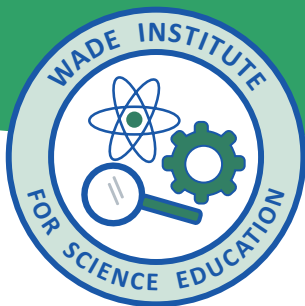


# Wade Institute for Science Education



## 2023 Annual Report



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# Message from the Wade Institute's Executive Director

2023 has seen a growth in the Wade Institute's work with school districts and a shift in the format of many of our Professional Learning programs for K-12 educators. Since COVID we've found that the landscape and needs for STEM professional development programs has shifted. The demand for OpenSciEd (OSE) Professional Learning programs grew this year with the release of the high school units, keeping our staff busy with both middle and high school curriculum and unit launches. We continued to bring back in-person programming, offering a mix of virtual and on-site programs. We were pleased to receive Open Access Professional Learning (OAPL) funding from the Department of Elementary and Secondary Education, which let us offer many of our Professional Learning Programs at no cost to Massachusetts teachers, often including a stipend.

We continued to develop an intensive Strategic Planning Process to ensure our ability to expand our work and carefully consider the types of professional development services we can offer schools. Empower Success Corp assisted us in creating a Strategic Planning Process designed to enhance the Wade Institute's sustainability over the next five years. We will begin implementing the plan in January 2024.

Our full-time staff expanded, adding an Education Coordinator and 3 additional Education Specialists to help us meet the demand for increased OSE Professional Learning Programs, the launch of our Rise to the Challenge workshop series, and several technology workshops focusing on using sensors in the classroom.

We are looking forward to a program-filled year in 2024 as we continue to work with new partners and school districts across the Commonwealth, and collaborate with organizations such as the National Science Education Leadership Association and the National Science Teaching Association at the national level.

Thank you for your support as we move forward with our mission to support phenomena-based inquiry STEM education and help Massachusetts schools implement high-quality instructional materials into their science curriculum.



Sandra Ryack-Bell  
Executive Director

# 2023 Summer Professional Development Institutes

The 2023 Summer Professional Development Institutes took place in July and consisted of two on-site programs in different regions of Massachusetts. Teacher participants explored a variety of topics in a collaborative learning environment supported by professional scientists and engineers, environmental and informal educators, and biologists. Most days were spent outside in the field investigating phenomena in the natural world, as teachers canoed, tracked bird migration, measured shark models, engineered a TinkerCAD project, tested water quality, and collected data. Courses were based on guided-inquiry investigations and exploring phenomena, which educators experienced through a variety of local site visits, peer discussions, expert instruction and guidance from our partners, and hands-on learning experiences. Teachers also left with newfound confidence in addressing the Science & Engineering Practices in the classroom. At the close of each course, teachers gathered these experiences and resources to develop inquiry-based investigations and phenomena-based unit plans to translate their new knowledge and material into the classroom setting.



## *Whales' Tales, Turtle Hurdles, and Migration Phenomena*

During this Summer Professional Development Institute in the Southeast/Cape Cod region of Massachusetts, elementary and middle school educators explored local ecosystems, migratory patterns and how shore birds, butterflies, sharks, and terrapins are connected through the phenomena of migration.

Teachers started their week at Manomet Inc. in Plymouth by exploring the relationship between Monarchs and Milkweed. They also experienced Manomet's environmental stewardship work while measuring bird migration with both low- and high-tech tracking tools. With the Atlantic White Shark



Conservancy, participants used real-time data and stakeholder debates to discuss the controversy of sharks in the Southeast region and their historical relevance. They also got up close and personal with life-size shark replicas in a cross-curricular measurement activity.



The week continued for educators by paddling down the Slocum River with the Lloyd Center for the Environment. Teachers worked as citizen scientists while walking the many paths available at the Lloyd Center to collect data using the iNaturalist app. They also spent time with some local marine creatures and released a rehabilitated Diamondback Terrapin into the Slocum River.

