Chesapeake Bay Program
Science. Restoration. Partnership.

What Is a MWEE?

Meaningful Watershed Educational Experiences (MWEEs) are learner-centered experiences that focus on investigations into local environmental issues that lead to informed action and civic engagement. Both teachers and students play important roles in the MWEE by working together in partnership. Teachers present unbiased information and assist students with their research and exploration, while students go through the inquiry process and ultimately take action to address the issue. Four essential elements and four supporting practices build upon each other to create this comprehensive learning experience for students.

Students in Baltimore City model polluted runoff with the Living Classrooms Foundation.

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MWEE Essential Elements

The MWEE consists of four essential elements that describe "what students do." These elements promote a learner-centered approach that emphasizes the role of the student in actively constructing meaning from the learning experiences. Throughout the process students have

> ***"Part of the beauty of MWEEs is that they are not something extra*** but are, indeed, a means of enriching lessons for deeper student learning while strengthening local and national academic standards."
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> ***—Donna Balado, Maryland State Department of Education***

time for reflection, allowing them to refocus on how what they are learning and experiencing affects the driving question of their investigations.

Issue Definition

Students focus on a driving question that addresses a locally relevant environmental issue, problem, or phenomenon requiring background research and investigation. Driving questions—often referred to as essential questions, organizing questions, or overarching questions—are the "big picture" questions that are important for sparking curiosity and organizing inquiry for the issue investigation. Posed by the teacher, driving questions provide students with a framework for learning across disciplines. Students learn more about the issue through classroom instruction and by making observations, collecting data, conducting experiments, talking to experts, and reviewing credible publications. Supporting questions are generated by the students to help find the missing information needed to answer the driving question. During Issue Definition, students also reflect on personal and public values and perspectives related to the issue.

Criteria for Effective Driving Questions

- Supports learning objectives
- Helps initiate and focus the inquiry
- Relevant and related to everyday life
- Provides opportunities for stewardship and civic action
- Thought-provoking and intellectually engaging
- Open-ended (i.e., typically will not have a single, final, and correct answer)
- Promotes further inquiry (i.e., raises additional questions)
- Encompasses both natural and social systems and topics
- Requires students to revisit the problem frequently as knowledge and understanding evolve
- Calls for higher-order thinking, including analysis, inference, prediction, and evaluation

Outdoor Field Experiences

Students participate in one or more outdoor field experiences sufficient to investigate the issue, problem, or phenomenon. These investigations may involve making observations, collecting data, and/or conducting other activities required for answering their questions and informing student actions. To the extent possible and within appropriate safety guidelines, students are actively involved in planning the inquiry that occurs during the outdoor field experience(s). Field study sites can be located on school grounds or at locations close to school such as streams or city parks. They can also take place at offsite locations like state parks, wildlife refuges, or education centers that are equipped with experts, gear, and facilities. A range of individuals, including teachers, environmental educators, natural resource professionals, or trained volunteers, can help facilitate field experiences.

Synthesis and Conclusions

Students identify, synthesize, and apply evidence from their investigations to draw conclusions and make claims about the issue, problem, or phenomenon. They convey data and information about their investigations, conclusions, and claims to audiences ranging from classrooms to the larger

public community. The focus in this stage is on explaining their investigation rather than inspiring action.

Stewardship and Civic Action

Once students have generated a claim, they should work in small groups or as a class to brainstorm and evaluate solutions, and then take action! Throughout this process, teachers play an important facilitation role by forming groups, moderating, and answering questions, while students drive the decisionmaking, planning, and implementation in an age-appropriate way. Action projects may include stewardship, civic action, or a combination of both. Students reflect on the action and determine the extent to which the action successfully addressed the problem, challenge, or opportunity reflected in the claim. Students may also share proposals for sustaining or extending the action.

MWEE Supporting Practices

The MWEE also includes four supporting practices that describe "what teachers do" to ensure success.

Active Teacher Support

MWEEs depend on teacher facilitation and ongoing support of student learning. Teachers ensure that the essential elements of the MWEE come together to support academic goals for learning while creating opportunities for students to take active roles in their learning. Even when environmental educators or other professionals are leading elements of the MWEE, the teacher should be actively engaged in answering questions and relating the experience to the larger MWEE.

Incorporating Youth Voice into the MWEE

Encouraging youth voice during a MWEE is important for fostering a lasting environmental stewardship ethic in students. Giving students the opportunity to make decisions throughout the MWEE helps them to foster a belief in their own abilities, realize that their voices matter in the community, and apply innovation and creativity to tackle real issues. Here are some ideas to work youth voice into each of the essential elements.

Issue Definition

» Have students generate or add to supporting questions to help answer the driving question and shape investigations.

Outdoor Field Experiences

» Have students design their own inquiries and experiments to conduct during the outdoor experiences.

Synthesis and Conclusions

» Give students the opportunity to share and debate their conclusions with their peers.

Stewardship and Civic Action

» Encourage students to design and present their own project ideas to address their problem, issue, or phenomenon.

» Provide opportunities for students to present their findings to a meaningful audience such as local or state decision makers.

Other things to consider

» Ask questions of the students rather than provide answers.

» Create a safe space where everyone is comfortable being heard, including using techniques to encourage introverted youth to have their voices heard.

» Set up a speaking and decision-making system. Often democratic or consensus practices work well.

» Consider multiple perspectives.

Classroom Integration

MWEEs are anchored to curriculum standards and support formal goals for learning and student achievement. They provide authentic, engaging opportunities for interdisciplinary learning that crosses traditional boundaries between disciplines. Some portions of the experience, such as the outdoor field experiences, may occur off school grounds and/or be facilitated in partnership with external providers, however, the MWEE is integrated into the scope and sequence of the academic program.

Elementary school students study macroinvertebrates at Delaware Nature Society's Flint Woods Preserve.

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Local Context

MWEEs occur within a local context (i.e. schoolyard, neighborhood, town, or community) in order to establish the life-relevancy of the issue, problem, or phenomenon being studied. Situating the MWEE within local contexts enables students and teachers to explore how individual and collective decisions affect their immediate surroundings and how their immediate surroundings affect the larger environment.

Types of Action Projects

- ***Watershed Restoration or Protection*** (e.g., create schoolyard habitat, planting trees or grasses, invasive species removal, community cleanup, stormwater management)
- ***Everyday Choices*** (e.g., reduce/reuse/recycle/upcycle, composting, energy conservation, water conservation)
- ***Civic Engagement*** (e.g., town meetings, voting, writing elected officials/decision makers, advocating for policy change)
- ***Community Engagement*** (e.g., presentations, social media, event-organizing, messaging at community events/fairs/festivals, mentoring, PSAs, flyers, posters)

Sustained Activity

MWEEs represent sustained activity that engages students from beginning to end. Though a field experience may occur on one day, the total duration leading up to and following the experience involves a variety of rich learning opportunities spread over the course of a unit or multiple units. Experiences such as tours, gallery visits, simulations, demonstrations, or nature walks may be instructionally useful, but alone do not constitute a MWEE.