The Environmental Health program has integrated the QEP and our own EHAC accreditation requirements into our curriculum. The strength of the ENVH program student learning outcomes is the vast amount of engaged and experiential learning that comprises the majority of our upper level courses.

All outcomes were measured in several of our courses through student projects in the community. For example, in ENVH 310/311, students were required to assess the health of surface water using physical, chemical and biological parameters. This requires them to assess data they collected from the real world and compare it to scholarly sources (integrate complex information) and synthesize the information to create recommendations for improvement (solves complex problems). From their analysis, they are required to create a technical lab report and presentation (artifacts/capture points) to the local community that is affected by the surface water (communicate effectively and responsibly) A rubric is used to evaluate the report and presentation. Since the project takes place in the community, they are forced to consider local customs/regulations that may impact water quality and discover how to best serve that community through their report and recommendations (practice civic engagement). In addition, students work in teams on this project – this requires them to work collaboratively, identify their own and others strengths and weaknesses, and become adaptable as project obstacles emerge. Students also complete peer evaluations to assess their ability to work on a team. Last, this experience helps them discover if they would like to pursue an internship or permanent employment in water quality (clarify and act on purpose and values).

Based on the technical lab report and oral presentations from the Fall 2011 class, students were successful in integrating these experiences. Two areas of improvement were identified: ask students if/how the QEP learning objectives were met from their prospective and how the process could be improved, and to find opportunities to collaborate with local agencies to enhance civic engagement.

Other examples of QEP implementation revolved around our student project of monitoring for radon around campus and taking a field trip to Hobcaw Barony to enhance the learning experience in Medical Entomology. Posters are included on the next page and provide quotes from students about their learning experiences and their activities.
Radon Monitoring on the Western Carolina University Campus
An Environmental Health (ENVH) Example of the QEP

Introduction
- Radon is the second leading cause of lung cancer in the U.S. (EPA, 2012)
- The geology of western NC puts residents at increased risk from radon exposure
- EPA (2012) identifies Jackson county as a Zone 2 area, moderate potential for elevated indoor radon concentrations
- WCU does not have any previous radon monitoring data

Study Methodology
The ENVH program and student chapter of the American Society of Safety Engineers identified a student leadership team comprised of James Bailey, Kristina Barlett, Dana Chandelier, Courtney Hudson, Melissa Hoeger, Lailani Rachott, Daniel Rakitch, and Josh Turner to ensure the following tasks were completed by themselves and other student volunteers:

- Lailani Rachott, Dr. Tracy Zoreick and Dana Chandelier check radon monitor in family member Philip Hoeger’s (far)

Tasks completed by students:
- Partner with NC DHHS Catherine Postford
- Offer a public lecture on radon hazards, monitoring and mitigation
- Partner with Jan McMy, WCU Office of Safety and Risk Management
- Develop sampling strategy in accordance with EPA Radon Monitoring Protocol
- Monitor about 21 buildings on campus for 7 days
- Write report to be reviewed by NC DHHS and WCU Office of Safety and Risk Management

References

Student Thoughts on QEP Outcomes
Integrate information:
The student volunteers came from a variety of backgrounds and each brought something new and useful to the table when it came to data collection and planning.

Solve complex problems:
We had to rely on the implications of the project, because our recommendations affect how WCU handles the potential radon threat. Recommendations must be useful and realistic, because while the optimal solution might be the safest, cost and time are also important factors.

Communicate effectively and responsibly:
The project required we seek information from credible sources to ensure that we were educated. We also needed to be able to communicate information to the general public, as well as write a technical, professional report.

Each audience required consideration of our communication style.

Practice civic engagement:
Bringing an expert speaker to a public meeting and explaining our radon project gave us a sense of being part of the community by acting as professionals to identify common health threats.

Clarity and act on purpose and values:
We were forced to make our own decisions and rely less on others. The meetings were driven by student leadership, with input from the advisors. By taking the reins of the project in our own hands, we were able to make our own mistakes and learn from them, and use the knowledge gained over the course of the project to apply in our careers.

Between the Waters - Discovery at Hobcaw Barony

In October 2011, fifteen undergraduate students from the WCU Environmental Health Sciences Program spent three days at the historic Hobcaw Barony (Georgetown, SC) collecting and identifying mosquitoes. During the course of the trip, students were able to sample 21 different mosquito species using adult and larval collection techniques. This engagement activity helped students gain information from a variety of contexts, including coursework, personal interests, undergraduate research experience, and internship experiences. For some students, this field trip helped them clarify and act with purpose by providing opportunities to interact and learn from medical entomologists, operational mosquito control personnel, and coastal marine scientists.

Mosquito Species (Found at Hill)

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<thead>
<tr>
<th>Mosquito Species</th>
<th>Pathogens Vected</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Species</th>
<th>Pathogens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anopheles</td>
<td>malaria</td>
</tr>
<tr>
<td>Culex</td>
<td>encephalitis</td>
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<tr>
<td>Aedes</td>
<td>dengue</td>
</tr>
<tr>
<td>Tabanus</td>
<td>blackwater fever</td>
</tr>
<tr>
<td>Culicoides</td>
<td>trypanosomiasis</td>
</tr>
</tbody>
</table>

Students from WCU were hosted by the D. W. Shirras Foundation, Inc., the University of Georgia, and the University of South Carolina. This internationally recognized foundation research institute has been involved in the environmental sciences, health, education, and coastal water environments. Students were able to sample during the 2011 mosquito season, which includes the yellow fever virus, West Nile virus, Eastern equine encephalitis virus, and St. Louis encephalitis virus. In addition, students were able to sample mosquitoes in the Hobcaw Barony National Wildlife Refuge, method on the Big River, and provided with the opportunity to learn about the environmental impact and the importance of mosquito control.