Watershed STEM Education Partnership Grants

REQUEST FOR PROPOSALS

1. WELCOME

The North American Association for Environmental Education (NAAEE) is pleased to offer an opportunity for your organization to apply for a Watershed STEM (science, technology, engineering, and mathematics) Education Partnership grant. Through the Watershed STEM Education Partnership grant program, NAAEE supports the mutual STEM education goals of the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Department of Education (U.S. ED). These grants will provide Nita M. Lowey 21st Century Community Learning Centers (21st CCLC) access to authentic STEM experiences that use NOAA's unique education mission as a context for engagement.

U.S. ED's 21st CCLC program provides academic enrichment opportunities during non-school hours for students, particularly those who attend high-poverty and low-performing schools. The program helps students meet state and local learning standards in core academic subjects, such as reading and STEM; offers students a broad array of enrichment activities that complement their regular academic programs; and provides literacy support and other educational services to the families of participating children.

The Watershed STEM Education Partnership grants will support access to academic enrichment experiences for program participants at 21st CCLC program sites. The total portfolio of funded projects is anticipated to reach a minimum of 40 21st CCLC sites, primarily in geographic areas served by the NOAA Bay Watershed Education and Training (B-WET) program [see Appendix 1]. Grant activities will focus on delivering essential elements of NOAA B-WET's Meaningful Watershed Educational Experiences, or MWEEs, to the audiences served by the 21st CCLC program. The MWEE is the core B-WET program experience based on research, evaluation results, and lessons learned from over a decade of program implementation. See details below. In managing a grant program focused on building partnerships, NAAEE is pleased to work with partners at the NOAA Office of Education and U.S. ED to support a wide range of opportunities in outreach and education through the Watershed STEM Education Partnership grants program.

NAAEE is interested in leveraging NOAA and 21st CCLC resources to increase participants' understanding and stewardship of local watersheds and related ecosystems. NAAEE is also interested in forging lasting collaborations between environmental education providers and 21st CCLC sites to achieve greater impacts at several levels by:

- bringing environmental education programming to 21st CCLC students during non-school hours,
- building the capacity of environmental education providers to offer high-quality programming in out-of-school settings and
- helping 21st CCLC sites build a culture that values investigation, exploration, and authentic place-based learning as a context for improving student learning and achievement.

2. ABOUT THE WATERSHED STEM EDUCATION PARTNERSHIP GRANTS

Through Watershed STEM Education Partnership grants, grantees will work with 21st CCLC site partners to incorporate essential elements of NOAA B-WET's "Meaningful Watershed Educational Experiences" (MWEEs) into out-of-school time programming.

A. MEANINGFUL WATERSHED EDUCATIONAL EXPERIENCES (MWEEs)

Meaningful Watershed Educational Experiences (MWEEs) are learner-centered experiences investigating local environmental issues that lead to informed action and civic engagement. They are composed of multi-stage activities that include learning in and out of the classroom and aim to increase the environmental literacy of all participants. MWEEs help increase students' understanding of basic watershed concepts and the interaction between natural and social systems, highlighting the connection between human activity and environmental conditions.

MWEEs include four essential elements for student experiences and supporting practices that educators engage in to support students during a MWEE:

Meaningful Watershed Educational Experience Essential Elements

- Issue definition
- Outdoor field experiences
- Synthesis and conclusions
- Environmental action projects

Meaningful Watershed Educational Experience Supporting Practices

- Teacher facilitation
- Learning integration
- Sustained experience
- Local context

The full MWEE definition is available here and in Appendix 3, including resources for designing and implementing a MWEE project. Based on past program evaluation, the value of MWEEs in out-of-school time can be magnified with an emphasis on the most engaging aspects of the framework (i.e., hands on explorations, outdoors or nature based field experiences, youth-led activities) and less emphasis on traditional classroom activities. Proposals should include details about how projects will support MWEE implementation tailored to the out-of-school time at 21stCCLC partner sites.

B. NOAA-21st CCLC WATERSHED STEM EDUCATION PARTNERSHIP GRANT PROJECTS

NAAEE anticipates funding projects from both pathways described below. Only one proposal to this request for proposals may be submitted per organization, and applicants must choose one pathway when submitting a proposal.

Pathways:

1. **Foundations:**

This pathway is intended for organizations seeking to **develop capacity** in out-of-school time environmental education and create **new partnerships** with 21st CCLC sites. Applicants to this pathway must demonstrate past experience implementing MWEEs in formal K-12 education as a B-WET grantee or partner. Experience working in out-of-school time is preferred but not required.