Additionally, teachers had many pedagogical experiences woven throughout the week from experiencing an Anchoring Phenomenon Routine as a student to addressing each Science & Engineering Practice as they used them throughout the week and determining levels of inquiry during investigations. Throughout the institute, teachers were encouraged to think about ways they can incorporate local ecosystems, marine life, and/or migration phenomena into their classroom practice.

### ***Watershed Science and Engineering in the Berkshires***

The Watershed Science and Engineering Professional Development Institute hosted grades 6-12 educators in the Berkshires. Participating teachers explored ways that engineering supports natural systems and habitats while using methods and resources to teach locally relevant science to highlight engineering career opportunities.



Teachers spent most of the week at The Berkshire Science Common, accompanied by fieldwork with the Berkshire Environmental Action Team, BCC Science Department, and the Pittsfield Engineering Department. Investigations included field observations in local ecosystems, erosion and runoff demonstrations with a stream table project and TinkerCAD design. Teachers learned more about state water quality protocols while visiting a local wastewater treatment plant and talking with engineer experts in the natural processes. The week concluded with the participants engaging in engineering design challenges which emphasized phenomena-based learning and designing inquiry investigations as they created their own mini wastewater treatment plants.

# Open Access Professional Learning (OAPL)

After completing a rigorous application process in the summer of 2022, the Wade Institute was delighted to be accepted into DESE's Open Access Professional Learning program (OAPL) – which enabled us to provide free access to Focus Workshops and selected Summer Professional Development Institutes for qualified Massachusetts educators, beginning in January of 2023.



The Wade Institute was able to offer 4 focus workshops and 2 Summer Institutes in 2023, with a total program registration of just under 100 teachers. Programs were held in Springfield, Worcester, Canton and the Dartmouth area, using both in-person and online instruction. The Springfield-based hybrid programming kicked off the year, with teachers exploring *STEAM and Earth Science* with partners from the Springfield Science Museum and faculty from Amherst College.

Two workshops on *Building the Storyline Using Culturally Relevant Phenomena* were held in the Worcester area: for elementary teachers at the Tower Hill Botanical Garden and for middle and high school teachers at the Blackstone River Valley National Heritage Corridor. Our highly successful Sensors workshops introduced teachers to coding and circuitry, using Arduino breadboards in a series of engineering design challenges.



Finally, our Summer Professional Development Institutes, *Whales' Tales*, *Turtle Hurdles*, and *Migration Phenomena* in the Southeast Region of Massachusetts and *Watershed Science and Engineering* in the Berkshires. *Whales' Tales*, *Turtle Hurdles*, and *Migration Phenomena* provided a 5-day experience with Manomet Conservation Sciences, the Lloyd Center for the Environment and the Atlantic White Shark Conservancy – looking at migration from every angle. *Watershed Science and Engineering* explored how engineering supports natural systems and habitats with the Berkshire Science Commons at Berkshire Community College, the Berkshire Environmental Action Trust and City of Pittsfield Engineering Department.



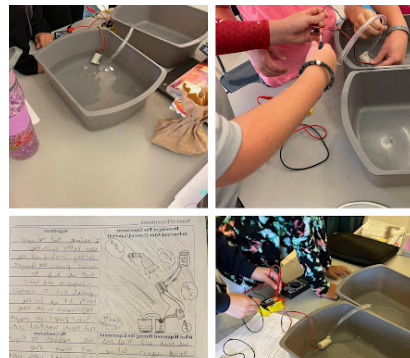
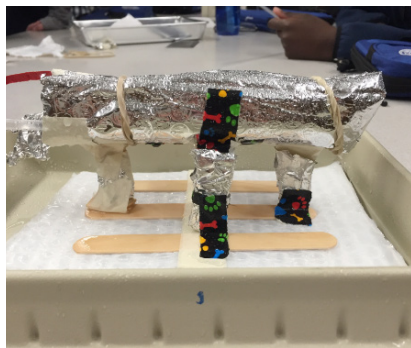
# Focus Workshops

