



STEWARDSHIP AND MEANINGFUL WATERSHED EDUCATIONAL EXPERIENCES

The “Stewardship and Community Engagement” Commitment of the *Chesapeake 2000* agreement clearly focuses on connecting individuals and groups to the Bay through their shared sense of responsibility and action. The goal of this Commitment, included below, not only defines the role of the jurisdictions to *promote* and *assist*, but formally engages schools as integral partners to *undertake initiatives* in helping to meet the Agreement. This goal commits to:

Promote individual stewardship and assist individuals, community-based organizations, businesses, local governments and schools to undertake initiatives to achieve the goals and commitments of this agreement.

Similarly, two objectives developed as part of this goal describe more specific outcomes to be achieved by the jurisdictions in promoting stewardship and assisting schools. These are:

Beginning with the class of 2005, provide a meaningful Bay or stream outdoor experience for every school student in the watershed before graduation from high school.

Provide students and teachers alike with opportunities to directly participate in local restoration and protection projects, and to support stewardship efforts in schools and on school property.

There is overwhelming consensus that knowledge and commitment build from first-hand experience, especially in the context of one’s neighborhood and community. Carefully selected experiences driven by rigorous academic learning standards, engendering discovery and wonder, and nurturing a sense of community will further connect students with the watershed and help reinforce an ethic of responsible citizenship.

To this end, the Chesapeake Bay Program Education Workgroup seeks to define a common set of criteria to help the Bay watershed jurisdictions meet the intent of this Commitment of the *Chesapeake 2000 Agreement*. From these criteria, each jurisdiction will continue to craft and refine its own plan, tailored to its own population, geography, and fiscal and human resources.

Defining a Meaningful Bay or Stream Outdoor Experience

A *meaningful* Bay or stream outdoor experience should be defined by the following.

Experiences are investigative or project-oriented. Experiences include activities where questions, problems, and issues are investigated by the collection and analysis of data, both mathematical and qualitative. Electronic technology, such as computers, probeware, and GPS equipment, is a key component of these kinds of activities and should be integrated throughout the instructional process. The nature of these experiences is based on each jurisdiction’s academic learning standards and should include the following kinds of activities.

- Investigative or experimental design activities where students or groups of students use equipment, take measurements, and make observations for the purpose of making interpretations and reaching conclusions.
- Project-oriented experiences, such as restoration, monitoring, and protection projects, that are problem solving in nature and involve many investigative skills.
- Social, economic, historical, and archaeological questions, problems, and issues that are directly related to Bay peoples and cultures. These experiences should involve fieldwork, data collection, and analysis and directly relate to the role of the Bay (or other bodies of water) to these peoples' lives.

Experiences such as tours, gallery visits, simulations, demonstrations, or "nature walks" may be instructionally useful, but alone do not constitute a *meaningful* experience as defined here.

Experiences are richly structured and based on high-quality instructional design. Experiences should consist of three general parts including a) a preparation phase; b) an outdoor action phase; and c) a reflection, analysis, and reporting phase. These "phases" do not necessarily need to occur in a linear fashion. These include the following.

- The *preparation phase* should focus on a question, problem, or issue and involve students in discussions about it. This should require background research and student or team assignments as well as management and safety preparation.
- The *action phase* should include one or more outdoor experiences sufficient to conduct the project, make the

observations, or collect the data required. Students should be actively involved with the measurements, planning, or construction as safety guidelines permit.

- The *reflection phase* should refocus on the question, problem, or issue; analyze the conclusions reached; evaluate the results; and assess the activity and the student learning.

Experiences are an integral part of the instructional program. Experiences should not be considered ancillary, peripheral, or enrichment only, but clearly part of what is occurring concurrently in the classroom. The outdoor experiences should be part of the division curriculum and be aligned with the jurisdiction's learning standards. Experiences should make appropriate connections among subject areas and reflect an integrated approach to learning. Experiences should occur where and when they fit into the instructional sequence.

Experiences are part of a sustained activity. Though an outdoor experience itself may occur as one specific event, occurring in one day, the total duration leading up to and following the experience should involve a significant investment of instructional time. This may entail smaller amounts of outdoor time spread over an entire school year. Likewise, the actual outdoor experiences may not necessarily involve all students in a class at the same time. Rich learning experiences, especially those involving monitoring and restoration activities, may require time increments spread over weeks or even months. A sustained activity will generally involve regularly-scheduled school time and may involve extended day or weekend activity.

