

What strategies do the courses use to both advance science education and foster civic engagement?

To introduce students and faculty to the SENCER approach, it was helpful to identify student characteristics of “agents of civic engagement”. Determining student/faculty expertise with the policy issues impacting the riparian environment introduced us to community leaders not previously invited into education department classrooms and led us to identify potential collaborators in Hampton’s School of Science. Having both of the chairs of Departments of Biological, Environmental and Marine Science as part of the team greatly increased our ability to connect learning to previous coursework, schedule field experiences, conduct lab experiences, and identify policy issues that could be addressed in one semester.

Table 1. The connections made among the courses.

Science Topics	Education Topics	Policy Issues
What environmental impact has human population growth had on the other populations common to the area?		
<p>Complete lab exercises to learn appropriate scientific sampling and measurement techniques;</p> <p>Analyze maps and GIS projections to define areas of human, insect, and woody species population growth;</p> <p>Read reports and scientific analyses produced by local, state, and federal agencies;</p> <p>Create study collections.</p>	<p>What do still and video images that are captured by the class and those presented in the public domain (public opinion shapers: Internet, newspapers, and television) indicate about the issue;</p> <p>How is the issue addressed by the Virginia Standards of Learning? What inquiry based curriculum materials are available to promote authentic learning? How often is science taught during a 90 hour period of clinical observation?</p>	<p>Choose a specific school to determine the mobility of the school age population due to the occupations of parents in the military, fishing industry, and shipbuilding.</p> <p>Determine the distance of the school from local waterways and examine sources of absenteeism to determine susceptibility to insect transmitted or waterborne diseases.</p> <p>Interview the mayor (also the Dean of the School of Liberal Arts & Education) and review the school system budget to determine if these issues are addressed in the budget and the curriculum.</p>
What environmental safety issues do elementary school age children face?		
<p>Identify factors such as longitude and latitude, geological soil formation, and sun angle of incidence, etc. that acting in combination create hurricane force winds and wave action causing beach erosion.</p>	<p>Examine school system preparation for major storms and emergency response plans;</p> <p>Identify major transportation and construction sites near elementary schools;</p>	<p>Since the schools observed are within one mile of the Hampton or James Rivers, how is instructional material pertaining to the river, its role in a storm system, or its role as a disposal site part of classroom activities?</p>

<p>Identify solid and liquid point source pollutants found in the Hampton River and trace their source and eventual disposal.</p>	<p>Examine how the facts are presented by the media and in approved curriculum materials.</p>	
<p>How do cities spend their revenues on environmental remediation or reclamation projects and how does this affect the school system budget?</p>		
<p>Examine models of insect and plant lifecycles; storm formation and land reclamation; Apply scientific tools to design effective strategies for mediation leading to better land use management.</p>	<p>Create lesson plans, which invoke the 5 Es (Engage, Explore, Explain, Elaborate, Evaluate). Reflective essay in portfolio about civic responsibility of elementary school teachers.</p>	<p>Website design which reflects Riverscape goals and objectives, showcases products of investigation, and provides links to resources for K-6 teachers.</p>