

## **Expanding Access and Deepening Engagement: Building an Open Source Digital Platform for Restoration-Based Stem Education in the Largest Public-School System in the United States**

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**Abstract :** This project focuses upon the expansion of the existing "Curriculum and Community Enterprise for the Restoration of New York Harbor in New York City Public Schools" NSF EHR DRL 1440869, NSF EHR DRL 1839656 and NSF EHR DRL 1759006. This project is recognized locally as "Curriculum and Community Enterprise for Restoration Science," or CCERS. CCERS is a comprehensive model of ecological restoration-based STEM education for urban public-school students. Following an accelerated rollout, CCERS is now being implemented in 120+ Title 1 funded NYC Department of Education middle schools, led by two cohorts of 250 teachers, serving more than 11,000 students in total. Initial results and baseline data suggest that the CCERS model, with the Billion Oyster Project (BOP) as its local restoration ecology-based STEM curriculum, is having profound impacts on students, teachers, school leaders, and the broader community of CCERS participants and stakeholders. Students and teachers report being receptive to the CCERS model and deeply engaged in the initial phase of curriculum development, citizen science data collection, and student-centered, problem-based STEM learning. The BOP CCERS Digital Platform will serve as the central technology hub for all research, data, data analysis, resources, materials and student data to promote global interactions between communities, Research conducted included qualitative and quantitative data analysis. We continue to work internally on making edits and changes to accommodate a dynamic society. The STEM Collaboratory NYC® at Pace University New York City continues to act as the prime institution for the BOP CCERS project since the project's inception in 2014. The project continues to strive to provide opportunities in STEM for underrepresented and underserved populations in New York City. The replicable model serves as an opportunity for other entities to create this type of collaboration within their own communities and ignite a community to come together and address the notable issue. Providing opportunities for young students to engage in community initiatives allows for a more cohesive set of stakeholders, ability for young people to network and provide additional resources for those students in need of additional support, resources and structure. The project has planted more than 47 million oysters across 12 acres and 15 reef sites, with the help of more than 8,000 students and 10,000 volunteers. Additional enhancements and features on the BOP CCERS Digital Platform will continue over the next three years through funding provided by the National Science Foundation, NSF DRL EHR 1759006/1839656 Principal Investigator Dr. Lauren Birney, Professor Pace University. Early results from the data indicate that the new version of the Platform is creating traction both nationally and internationally among community stakeholders and constituents. This project continues to focus on new collaborative partners that will support underrepresented students in STEM Education. The advanced Digital Platform will allow for us connect with other countries and networks on a larger Global scale.

**Keywords :** STEM education, environmental restoration science, technology, citizen science

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