Experiences consider the watershed as a system. Experiences are not limited to water-based activities directly on the Bay, tidal rivers, streams, creeks, ponds, wetlands, or other bodies of water. As long as there is an

intentional connection made to the water quality, the watershed, and the larger ecological system, outdoor experiences that meet the intent of the Commitment may include terrestrial activities in the local community (e.g., erosion control, buffer creation, groundwater protection, and pollution prevention).

Experiences involve external sharing and communication. Experiences should warrant and include further sharing of the results beyond the classroom. Results of the outdoor experiences should be the focus of school-based reporting, community reporting, publishing, contribution to a larger database of water quality and watershed information, or other authentic communication.

Experiences are enhanced by natural resources personnel. Utilizing the expertise of scientists and natural resources professionals can heighten the impact of outdoor experiences. This includes both their participation in the classroom and leadership on-site during outdoor activities. These personnel have technical knowledge and experience that can serve to complement the classroom teacher's strengths and augment the array of resources for the learning. Additionally, these professionals can serve as important role models for career choices and as natural resources stewards.

Experiences are for all students. As it is crucial for all citizens to have an understanding of and connection with their own watershed, an outdoor experience is for all students regardless of where they live. Much of the land area in the jurisdictions is outside of the Bay watershed; however, it is intended that students residing in those areas have similar opportunities within their own local setting or beyond.

It is also clear that these kinds of experiences must be extended to all students including students with disabilities, in alternative programs, and special populations. No child

should be excluded from a *meaningful* watershed experience.

Meaningful Experiences **across the K-12 Program**

It is the intention that every student somewhere in the K-12 program will have a *meaningful* outdoor watershed experience before graduation from high school; however, it is the expectation that these kinds of activities will occur throughout formal schooling. Beginning with the primary grades, the jurisdictions' academic learning standards in the social and natural sciences call for inquiry, investigation, and active learning. These skills, concepts, and processes increase in complexity and abstraction, "spiraling" and building throughout the elementary, middle, and high school programs. Likewise, the experiences should reflect this progression.

Outdoor experiences should occur at each level, elementary, middle, and high school. These experiences should be defined by the local curriculum, be aligned with the jurisdiction's learning standards, and mirror the developmental level of students.

The following example "scope and sequence" describes experiences that should be appropriate for many students in the K-12 program.

K-5 experiences should be predominantly local, school, or neighborhood-based, including activities reflecting students' background knowledge, shorter attention span, and physical capabilities. Experiences must clearly relate to academic learning standards across subject areas and reinforce basic concepts such as maps and models, habitat principles, and the concept of the water cycle and watersheds. Care must be taken with the introduction or discussion of complex issues.

6-8 experiences should focus on team and class projects and investigations. These experiences should reinforce research skills requiring the use and analysis of more authoritative print and electronic resources. Longer-term restoration, monitoring, or investigative projects should be conducted locally or on school grounds. Actual student experiences in or near water may be appropriate for many middle school students (following school safety guidelines carefully). Activities such as water-quality testing can be used to reinforce many science, mathematics, and technology skills developed in middle school.

9-12 experiences should reflect students' more abstract reasoning and detailed planning ability. Locally based activities continue to be important, but student watershed experiences beyond the immediate community will have considerable impact in meeting academic and stewardship goals. First-hand experiences in or near water should be part of the implemented curriculum, especially as these experiences relate to the Earth and biological sciences, concepts developed in civics and government, and attitudes reinforcing responsible citizenship.

Conclusion

The preceding consensus criteria define a clear vision for bringing the Bay into every classroom and every child out into the watershed in a *meaningful* way. It will be the goal of every educator, teacher and administrator, to move toward incorporating those experiences that build academic success, reinforce responsible citizenship, and work toward the goals of the *Chesapeake 2000* agreement. With inspired leaders, committed parents, and supporting communities garnering the fiscal and human resources to help make this happen, young people will be significant contributors to healthy, bountiful, and enduring watersheds.