



Maryland State Department of Education

Service-Learning Fellow's Project

Submerged Aquatic Vegetation Monitoring Project

Calvert County Public Schools, Tom Harten

Primary Subject: Science

Unit Title: Submerged Aquatic Vegetation
Monitoring Project

Type(s) of Service: Indirect and/or Advocacy

Project Description: The middle school science service-learning curriculum provides for a meaningful service to the community. For the past 18 years, seventh grade students in Calvert County have been assisting the U.S. Fish and Wildlife Service (U.S.F.W.S.) and the Virginia Institute for Marine Sciences in a bay-wide study of submerged aquatic vegetation (SAV). These underwater grasses play a critical role in the health of the bay as a filter for nutrients and sediment which can be detrimental to the health of the environment. Additionally, these plants serve as important habitat for crabs and for spawning fish in the bay and its tributaries. SAV have been drastically reduced within the Chesapeake Bay and efforts to restore these grasses through propagation and transplanting, and efforts to monitor the existing natural beds, are critical to the recovery of these important species. Students visit King's Landing Park in Huntingtown for their CHESPAX field experience. Here they learn about actions that can be taken to improve conditions for SAV and then take part in the SAV survey project.

Students travel by canoe to a research site and collect small samples of the grasses to be used for identification purposes. Students make notes about the environmental conditions at the site relevant to SAV growth and survival. Students also record any wildlife observations made during their research period. Upon their return to shore, students use field guides to identify the SAV species collected and record their findings on their field data form.

Potential Service-Learning Action

Experiences: All of these data collected by students are used as a part of the report that the students will make to the U.S.F.W.S. as their final project activity. This final component of the project also serves as an assessment tool for the classroom teacher to ensure that students have mastered the targeted content for this unit of study.

Maryland Curriculum Standards Met

Science:

Several curricular objectives established by the Maryland State Department of Education and adopted by the Calvert County Public Schools are achieved through the completion of the service-learning experiences.

Alignment with Maryland's Best Practices of Service-Learning: Submerged Aquatic Vegetation Monitoring Project

- 1. Meet a recognized community need** (*e.g. What health, education, environment or public safety need was met? How did you determine there was a real need in this area? Who was helped by your project?*) Calvert County forms a peninsula between the Chesapeake Bay and the Patuxent River. County residents have strong ties to these waterways as these places are used both recreationally and commercially by the people who live here. Historically, the river and bay had served as a source of livelihood by the strong waterman community that existed locally. Environmental changes, including the loss of SAV, have impacted the natural resources important to this community. Those who use the bay today recreationally for fishing, crabbing, and swimming also benefit from a healthy SAV population as these grasses provide food and shelter for living resources and serve as a natural filter to improve water quality in the bay. Since the SAV play such a vital role in the health of these important waterways, there is a recognized need within the local community to increase SAV populations.
- 2. Achieve curricular objectives through service-learning** (*How did the project reinforce or enhance student academic learning?*) Several curricular objectives established by the Maryland State Department of Education and adopted by the Calvert County Public Schools are achieved through the completion of the service-learning program. These indicators are assessed on both benchmark and end of year exams.
- 3. Reflect throughout the service-learning experience** (*What types of activities did students engage in to reflect on their project?*) The program activities are structured for the students to respond orally and in writing to various prompts in their student activity booklet. These prompts are designed to engage students with the program content and to provide the classroom teacher with a way to assess student learning. At the conclusion of the program, the students complete a letter reporting their results to the U.S.F.W.S.. Students summarize their findings and reflect upon the field experience through this writing exercise.
- 4. Develop student responsibility (Students have opportunities to make decisions about the service-learning project.)** (*How did students have opportunities to make decisions about the service-learning project and take on leadership?*) Central to the program is the development of student responsibility for the care of the natural environment. The concept of "citizen science" is a recurring theme throughout the project. Much of the field data generated for many environmental monitoring projects comes from citizens trained to perform these field data collection tasks. This model provides the scientists with more time to conduct detailed analyses of the data and provides a link for community members to become a part of the scientific process.



Throughout the program the students learn about specific actions that they can take to improve conditions for SAV in the bay and have the opportunity to perform some of these tasks as a part of the program activities.

5. **Establish community partnerships** (*With what community partners did you collaborate? Non-profits, civic organizations, businesses that provided donations, etc.*) Community relationships are integral to the presentation of this initiative. Numerous agencies including the USFWS, the Virginia Institute of Marine Sciences, the MD Sea Grant program, NOAA, the Chesapeake Bay Trust and other organizations have provided support for this program through their technical expertise or financial resources for the development of the seventh grade SAV program. The student data generated through the project benefits the scientific community as the information is used as a part of bay-wide research on the annual health of SAV in the Chesapeake Bay.
6. **Plan ahead for service-learning** (*How did you prepare and plan for the project?*) The 7th grade program is an on-going project where part of the preparation for student service-learning is having students engage in a series of classroom experiences including: laboratory activities, direct content instruction, reading articles, and discussion of current, related events. Students complete these activities prior to attending their field experience. The program continues throughout the year as classes receive field reports from the CHESPAX office updating the class on the SAV species being encountered in the field by other visiting classes. Each classroom teacher receives a poster with a map of the study area and can update the poster with the data received to keep their classes current on the progress of the field research throughout the season. This is used by the teachers for follow up discussions for the classes that have already completed their research and as a part of preparatory discussions for those classes yet to conduct their fieldwork.
7. **Equip students with knowledge and skills needed for service** (*What did students learn through the experience?*) As a part of the seventh grade science curriculum, students work in the classroom to learn about the important role of SAV, the trends in SAV growth, and the actions that can be taken to improve the environmental conditions that would permit the return of SAV in the Chesapeake Bay. Students read an article by a U.S. Fish and Wildlife scientist, interpret graphs and aerial photography of SAV population trends supplied by partner agencies, and conduct research on individual SAV species to prepare them for their action project that will take place during a field experience on a Chesapeake Bay tributary.

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