

The Wetlands

John Hanson Middle School was able to carry out Charles County's pilot Community Service-Learning Program in Science through a grant from the [Chesapeake Bay Trust](#). We received \$4,100 to complete a wetland on school property. The project temporarily stores runoff from the back of the school, the front parking lots and athletic fields. The retained runoff will be allowed to recharge ground water and prevent torrents of water from eroding soil. In addition, the wetland will provide a habitat for wildlife to increase diversity and population counts.

Best Practice 1: What recognized community need was met by your project? Our community had a need to address an environmental problem, and our students provided a long-term solution. The local soil conservationist and representative from Resources, Conservation, and Development (RC&D) noted a problem with our rain runoff and suggested a wetland at the north end of the school. (The students were unaware of this professional conclusion.) My objective was to allow the students to come to that conclusion on their own with some gentle guidance. In addition, the students learned that our schoolyard had removed acres of forestland to create the grass schoolyard that proved to have very little "life." The students performed sample population counts: in 20 sample sites they found 1 brown ant, 1 carpenter ant, 1 potato bug, and one unidentified insect. Based on their prior knowledge of diversity, food chain/web and ecosystems, they concluded that the site was not healthy. Then, I showed the students the problem with the water runoff. They later analyzed the schoolyard area for the suitability of a wetland by considering sunlight conditions, water source and soil type. The students concluded that based on data, the area needed to change to become a better habitat and a wetland would be a suitable change.

The project helped the students in their process of becoming responsible citizens toward the environment. The wetland project will also help to educate many other students in future years. The project also contributes to "cleaner" streams in our local area. Furthermore, the students valued the project even more when they realized they were helping to protect the Chesapeake Bay. How many are helped with that in mind?!

Best Practice 2: How was the project connected to the school curriculum and curricular objectives? Generally speaking, the wetland project provided an opportunity for the students to apply the knowledge gained in the classroom to a real life situation. My approach to this project was to teach the basic concepts provided in the Maryland State Standards (3.8.7 through 3.8.13) and Maryland Learning Outcomes, but then get very specific through our study of wetlands. For example, the students analyzed how factors such as climate change, urban development, and changes in specie population could effect the size and stability of populations in class. Then, the students considered the change in stability of the population when the forest was changed to a schoolyard. The students wanted to collect data on the number of and different kinds of organisms there were in the schoolyard. We studied the manner that scientists monitor these changes by population counts and the students chose a population count method appropriate to our situation. In marked areas in the planned wetland site, they performed the actual population counts. The students calculating the area of the planned wetland and multiplying the number of species by the area integrated math in that lesson (Standard 3.8.7). These population counts will be used in comparison with this years 7th grade data to determine the success of the project. Of course this example was only one of the many instances the service learning project enabled the integration of different subjects and for the students to apply the content knowledge they gained in class to a real life situation.

Best Practice 3: How did participants reflect on their experiences throughout the project? Often times through the project I felt challenged to present the project to the students in a way that guided them to figure something out or to solve a problem. Even though we received the grant specifically for a wetland and professionals preplanned the project, I wanted the students to feel more ownership by allowing them to make as many decisions as possible. There was much more time spent in my planning to accomplish this goal. In regards to the students, they were continually reflecting on the project. For example, they collected data on the appropriateness of the planned wetland site based on water source, slope, soil type and organism counts. They wrote a letter to a local engineer to check the accuracy of their interpretation of the data collected and their conclusion. They were also asked to complete a power point presentation on the data they collected through the unit. There were approximately 8-10 sessions in the

computer lab where the students gave a synopsis, conclusion or reflection on the investigations performed relating to the wetland.

Best Practice 4: How did students take leadership roles and take responsibility for the success of the project?