## Rise to the Challenge Workshop Series: Hurricane Heroes

This two-day workshop was the first in a new Wade Institute series, *Rise to the Challenge*. This series consists of Focus Workshops centered around each of our past STEM Week Design Challenges. The workshops are offered in collaboration with the original partners and are an enhanced and expanded version of the previous challenges, to increase difficulty and scope. Teachers explore how phenomena can spark curiosity, drive investigation, and make the learning relevant for students. The challenges are designed for middle school students but are easily adaptable to upper elementary or high school settings. We ran the first Rise to the Challenge Workshop in November.



*Hurricane Heroes* presented students and teachers with the following challenge: A category 4 hurricane has hit fictional Storm City, Massachusetts. The city faces several problems that can only be solved by your engineering team. Using this challenge as the foundation for the instruction, teachers participated as their students would to complete investigations including evacuating citizens, building shelter, moving floodwaters, and designing alternative energy sources. The challenge culminates in a redesign of the city's resources to prevent future disasters and a presentation of their final plans. Participants had the opportunity to collaborate and reflect with the course instructors and fellow teachers.



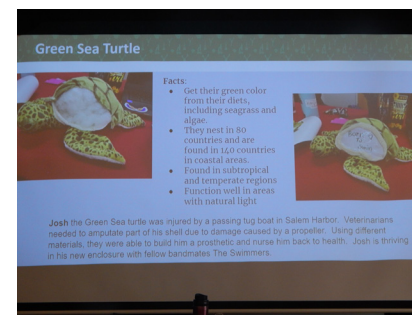
# Animal Adaptations and Bioengineering STEM Challenge

The statewide 2023 MA STEM Challenge, sponsored by the MA STEM Advisory Council and the MA Department of Higher Education centered on the theme *See Yourself In STEM*. The Wade Institute received funding to run one of the design challenges for the MA STEM Week. In partnership with the Lloyd Center for the Environment and Buttonwood Park Zoo, we developed an engineering design challenge: *Animal Adaptations and Bioengineering*.



Students participating in the challenge were given the role of a team of engineers specializing in creating prosthetics for injured animals. Each team of engineers were tasked with creating a prototype prosthetic for an injured animal. Students demonstrated their learning by presenting their models and demonstrating how the prosthetic works and why it is needed.

Over 106 teachers signed up to participate in the Challenge. Teachers received a curriculum packet and a classroom kit of materials for running the challenge with their students. 22 teachers were able to participate in an on-site pre-challenge teacher workshop at Buttonwood Park Zoo where they were able to experiment with the challenge investigations. For teachers unable to attend the on-site session we offered a virtual pre-challenge workshop. 45 teachers participated in the pre-challenge workshops. During STEM week in October, teachers conducted the challenge with their students and shared their experiences in a virtual showcase.

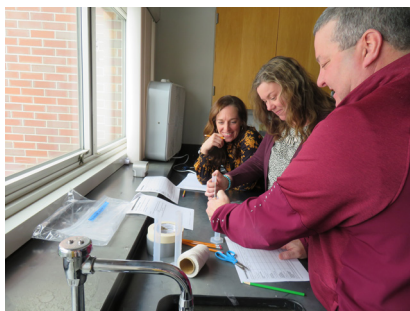


# Customized Professional Learning Services

Through its Customized Professional Learning Services, the Wade Institute provides programs that address the professional learning needs and interests of individual schools and districts. In 2023 the Wade Institute provided Customized Professional Learning Services programs to middle and high school teachers in five Massachusetts school districts. The 2023 Customized Professional Learning Services sites included Whittier Regional Vocational Technical High School, Pittsfield Public Schools, Fitchburg Public School, Peabody Public Schools, and Medway Public Schools.