2. **Extensions:**

Open to past recipients of Watershed STEM grants, this pathway is intended for organizations that want to **build on existing work and established partnerships**. Applicants should describe how the proposed project will leverage prior work and lessons learned to expand or further develop activities with 21st CCLC site partners.

In either program pathway, applicants for a Watershed STEM Education Partnership grant should adapt components of the B-WET MWEE framework for implementation in non-school hours, using NOAA science, sites, and/or expertise and aligning with 21st CCLC site curriculum. Activities should emphasize STEM skills, engage students and staff in hands-on environmental education opportunities that take place both outdoors and indoors, and provide opportunities for students to interact with NOAA and other subject matter experts. Applicants should coordinate with 21st CCLC site partners to ensure the projects help meet their program objectives and student learning and staff capacity building needs. Projects may be funded for all audiences and age ranges served by the 21st CCLC program, including elementary, middle, and high school levels, and should be designed to be age appropriate for the specific project audience.

Further, NAAEE recognizes the need to instill comprehensive knowledge, skills, competencies, and resilience around the most pressing economic, social, and environmental issues of today: climate change. The MWEE educational framework can directly foster climate knowledge, skills, and competencies to address climate

change, climate impacts, and create opportunities to contribute to climate solutions in communities and explore green careers. Applicants to this opportunity are encouraged to address these topics in their projects.

eeBLUE Watershed STEM Education Partnership grant projects:

- are implemented as academic enrichment during non-school hours;
- use best practices for STEM education focusing on the environment as a core element of STEM investigations;
- address specific 21st CCLC site program objectives (such as increasing student engagement and achievement, supporting college and career readiness, responding to family members' needs);
- emphasize project based learning, maximize youth voice and empowerment, and include opportunities for student reflection and meaning-making;
- draw on NOAA scientific information and resources and MWEE best practices;
- engage students in hands-on environmental education opportunities that take place both outdoors and indoors;
- meet the student learning and staff capacity building needs of 21st CCLC program sites;
- include opportunities for mutual sharing of expertise between environmental education providers and 21st CCLC staff;
- ensure 21st CCLC staff support students' participation in the environmental education project; and
- promote student interest in STEM careers.

Project models may vary based on after-school vs. summer programming and in response to partner site needs, but a typical engagement is expected to be a minimum of 1-2 hours per week at each site over a 6 to 10 week period each year of project implementation.

Funds will support organizations with experience working on NOAA-related education projects or implementing projects that draw on NOAA assets such as data, resources, expertise, or places. Applicants to this opportunity should be either a past recipient or partner of a NOAA B-WET grant or a past recipient of a Watershed STEM Education Partnership Grant (administered by NAAEE or the National Marine Sanctuary Foundation) and are asked to demonstrate experience implementing STEM-based environmental education using NOAA assets in partnership with NOAA in their proposal.

All funded activities must serve 21st CCLC sites, and 21st CCLC site partners must be actively funded by the 21st CCLC program for the duration of their involvement in the project. Note that a single 21st CCLC program may include multiple 21st CCLC sites. Information about eligible 21st CCLC site partners can be found at state 21st CCLC program websites. Potential applicants are encouraged to begin recruiting and working with 21st CCLC site partners early in the application process. When developing collaborations, applicants should ensure they have support from the 21st CCLC program director(s) and the specific partner site/center coordinator(s). Partner 21st CCLC programs should also confirm that their participation is supported by their state 21st CCLC program management. A letter of collaboration from 21st CCLC program/site partner(s) is a required part of the proposal package. It should be made clear that they have support to participate from their program and state, understand their role, and are committed to participating for the project's duration. Priority will be given to applicants proposing to work with 21st CCLC sites not currently participating in another U.S. ED STEM partnership activity, such as the NASA STEM Design Challenges.

As part of the proposed project, applicants should collaborate with participating 21st CCLC staff to develop the out-of-school programming and provide 21st CCLC educators with the opportunity to learn more about NOAA assets and environmental education focused around STEM. Applicants should plan to work with 21st CCLC staff to design MWEE programming that is aligned with 21st CCLC learning objectives and will be successful in the afterschool/summer setting. Applicants should also provide ongoing technical and watershed science content support for 21st CCLC staff. Applications should demonstrate a clear path for collaboration and discuss the ways in which they will deeply and meaningfully work with partners to co-create the project.

Applicants should also provide participating 21st CCLC program sites with multiple formats and opportunities to connect with NOAA and related subject matter experts (scientists, educators, evaluation specialists, and others) to discuss watershed and environmental education content through in-person sessions or virtually, such as chat, streaming video, or collaborative software (a minimum of one interaction per site). Scientists and subject matter experts should be recruited from NOAA when possible (NOAA employees are encouraged to participate in STEM-related education and outreach activities in NOAA Administrative Order 216-106A). Subject matter experts should have experience in youth engagement or be provided with training on how to interact with students and the program sites. Applicants must document how they will partner with NOAA and use NOAA science, sites, resources, and/or expertise in project implementation. Letters of collaboration from NOAA partners are encouraged as part of the proposal.

Grant recipients will also be required to coordinate with NAAEE, NOAA, U.S. ED, and their partners, and 21st CCLC staff as necessary to plan project implementation schedules and content delivery methods. Grant recipients will be asked to identify 21st CCLC site partner needs for technical assistance and provide photos or video of project activities as well as curriculum products and other resources for inclusion on a program website similar to the You for Youth professional learning portal (https://y4yarchives.org/stemchallenge/noaa). It is also anticipated that NOAA, NAAEE, and U.S. ED will offer opportunities for grantee and 21st CCLC site capacity building related to MWEEs and related education best practices at various times during the project implementation timeline.

C. PROJECT OUTCOMES

While project evaluation for this request for proposals is not required, applicants are encouraged to discuss how success of the proposed project will be assessed and communicated. In addition, wherever possible, grant recipients are expected to collect and share information about lessons learned, successes towards meeting project objectives, and reflect on how findings may inform decisions about future programming in their grant progress reports. This information may be quantitative and/or qualitative and may include, for example, observations of best practices, specific case studies, and a list of connections made. Applicants will need to be aware of and adhere to any pertinent rules and policies regarding data collection for their state and/or district and/or partnering sites and be prepared to address this if needed. In addition to project evaluation, grant recipients may also be asked to participate in NOAA's program evaluation and/or an evaluation study led by the U.S. ED and to provide general demographic data about project participants.

Projects funded under this grant should align with the following anticipated program outcomes.

21st CCLC site students will:

- Improve STEM practices
- Improve awareness of the relevance and application of STEM to their lives and communities
- Increase personal agency to take action regarding environmental issues that affect their communities
- Understand how individual decisions have environmental impacts within and beyond their communities
- Meet people who share similar interests in their environment
- Meet STEM role models
- Cultivate interest in learning outdoors
- Cultivate interest in engaging in future STEM learning opportunities
- Cultivate interest in STEM or environmental education careers
- Explore new places in their communities

21st CCLC staff will:

- Build skills and confidence to teach outdoors
- Increase capacity to form and maintain mutually beneficial partnerships with EE providers
- Understand the importance of environmental education in students' lives
- Improve knowledge of relevant NOAA assets that can enhance student experiences
- Express interest in forming future partnerships with EE providers

Environmental education providers will:

- Understand the goals and objectives of the 21st CCLC program
- Understand how to design and implement MWEE projects in out-of-school time appropriate for partnerships with 21st CCLC sites
- Increase capacity to form and maintain mutually beneficial partnerships with 21st CCLC sites
- Express interest in forming future partnerships with 21st CCLC sites

3. GRANT INFORMATION

NAAEE anticipates reaching 40 or more 21st CCLC sites per year through approximately 15 competitively awarded Watershed STEM Education Partnership grants.

A. PROJECT TIMELINE

Projects should be planned for **18 months of implementation in 2024 and 2025**. NAAEE anticipates funds will be available by July 1, 2024. All project activities should conclude by the end of the calendar year **2025** to allow for final reporting and evaluation activities to conclude in early **2026**.

Grant activities may occur in the spring, summer, fall, or some combination of these. Grantees may plan for some capacity building, planning, and partnership building activities at the beginning of the project. Examples include working with site partners to refine project plans and participating in training and professional development offered by NOAA, NAAEE, and U.S. ED.

B. FUNDING AMOUNT

Applicants may apply for a total request of up to **$100,000**. $25,000 is the minimum that may be requested for partnerships with a single 21st CCLC site. Higher funding requests should reach multiple sites and/or demonstrate greater contact time or duration of project implementation at each site. Funding requested should be appropriate for the number of sites to be served with the proposed project model, and applicants should justify the scale of project implementation in their proposals. NAAEE anticipates funding projects that serve single 21st CCLC sites and projects that serve multiple sites through this request for proposals and aims to reach at least 40 21st CCLC sites each year through the portfolio of funded projects.

C. OTHER GRANT INFORMATION

All funded activities must serve 21st CCLC sites, and 21st CCLC site partners must be actively funded by the 21st CCLC program for the duration of their involvement in the project. Applicants should confirm 21st CCLC grant status and timeline with their potential site partners since this varies by state. Priority will be given to sites not currently offering STEM based environmental education utilizing NOAA assets or participating in another U.S. ED STEM partnership activity. Information about eligible 21st CCLC site partners can be found at state 21st CCLC program websites. A letter of collaboration from 21st CCLC program/site partner(s) is a required part of the proposal package. It should be made clear that they have support to participate from their program and state, understand their role, and are committed to participating for the duration of the project.

Only **one proposal** to this request for proposals may be submitted **per organization**. Proposals should include support needed for all planned project activities, including travel and supplies. Project budgets should adequately justify the funding requested to reach the proposed number of sites with the planned activities.

Matching funds are not required for this program. Additional technical assistance support from You for Youth may be available if site needs are identified during project planning and implementation.

Notification of funding decisions are expected to be made by **June 1, 2024**. Project start dates can be flexible, with the earliest project start date of **July 1, 2024**.

D. ELIGIBILITY

Prospective applicants are eligible to submit a proposal if (all criteria must be met):

- ✓ Applicant can demonstrate experience with either or both of the following:
    - ✓ successful implementation of a past Watershed STEM Education Partnership Grant and/or
    - ✓ implementing MWEE environmental education utilizing NOAA science as a result of participation in the NOAA B-WET program as a B-WET grant recipient or major partner.
- ✓ The applicant is a K-12 public or independent school or school system, institution of higher education, nonprofit organization, state or local government agency, interstate agency, or Indian tribal government.
- ✓ The applicant is not a federal government agency, a foreign entity, or an individual.
- ✓ Project work is conducted by a U.S. organization in the United States or territories that can provide a valid UEI number. A UEI number is the authoritative identification number provided by the U.S. government, used to identify businesses awarded federal grants, awards, and contracts (https://sam.gov/content/duns-uei).
- ✓ The applicant plans to work with sites in the states and/or counties identified in APPENDIX 2.
- ✓ The applicant intends to partner with at least one 21st CCLC site, and 21st CCLC sites are the audience for all planned programming.
- ✓ If an applicant is a current 21st CCLC grantee, the site(s) they propose to partner with for this project must not be the site(s) that they are currently funded by the 21st CCLC program to operate.
- ✓ The applicant is not on the federal government's debarred list.

Proposals that fail to meet the eligibility requirements outlined in this request for proposals will be rejected without further review.

E. GRANTEE RESPONSIBILITIES

Final awardees must submit an interim and final report to NAAEE each year of project implementation. The final report will be due upon project completion, no later than January 31, 2026, or 30 days following the grant end date, whichever is sooner. Financial reports will also be required. Progress reports and the final report must include photos and/or videos of project activities as well as curriculum products and other resources for inclusion on a website similar to the You for Youth professional learning portal (https://y4yarchives.org/stemchallenge/noaa). Grantees will be asked to report on project activities, outcomes (see 2.B.c above, outreach, challenges, and participant demographics. Additional guidance on reporting and curriculum products and resources to be submitted will be provided to grantees in year 1 of the project.

4. APPLICATION PROCESS

A. COMPETITION TIMELINE

January 29, 2024 - Request for proposals announced.
January 31, 2024-Informational Webinar, register here.
March 29, 2024- Request for proposals closes.
April 1 - May 31, 2024 - review and selection.
June 1, 2024 - Funding decisions announced (anticipated).
July 1, 2024 - Funds available, earliest project start date.

B. SUBMITTING YOUR PROPOSAL

Proposals must be submitted via the **NAAEE Submittable portal** by **Midnight EASTERN TIME, 3/29/24**. Please ensure that you select only **one** of the two pathways: Foundations or Extensions.

The proposal package must include:

- ✓ a detailed description of your project activities, specifically addressing how you will include STEM based environmental education incorporating MWEEs and support the priorities of your 21st CCLC site partners;
- ✓ a detailed description of project goals, deliverables, and how they will be accomplished, including a timeline and/or milestone chart;
- ✓ a budget table and budget narrative;
- ✓ a list of of planned 21st CCLC site partners; and
- ✓ letters of commitment from 21st CCLC site partner program directors and/or center/site coordinator(s).

Letters of collaboration from NOAA programs(s) and other major project partners are encouraged. Additional materials, such as curriculum or other documents, may be submitted but may not be reviewed.

C. REVIEW AND SELECTION PROCESS

A panel of qualified reviewers will score proposals based on how well they fulfill the criteria in Appendix 2 of this proposal request. The additional selection factors provided in Appendix 2 may be used to ensure a diverse cohort of funded projects (looking at geography, partners, audience, and more). State 21st CCLC staff will have an opportunity to review and approve 21st CCLC program/site participation as part of the review process.

All organizations that submit a proposal will be notified whether your project is selected for funding by **June 30, 2024**.

5. FOR MORE INFORMATION

- ✓ Read the information and FAQs online.
- ✓ Register for an informational webinar for potential applicants or review the recording, which will be posted on the landing page.

  Register here for our applicant webinar on **Wednesday, January 31st**, at **3:00 PM US Eastern Time.**
- ✓ For questions that cannot be answered through this request for proposals, the informational webinar, or the FAQs, please contact the eeBLUE Team at eeBLUE@naaee.org or T'Noya Thompson at (281) 785-0995

A. ABOUT THE NOAA BAY WATERSHED EDUCATION AND TRAINING PROGRAM

The NOAA B-WET program funds locally relevant, authentic experiential STEM learning for K-12 audiences through multi-stage MWEEs that include learning both outdoors and in the classroom. The activities are driven by rigorous academic learning standards and aim to increase participants' understanding and stewardship of watersheds and related ecosystems. The B-WET program currently serves seven geographic areas of the country: California, Chesapeake, Great Lakes, Gulf of Mexico, Hawaii, New England, and the Pacific Northwest. Regional implementation allows B-WET programs to support grantee capacity building and to connect grantees to local NOAA assets and relevant STEM expertise while being responsive to local education and environmental priorities. http://www.noaa.gov/office-education/bwet

B. ABOUT THE U.S. DEPARTMENT OF EDUCATION NITA M. LOWEY 21st CCLC PROGRAM

The 21st CCLC program supports the creation of community learning centers that provide academic enrichment opportunities during non-school hours for children, particularly students who attend high-poverty and low-performing schools. The program helps students meet state and local student standards in core academic subjects, such as reading and math; offers students a broad array of enrichment activities that can complement their regular academic programs; and offers literacy and other educational services to the families of participating children. https://www2.ed.gov/programs/21stcclc/index.html

C. ABOUT THE NORTH AMERICAN ASSOCIATION FOR ENVIRONMENTAL EDUCATION

For five decades, the North American Association for Environmental Education (NAAEE) has served as the professional association, champion, and backbone organization for the field of environmental education (EE), working with EE professionals across the United States, Canada, and Mexico, as well as globally, to advance environmental literacy and civic engagement to create a more equitable and sustainable future. For more information on NAAEE, visit https://naaee.org.

APPENDIX 1: Geographic areas where projects must be implemented

Project geography is structured around the NOAA B-WET program watershed regions. Applicants should identify their project's watershed area of focus in the proposal.

California:
21st CCLC sites served must be located in Mendocino, Sonoma, Napa, Marin, Solano, San Francisco, Contra Costa, Sacramento, San Mateo, Alameda, San Joaquin, Stanislaus, Santa Cruz, Santa Clara, Monterey, San Benito, Merced, Madera, Fresno, San Luis Obispo, Tulare, Santa Barbara, and Ventura, CA.

Chesapeake Bay:
21st CCLC sites served must be located in states that indicated support for the "Student Goal" (Meaningful Watershed Educational Experiences - MWEEs) as a part of the Chesapeake Bay Agreement. This includes all school districts (not only those in the Chesapeake Bay Watershed) in Delaware, District of Columbia, Maryland, Pennsylvania, and Virginia.

Great Lakes:
21st CCLC sites served must be located in the states of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin

Gulf of Mexico:
21st CCLC sites served must be located in the states of Alabama, Florida, Louisiana, Mississippi, or Texas.

Hawaii:
21st CCLC sites served must be located in the state of Hawaii.

New England:
21st CCLC sites served must be located in the states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, or Vermont.

Pacific Northwest:
21st CCLC sites served must be located in the states of Oregon, Washington, or Alaska.

APPENDIX 2: Review Criteria and Selection Factors

REVIEW CRITERIA

Proposed projects will be reviewed and scored based on the criteria below:

Importance/relevance and applicability of proposal to the program goals (30 points)

- Do the proposed activities emphasize STEM skills and promote student interest in careers in STEM?
- Does the proposed project support individuals' knowledge, skills, attitudes, and motivations to protect and restore watersheds?
- Does the proposed project foster climate literacy and/or the exploration of green careers?
- Does the applicant address 21st CCLC program and site objectives?
- Does the applicant explain the need for implementing the project at the 21st CCLC site(s) to be reached?
- Does the proposed project include using NOAA assets to achieve project goals?
- Does the proposed project include opportunities for participants to interact with NOAA or other relevant subject matter expert(s)?
- Are the project activities likely to create lasting collaborations between partners?

Technical merit (30 points)

- Does the applicant demonstrate how the proposed activities address the elements of the NOAA B-WET Meaningful Watershed Educational Experience?
- Do the proposed activities engage 21st CCLC site students and staff in hands-on environmental education opportunities that take place both outdoors and indoors?
- Does the proposed project include best practices (such as project-based learning, support for youth voice and empowerment, and opportunities for student reflection)?
- Does the proposal clearly describe how the project will be executed logistically and include details sufficient to determine that it can reasonably be completed in the proposed time frame?
- Does the proposed project include collaboration with 21st CCLC partners in the design and development of programming? Does the application demonstrate a clear path for collaboration and discuss the ways in which the applicant will deeply and meaningfully work with partners to co-create the project?
- *For Pathway 2:* Does the applicant describe how the proposed project will complement or build on prior Watershed STEM grant partnership work?

Qualifications of applicants (20 points)

- Does the applicant demonstrate experience with the NOAA B-WET program as a B-WET grant recipient or major partner? Does the applicant demonstrate prior experience implementing a Watershed STEM Partnership Grant?
- Does the applicant demonstrate experience and success implementing STEM based environmental education using the MWEE framework?
- Does the applicant demonstrate experience and success implementing STEM education in out-of-school time?
- Does the applicant demonstrate experience partnering with NOAA?
- Does the applicant have a commitment to and experience with reaching underserved youth?
- Are letters of collaboration from 21st CCLC partner site(s) and other project partners included?

Project costs (15 points)

- Is the proposed budget request reasonable and justified?

Outreach (5 points)

- Does the applicant commit to collaborate with NAAEE and NOAA to produce content that will be shared after the project concludes?

ADDITIONAL SELECTION FACTORS

To ensure a diverse cohort of funded projects, NAAEE, in collaboration with NOAA and U.S. ED, may select a proposal out of review rank order if justified based upon the following factors:

A. Availability of funding
B. Balance/distribution of funds
    a. Geographically (to include urban/rural designation)
    b. By type of institutions
    c. By type of partners
    d. By project types (including pathways described in this request for proposals)
    e. By audience types
C. Duplication of other projects funded or considered for funding by NAAEE, NOAA, or U.S. ED
D. Applicant's prior award performance
E. Partnerships with/participation of targeted groups
F. State Education Agency input on proposed 21st CCLC site partner participation

APPENDIX 3: Resources

A. MEANINGFUL WATERSHED EDUCATIONAL EXPERIENCES (MWEEs)

(See also https://www.noaa.gov/education/explainers/noaa-meaningful-watershed-educational-experience)

The Meaningful Watershed Educational Experience (MWEE) is a learner-centered framework that focuses on investigations into local environmental issues and leads to informed action. MWEEs are made up of multiple components that include learning both outdoors and in the classroom and are designed to increase environmental literacy by actively engaging students in building knowledge and meaning through hands-on experiences. In these experiences, the core ideas and practices of multiple disciplines are applied to make sense of the relationships between the natural world and society. MWEEs help connect students with their local environment and equip them to make decisions and take actions that contribute to stronger, sustainable, and equitable communities.

The MWEE consists of four essential elements and four supporting practices that build upon each other to create a comprehensive, student-centered learning experience. Throughout the MWEE, teachers provide structure, support, and encouragement as students use their curiosity and creativity to investigate and take action to address a local environmental issue.

MWEEs are appropriate for all grade levels with content and practices growing in complexity and sophistication across the grades — starting with teacher-guided investigations and progressing to student-led inquiry. Using the MWEE framework helps educators create an engaging program to achieve their learning objectives (i.e., the knowledge, skills, and attitudes that students should be able to exhibit following instruction). Learning objectives should address academic standards, but might also include other objectives, such as teamwork, social-emotional learning, and civic responsibility.

MWEE ESSENTIAL ELEMENTS

The MWEE consists of four essential elements that describe "what students do:" Issue Definition, Outdoor Field Experiences, Synthesis and Conclusions, and Environmental Action Projects. These elements, together with the supporting practices, create a learner-centered framework that emphasizes the role of the student in actively constructing meaning from the learning experiences. The essential elements are not meant to be linear. In fact, some elements, such as Synthesis and Conclusions, occur repeatedly throughout the MWEE.

Issue Definition

During Issue Definition, students learn about an environmental issue by planning and conducting background research and investigations. An environmental issue is an environmental problem, often with observable

phenomena, to which community members bring a variety of perspectives. To provide structure for their exploration of the issue, students focus on a driving question that is defined by the teacher. This question is the "big picture" question that sparks curiosity and organizes student inquiry and investigations, which ultimately informs environmental actions. It should be open-ended, relevant to students' lived experiences, and meet learning objectives. To support youth voice and deepen the learning, students are actively involved in co-developing supporting questions with teachers to better understand the driving question and environmental issue.

To explore the driving and supporting questions, students gather information by making observations, finding and reading credible sources, talking to experts, and carrying out field investigations. Students also consider environmental policies and community practices and reflect on personal, stakeholder, and societal values and perspectives to develop a comprehensive picture of the root causes of the environmental issue.

Outdoor Field Experiences

Students participate in multiple Outdoor Field Experiences to explore the driving question and strengthen their connection to the natural world. Within appropriate safety guidelines, students are actively involved in planning and conducting the field investigations, including developing supporting questions to explore the driving question in the field. Field experiences allow students to interact with their local environment and contribute to learning in ways that traditional classroom or laboratory settings may not. During field experiences, students can use their senses, scientific equipment, and technology to make observations, collect data or measurements, and conduct experiments necessary to answer their supporting questions and inform environmental action. Students who have opportunities to learn in, thrive in, and appreciate the outdoors can become informed and engaged champions for our natural resources.

Outdoor Field Experiences can take place on school grounds or at locations close to schools, such as streams or local parks. They can also take place at off-site locations such as state or national parks, wildlife refuges, marine protected areas, or nature centers that are often staffed by experts and may provide access to field equipment and facilities. A range of partners, including environmental educators, natural resource professionals, or trained volunteers, can help facilitate field experiences; however, they should be co-developed and co-taught with teachers so that field experiences support learning objectives. Teachers and partners should ensure an accessible outdoor learning environment for all participants, including students with a range of physical, cognitive, emotional, and social abilities. They should also prepare students by providing information and discussing what students can expect to see, feel, or experience during their time outdoors to ensure students feel safe and comfortable during their field experiences.

Synthesis and Conclusions

During Synthesis and Conclusions, students reflect on each experience and investigation in relation to the issue, and share their claims and conclusions with each other. Teachers should plan for this to occur regularly throughout the MWEE. This learning and frequent reflection provide the foundation for the development of claims and environmental action that address the driving question and connect to the environmental issue. Throughout this process, students should demonstrate understanding of their investigations and conclusions

with their peers or the school community. This could involve multiple disciplines and a variety of formats including discussion, journaling, presentations, graphing, performing skits or songs, or creating art.

Environmental Action Projects

As a result of their investigations, students identify solutions and develop Environmental Action Projects that directly address the issue within their school, neighborhood, or community. Students are actively engaged in and, to the extent possible, drive the decision-making, planning, and implementation of the action project. Teachers facilitate this process by forming groups, moderating, and answering questions. Students reflect on the value of the action and determine the extent to which it successfully addressed the issue.

This essential element allows students to understand that they personally have the power to bring about change by taking action to address environmental issues at the personal, community, or societal level. Taking action instills confidence in students and can contribute to students becoming environmental stewards in their communities.

Environmental Action Projects can take many forms and may fall into the following types:

- Restoration or Protection: actions that assist in the recovery or preservation of a watershed or related ecosystem that has been degraded, damaged, or destroyed. Examples include: plant or restore protective vegetation/trees; restore a local habitat; remove invasive plants; clean up litter at local beaches, parks, or school grounds; develop a school garden, natural history area, community garden, or other sustainable green space; install rain gardens to help manage stormwater.
- Everyday Choices: actions that reduce human impacts on watersheds and related ecosystems and offer ways to live more sustainably. Examples include: refuse/reduce/reuse/recycle; monitor and save water in the face of potential drought or reduction in water availability; compost food or yard waste; research and implement energy efficient strategies or energy alternatives at school and/or at home.
- Community Engagement: actions that inform others about how to address community-level environmental issues. Examples include: give presentations to local organizations; organize community events; record or broadcast public service announcements; share information on social media; post flyers in community; share posters at community events/fairs/festivals; mentoring.
- Civic Engagement: actions that identify and address issues of public concern. Students acting alone or together to protect societal values or make a change or difference in a student's school, neighborhood, or community. Examples include: present to school principal or school board; attend, speak, or present at town meetings; write to local or state decision makers or elected officials.

MWEE SUPPORTING PRACTICES

The MWEE also includes four supporting practices that describe “what teachers do,” along with their partners, to ensure successful implementation with students. The supporting practices are Teacher Facilitation, Learning Integration, Sustained Experiences, and Local Context.

Teacher Facilitation

MWEEs require that teachers support student learning for the duration of the MWEE, both inside and outside the classroom. Teachers balance roles of facilitation, direct instruction, and coaching to create a student-centered learning experience where the essential elements of the MWEE come together to support goals for learning and create opportunities for students to take active roles in the learning process. Teachers provide space for student choice and voice by creating learning experiences that center on what students value. Even when activities or lessons occur at partner sites or are primarily led by partners at the school, teachers should be actively engaged. Teachers should connect these experiences to prior learning, foster critical thinking, and lead reflection after the experience so, regardless of the facilitator, the entire MWEE experience feels cohesive to the students.

To support this level of engagement, teachers should have access to professional development opportunities that support their content knowledge, understanding of the MWEE framework, and confidence and intention to implement MWEEs independently (see Teacher MWEE Professional Development Characteristics for specifics).

Learning Integration

The MWEE is an educational framework that helps teachers meet their learning objectives in an engaging way. MWEEs are not meant to be something "extra", but rather a means of enriching lessons for deeper student learning while meeting academic standards. To achieve this vision, MWEEs should be embedded into the school curriculum to support goals for learning and student achievement. They can also provide authentic, engaging interdisciplinary learning that crosses traditional boundaries between disciplines. Finally, the MWEE essential elements can also be used by educators in out-of-school settings (for example, after school programs, clubs, or summer camps) to enrich activities and complement school-based programming.

Sustained Experience

MWEEs rely on teachers to plan and implement a series of rich and connected learning opportunities where each essential element — from asking questions during Issue Definition through implementing Environmental Action Projects — builds upon and reinforces the others. To accomplish this, MWEEs are incorporated into a unit or multiple units, where learning happens both in and out of the classroom. This provides adequate time for students to not only reflect on the individual lessons and experiences, but also on how all of the elements cohesively come together. While an individual lesson may occur in one class period or field experience, that lesson or experience should be explicitly connected to the larger learning sequence of the MWEE.

Local Context

MWEEs have teachers use the local environment and community as a context for learning that is relevant to students' lives. Situating the MWEE within local contexts promotes learning that is rooted in the unique culture, history, environment, economy, literature, and art of a student's school, neighborhood, or community. To enrich MWEEs, local resources (e.g., partners, expertise, field sites) should be incorporated. Partnerships, such as those with local community-based organizations, create opportunities for students to engage with members of their community of diverse cultures, values, and expertise that can create a more equitable and inclusive experience.

Emphasizing the local context enables students and teachers to develop stronger connections to and appreciation for their local environments and communities. This also enables students and teachers to explore how their individual and collective decisions affect their immediate surroundings and, in turn, affect larger ecosystems and watersheds.

B. MWEE RESOURCES

B-WET and its partners have developed many resources to support the implementation of Meaningful Watershed Educational Experiences (MWEEs), available here: https://www.noaa.gov/office-education/bwet/resources/mwee-resources

C. RESOURCES FOR CONNECTING WITH NOAA

MWEEs use NOAA assets, such as data, resources, expertise, or places. NOAA has a wealth of applicable products, data, and services, as well as a cadre of scientific and professional experts who can enhance student experiences both in the classroom and in the field. These resources complement the educator's strengths and augment the educational resources. Additionally, NOAA personnel can serve as important role models for career choices and stewardship. For more on NOAA assets for education, please see https://www.noaa.gov/education/resource-collections, NOAA in your state (https://www.legislative.noaa.gov/NIYS/), and NOAA in your backyard (https://www.noaa.gov/ education/noaa-in-your-backyard).

D. ADDITIONAL RESOURCES FOR STEM IN OUT-OF-SCHOOL TIME

- The Watershed STEM program website includes grantee blogs, spotlights, and evaluation results: https://naaee.org/programs/eeblue/21CCLC
- NOAA 21st CCLC Watershed STEM Education Partnership Grants Program Evaluation Report: Executive Summary. 2023. https://naaee.org/sites/default/files/2023-08/eeBLUE_21stCCLC_ExecutiveSummary_FINAL.pdf
- NOAA Nita M. Lowey 21st Century Community Learning Centers Watershed STEM Education Partnership website: https://www.noaa.gov/office-education/bwet/partnerships/21stCCLC
- You for Youth partnership page: an online professional learning community that provides resources for afterschool educators, supported by the U.S. Department of Education. https://y4yarchives.org/stemchallenge/noaa
- 2017 pilot program, in partnership with the National Marine Sanctuary Foundation:
    - 2017 pilot program awards
    - 2017 pilot program evaluation report
- National Research Council. 2015. *Identifying and Supporting Productive STEM Programs in Out-of-School Settings*. Washington, DC: The National Academies Press. https://doi.org/10.17226/21740.