The project provided opportunities for the students to develop their responsibility. They were given an opportunity to solve a major problem in their immediate community; they were given choices and they learned from their decisions. Sometimes after the students made a decision, they reflected and found the decision to be a productive one. While other times, the students realized how they could have made better decisions and determined why. (As I reflect on the project, I realize that the decision itself wasn't important, but the process in getting there and reflecting was most important.) Therefore, the project also enabled the students to be better decision-makers. In addition to increasing responsibility and helping students to be better decision-makers, many students were motivated to learn because of the importance of the project. They realized that the erosion caused by rain runoff would be a detriment to their local streams and then eventually the Chesapeake Bay. They were partially motivated to do something because there wasn't one student who wanted to give up the fish, oysters or crabs they liked! They felt "valued" as a contributor to their community to solve one of their problems. Their self-confidence also generally increased as they came to realize they were not completing this project alone -- there were many professional individuals who were willing to take time to support them. Also note the fact the students returned to school in the summer to plant the wetland plants.

Best Practice 5: What community partners were worked with on this project? As mentioned previously, the community worked together in a wonderful manner to accomplish this task. Steve Cardono, Environmental Specialist at Nanjemoy Environmental Center in Charles County was responsible for writing the grant for the county and to provide endless guidance toward our project. If he didn't know the answer, he'd point us in the direction toward someone who did. Pete Cruikshank, from the Soil Conservation Office and Mark Rose, from Resource, Conservation and Development designed the wetland, drew plans and provided technical assistance to myself and the students and the heavy equipment operator. Peggy Shaumberg, a local engineer, provided the students with the background knowledge the students need in regards to wetlands in general and then specific advise in the design of their wetland. She also provided materials that helped the students determine what type of plants live in the type of wetland we were constructing and where to plant them. We also were fortunate to have two men from the Board of Education work for two weeks in the hot sun, with heavy equipment to excavate the wetland. After the wetland was excavated, we found the soil type had changed from our tests at a greater depth. Mr. Cruikshank and Mr. Rose recommended the wetland be lined with clay. A local company, Chaney Enterprises, donated 150 tons of clay to line the wetland. In addition, the action team comprised of Steve Cardono, Rosellen Harman (Director of Student Services), JHMS's Language Arts teachers, guidance and myself worked diligently toward ensuring that this project worked efficiently and effectively to provide a rewarding experience for the students.

Best Practice 6: How did you prepare and plan ahead for the project? Last year's wetland project was a pilot student service-learning project. Rosellen Harmon, along with Steve Cardono, established the general framework for the program. Because this particular project involved money to carry out the science activities, Steve wrote a grant through Chesapeake Bay Trust which required him to describe the project in detail. Prior to writing the grant, Steve visited JHMS with Mr. Cruikshank and Mr. Rose to collaborate on a project most beneficial to JHMS and determined the wetland would be the first project completed.

This year, the student service-learning project for 7th grade is on track and no longer a pilot. Since the project requires a great deal of up-front planning (the grant must be applied for the previous year), we started getting ready for this project a full year in advance. The funds left over from last year's project will be available this year to pay for the meadow and a Bayscape Garden.

Best Practice 7: What knowledge and skills did students develop through this project? The knowledge and skills the students attained through the project were diverse. First, they learned a great deal of information about wetlands. They learned the basis such as the purpose of wetlands, the different types of wetlands, appropriate sites for a wetland, identifying mature wetlands, and the interdependence of abiotic and biotic factors of a wetland. But they also learned to analyze soil, identify and classify indigenous plants, complete water analysis tests involving pH, dissolved oxygen, phosphates, nitrates, temperature and turbidity. All of this experience provided them an opportunity to make well informed decisions about where to put the wetland, what plants to choose, where to put the

plants, and possible animals to introduce to the wetland. Second, they learned to ask questions. Sometimes they didn't feel confident enough, or they felt their questions were "stupid" or they didn't have the technical background to say what they meant, however, through reassurance they become increasingly confident about their ability. The community support that was provided is responsible to a large degree for the increase in student confidence. In addition to the previously mentioned skills, students learned how to budget money from the grant, how to map plants on a grid, how to meet deadlines and how to persevere through challenges.

This project did link with the student's citizenship and civic duty responsibility. A trait such as being a good citizen can be modeled by adults and through a project such as this can be developed through encouragement. Evermore, if we provide real-life situations with real-life problems, students practice at their civic responsibility to a point where it becomes "normal." For so long, young people were expected to stay in the establishment of school where they could learn traditionally. However, I believe they need to actively participate in life to be able to make a difference...their difference. In fact, our motto throughout this project was, "Kids CAN make a difference!"

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