The Wade Institute continues to provide Customized Professional Learning Services programs that model hands-on, minds-on, phenomena-driven and inquiry-based instruction, centered on storyline teaching. Programming in Fitchburg expanded into working with their Elementary school teachers, bringing in Routines for Reasoning in Math, and correlating them to the routines of Storyline teaching. Additional programming returned to the Middle and High Schools, diving into Assessment and evaluating student work in a storyline classroom. Whittier Tech programming was an exploration of a new format for CPLS – a hybrid online/in-person model using our Schoology platform to explore inquiry, the Science and Engineering Practices, Phenomena-Based Instruction, and investigation design. Peabody programming was a deep dive into two Science and Engineering Practices – and incorporated coaching support into our CPLS model.



The Customized Professional Learning Services programs provide school administrators and teachers valuable space for exploring pedagogical concepts and science content, and bringing that work into the classroom to benefit student populations.

# OpenSciEd Professional Learning

The Wade Institute has seen continued growth in our delivery of OpenSciEd programming, striving to both expand our collection of designed OpenSciEd teacher trainings, as well as exploring different ways to deliver training and support to teachers implementing OpenSciEd. In each of these training programs teachers were introduced to the overarching elements of OpenSciEd's phenomena-based storyline teaching model, and experienced crucial lessons in student hat, including the anchoring phenomena routine, key investigations and assessment components.



In the winter and spring of 2023 we delivered our first series of 2-day deep dive programs to the Springfield Empowerment Zone Middle Schools, encompassing units 7.3, 8.3 and 8.5 – all of which were manufactured by Wade specifically for these schools. In the summer and fall we explored providing teacher support in the science content of OpenSciEd units, working with the Attleboro Public Schools and bringing science content experts to train teachers on concepts explored in 4 OpenSciEd units, covering the physical sciences, as well as earth and space content. To continue expanding our delivery options, in the winter of 2023 we provided Launch training on Unit 6.4 combined with individual teacher coaching during unit delivery.

During the summer of 2023 three Wade staff were trained on the newly released OpenSciEd High School units, and newly hired staff were trained on Middle School units, allowing us to expand our ability to deliver OpenSciEd programming. We immediately put that High School training to use, delivering Life Science and Chemistry units Launches to the Lowell Public Schools.



As the number of released OpenSciEd units has grown with the release of the High School units, we are still predominately delivering newly designed units, which includes extensive staff time for design. As we continue to develop a wider collection of OpenSciEd materials we look forward to benefiting from reusing Wade-designed materials and thereby reducing the staff time cost.



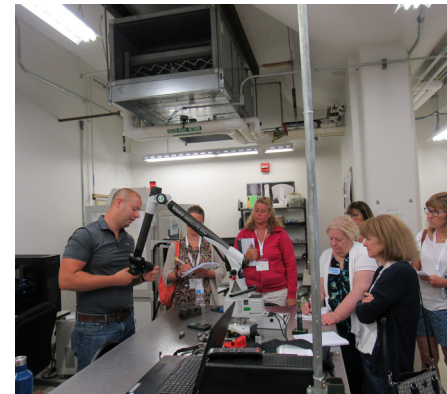
# Strategic Planning Process

In 2023, the Wade Institute embarked on an ambitious Strategic Planning process, partnering with Empower Success Corps (ESC) to develop a 3-year plan that would address the needs of the evolving landscape of STEM education and ensure the sustainable growth of the organization. Over a 10-month period, a dedicated team of consultants from ESC collaborated closely with Wade Institute Board Members Jake Foster, Neil Gordon, and Karen Worth, and Staff Members Sandra Ryack-Bell, Kathryn Atkins, and Janine Whealan. Together, the group identified long-term goals, collected valuable feedback from stakeholders, evaluated current programming for their relevance and impact, and explored innovative ways to enhance future fiscal sustainability. The process culminated in a plan designed to guide the Wade Institute toward strategic growth over the next 3 years, with an emphasis on strengthening the Board of Directors, expanding organizational awareness, diversifying funding sources, and developing an optimal mix of educational programming. The Wade Institute is looking forward to the future of the organization as it begins to implement these strategies.



# 2023 Collaborating Partners

- Atlantic White Shark Conservatory
- Beneski Museum of Natural History
- Berkshire Science Commons at Berkshire Community College
- Berkshire Environmental Action Team
- Blackstone River Valley National Heritage Corridor
- Buttonwood Park Zoo
- City of Pittsfield Engineering Division
- Lloyd Center for the Environment
- Manomet Inc.
- New England Botanic Garden at Tower Hill
- Springfield Science Museum



# Staff and Board

## Wade Institute Staff

Sandra Ryack-Bell, *Executive Director*  
Janine Whealan, *Office Manager*  
Nan Waksman Schanbacher, *Director of Development*  
Amanda Noble, *Marketing & Education Resource Coordinator*  
Kathryn L. Atkins, *Director of Education*  
Allison Pagliaro, *Assistant Education Director* (January – August)  
Kara Doherty, *Education Coordinator*  
Mary Finkel, *Assistant Education Director* (September – December)  
Rosemary Rak, *Education Specialist*  
Margaret Brumsted, *Education Specialist*  
Kathy Renfrew, *Education Specialist*  
Diana Cost, *Education Specialist*  
Leslie Knight, *Education Specialist*  
Sharon Kabelitz, *Education Specialist*  
Kevin Monteith, *Education Specialist*

## Wade Institute Board of Directors

Emily V. Wade, <i>President</i>	Ruth Ellen Fitch
Nan Waksman Schanbacher, <i>Co-Chair</i>	Jacob Foster
Karen Worth, <i>Co-Chair</i>	Andrea Gwosdow
Neil Gordon, <i>Treasurer</i>	Terry Kwan
Edith Copenhaver, <i>Clerk</i>	Obi Onochie
Deborah Cary	David Wong
Edith Copenhaver	Kathy Zagzebski
Donald DeRosa	

# Supporters

We are grateful to the many individuals, companies, and foundations who contribute their talent, time, and funds to support our work.

## Foundations and Corporations

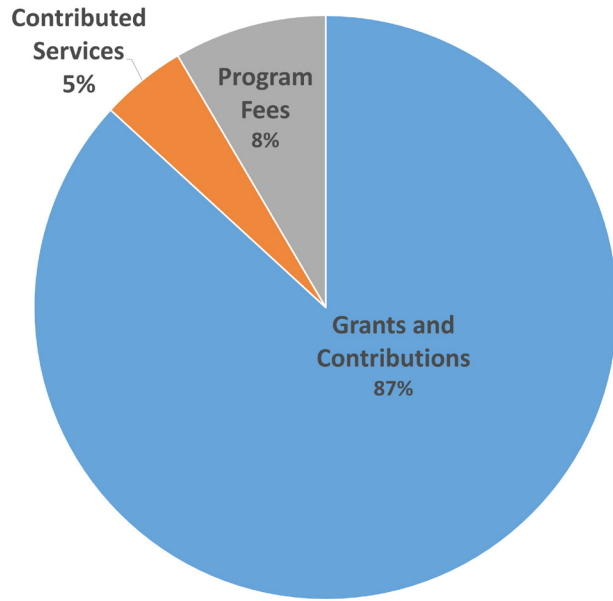
Alchemy Foundation (Kyra Montagu)  
Brabson Family Foundation  
Cleveland Foundation (Robin & Ellery Sedgwick)  
Cleveland Foundation (Irene Briedis)  
Esther B. Kahn Charitable Foundation  
Fuss & O'Neill's Force for Change  
George Garretson Wade Charitable Trust  
Hermann Foundation  
MA Department of Elementary and Secondary Education  
MA Department of Higher Education/STEM Advisory Council  
MA Executive Office of Education  
Maine Community Foundation (Warren & Brammie Cook)  
National Grid Foundation  
PayPal Giving Fund  
Vanderbilt Family Foundation

## Individuals

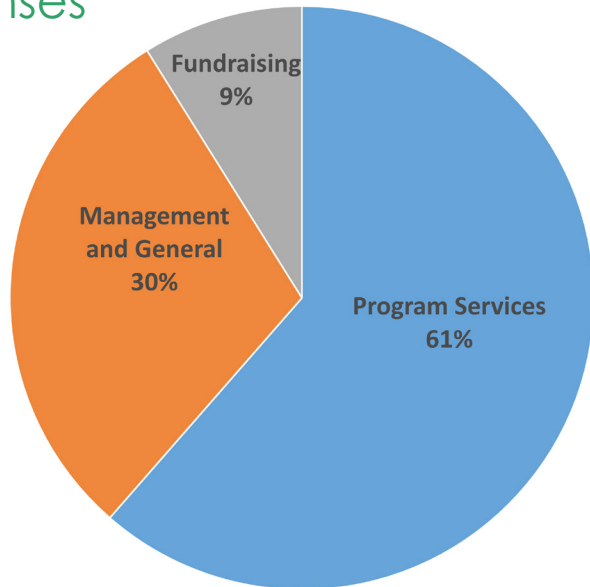
Sheldon Apsell	Lawrence & Atsuko Fish	William & Angela Lowell
Gregory & Karen Arenson	Ruth Ellen Fitch	Michael Monroe
Keith Bostian	Jacob Foster	Barry Nelson
Deb & Charlie Cary	Norman & Madeleine Gaut	Harold I. Pratt
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Edith Copenhaver	Susan & Jim Hunnewell	Estelle Weedon
Brit d'Arbeloff	Scott Kirsner	David Wong
Davis Dassori	Terry Kwan	Kathryn Zagzebski
Gaston & Marie Daumy	Gene Landy	
Don & Rosemarie DeRosa	Linda Leddy & Trevor Lloyd-Evans	
Patricia Deveaux	Sherry & Alan Leventhal	
Carolyn Fine Friedman		

# Financial Statement

## Revenues & Support



## Expenses



# Financial Statement

## Revenues & Support

Grants & Contributions	\$804,623
Contributed Services	\$43,762
Program Fees	\$78,450
Interest	\$4
<b>Total Revenues</b>	<b>\$926,839</b>

## Expenses

Program Services	\$555,862
Management and General	\$268,582
Fundraising	\$80,531
<b>Total Expenses</b>	<b>\$904,975</b>

Net Assets Beginning	\$403,092
Net Assets Ending	\$424,956

*A full copy of the audit is available from the Wade Institute office.*



# Reflections on Programs

*When going to a workshop, I'm always thinking about whether this is applicable to my practice. Everything we did today is something I can replicate with my students in one way or another.*  
- Global Learning Charter Public School Teacher



*My brain is already running with ways that I can bring this information into the classroom. A big standard in 4th grade is adaptations for animals/plants. I'm already thinking about how I can take the activities and information I learned today and modify it to fit our standards.* - Dighton-Rehoboth Regional School District Teacher

*Today helped to remind me of the importance of a science journal. It seems that most teachers in the group had used one at some point. It was beneficial to hear that there is not one way, but that student reflection and thinking about the material should be included in the notebook.* - Stoughton Public Schools Teacher

*There's nothing like experiencing something live in real time (such as the water treatment plant but applies to a million other things.) Videos and readings, etc. can enrich and deepen our understanding, but real-life experience is the "anchor."* - Lexington Public Schools Teacher

*I loved that this workshop had a great balance between building a teacher's background and making connections to teaching/learning strategies. I learned a lot about plants but also how to connect that learning to the creation of a storyline unit.* - Building the Storyline Participant

*Today was excellent - diverse mass of activities and tasks was engaging and kept things moving.* - Mohawk Trail Regional School District Teacher

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