



## School & Youth Program Partnership Guide

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Northeast STEM Center of Excellence



COMMUNITY BOATING CENTER  
INDIA POINT PARK, PROVIDENCE

3/4/15

Andrea Summers  
Central Falls School District  
Calcutt Middle School  
949 Dexter St.  
Central Falls, RI 02863

Dear Andrea,

Community Boating Center (CBC) is honored for the opportunity to provide a unique and exciting STEM experience in the classroom and on the Providence waterfront for a full sailing season of sponsored youth. Hands-on, experiential learning is the key to engaging today's youth with STEM education in a personally meaningful way. CBC has recently made great strides in capturing the inherently STEM-friendly components of sailing in a unique curriculum model and pilot program with both US Sailing and the Providence After-School Alliance. We're ready for more – so are the youth we serve.

We employ an inquiry-based learning model to encourage youth to take ownership in their education. We ask them to learn with us every day in a process of continuous improvement. Together, we share the extraordinary experience of daily sailing while investigating the science of the forces at work in and around our boat. We need your help to continue the great work that we have started by helping us to expand our programs to our full season and provide the means to actively advance our curriculum work each session.

We feel strongly that we offer much more than an out-of-school time activity. We view our maritime programs and waterfront facility as an extension of our partner organizations and welcome them to take full advantage of CBC as their own waterfront classroom. Hands-on, experiential learning is a vital component to so many education initiatives. Non-sailors may ask, "why sailing?" when Providence already has organizations that offer a variety of youth sports and recreational programs. There are few, if any, activities that teach so many important virtues and lessons about life the way sailing does: cause and effect, problem-solving, science and technology, teamwork, and much more. We are particularly excited to incorporate science, technology, engineering, and math (STEM) components into our full season curriculum this year. Sailing offers a myriad of opportunities to balance learning and fun in a dynamic way.

Empower students to skipper a boat on their own and watch their confidence soar! Sailing requires an unmatched mix of physical skills, intelligence, sound judgment, self-reliance and responsibility for vessel, crew and self. Boys and girls from different cultures and backgrounds work together learning tolerance, trust and respect for one another. Plus we invite our partners, school staff, and parents/family to share in the experience with many adult sailing opportunities at CBC.

We're confident you will agree that your choice of CBC as an out-of-school time venue will provide a unique opportunity for learning and recreational services that reinforce your commitment to education excellence. Feel free to contact me at (401) 454-SAIL (7245) or [johnof@communityboating.com](mailto:johnof@communityboating.com) with any questions. Thank you.

Sincerely,

John O'Flaherty  
Executive Director  
Community Boating Center



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## Reach STEM Sailing Curriculum Examples

### The Science of Sailing

All sailing is really about science and math. You're immersed in it, whether you realize it or not. [Reach](#) is a school enrichment program for students that involves classroom and on-the-water experiences. We add a very under-toned dash of science to fun experiments and games that start on land and evolve to using on-the-water sailing experiences as a springboard for discussion of the science behind it all.

Community Boating Center (CBC) partnered with US Sailing to develop Reach. [Click Here](#) for more information on the Reach modules. Reach utilizes sailing as an educational platform, challenging youth to embrace education, establish a love of learning and explore productive Science, Technology, Engineering, and Math (STEM) based careers. Reach connects the knowledge of educators, sailing instructors, engineers, and scientists with today's youth to provide them a one of a kind authentic learning experience, giving students the opportunity to apply classroom learning in a cooperative work environment. [Click Here](#) to view module correlations to Common Core standards.



CBC was the national pilot for US Sailing's "Reach" STEM curriculum aligned to Common Core and Next Generation science standards.

### Day 1 – Measuring Wind – “How can we use the wind?”

**Subject Areas** - Earth Science, Math (statistics and conversion)

**Setting** - Classroom/Outdoor

**Skills** - Gathering information, organizing data, analyzing, interpreting, applying, measurements conversion, averaging. (Reach Module 1)

**Vocabulary** - Standard units, Beaufort scale, Anemometer, mph

#### Summary

Students construct anemometers to measure wind speed, collect data, and compare wind velocity in different locations.

**Objectives** - Students will:

- Define wind scientifically using speed and direction.
- Construct an anemometer and measure wind speed.
- Convert revolutions per minute to mph & collect wind speed data.
- Be introduced to the Beaufort Wind Scale.
- Compare data, explain why we have standards in measurement.

### Day 2 – Buoyancy – “How does a boat float?”

**Subject Areas** - Science, Technology, Engineering and Mathematics

**Setting** - Classroom/Outdoor

**Skills** - Predict, test, explain (Reach Module 2)

**Vocabulary** - Gravity, Weight, Mass, Displacement, Buoyancy, Density

#### Summary

Students investigate buoyancy, density, and water displacement.

**Objectives** - Students will:

- Predict if object will sink or float if placed in salt or fresh water.
- Identify factors that affect the ability of an object to float.
- Explain the relationship of buoyancy and density.
- Explain how sailboats & tankers float even though they are heavy.

### Day 3 – Water Quality Testing – “What’s in the water?”

**Subject Area** - Earth Science, Chemistry

**Setting** - Classroom/Outdoor

**Skills** - Gathering Information, organizing data, identifying trends, and data analysis. (Reach Module 5)

**Vocabulary** - Hydrometer, salinity, ppt, specific gravity, pH scale, acid, base, turbidity, Secchi disk, red tide, algae bloom, and fish kills.

#### Summary

Students collect data and compare different measures of water quality daily for an extended period of time.

**Objectives** - Students will:

- Understand reasons for a difference in water and air temperature.
- Utilize a hydrometer to record salinity and specific gravity.
- Use ppt (parts per thousand) to describe the salinity of water.
- Be introduced to pH scale and be able to analyze acidity of water.
- Compare multiple sets of data.
- Make observations about changes in water quality.
- Identify and understand possible reasons for these changes.

### Days 4 - 8 – Sailing and more Reach Modules...

**Subject Area** – Hands-on sailing fun!

**Setting** - On-the-water, 22' stable & dry keelboats

**Skills** - Steering a course, adjusting sails, roles/responsibility as a crew

**Kids!** - You're in the driver's seat with this on-the-water adventure that allows you to steer your own boat. Ready for more? You'll explore the bay with your friends sharing the water with tankers, tugboats, and other unique waterfront resources!



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## Daily Program Quality

### SUPPORTIVE ENVIRONMENT

#### Welcoming atmosphere

- Staff greet youth
- Staff tone of voice and language
- Smile, friendly gestures, eye contact

#### Session flow

- Start and end on time
- Materials and supplies ready
- Enough materials and supplies for all
- Staff explain activities clearly
- Appropriate time for activities

#### Active engagement

- Youth engage with materials or ideas
- Tangible products or performances
- Youth talk about what they are doing
- Balance concrete and abstract

#### