and see ways that science-thinking can be incorporated into their divergent career paths.



**Danger!
Children
doing science!**



Coal Country BeeWorks, where students initially engaged honeybees, is an ongoing research project in how reclamation of defunct open-pit coal mine land can be achieved through apiforestation. It also seeks to engage area women in ways to improve their economic status using local and traditional resources.

Engagement: In the bee class, the knowledge many students have about declining bee populations is used to ask the question of what factors may be responsible. Generally, students come into the course knowing that bee loss is a critical issue, but also with the understanding that this is caused by pesticide use. The streambed courses have two foci of engagement. In Kentucky, political debate is focused on coal as a driver of local economics. In addition, our largely rural students have familiarity with streambeds, but more to the point is the intersection of the two issues, that the coal industry has impacted negatively on both stream and health quality and positively on employment, and that our students are very much aware of these issues.

Exploration: Students spend time in the field (sites within a few miles of the classroom, on public land) initially observing pollinators (not just honey bees) in the bee course and streambed components (geology, hydrology, and biota) in the watershed courses, then work in groups to identify a research project either in the field or in the lab. Lab work may involve collecting field samples for further processing. In addition, students read both academic and non-academic papers related to the course objectives. In all our courses, students are confronted with multifactorial explanations and are encouraged to sort through them to develop their own ideas about intersections between their social worlds and the natural world.

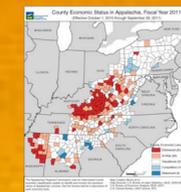
Service: Our students work with local middle school kids to design and perform research related to the projects described to the left. They spend about 6-12 hours during the semester working in small groups of about 8 middle school kids per college student, and in some cases they work with two smaller groups. The end product is a scientific poster session at the end of the term, often held in conjunction with our undergraduate/graduate poster symposium.

A second service project has been the utilization of video production technology to develop "public service announcements" related to the topics of the course. Student technological savvy and creativity have been impressive, and we are working with state educational television both to improve our capabilities and eventually to run the students' work on air.



EKU service area

EKU is here



EKU service area is rural, economically distressed, and contains Promise Zone counties.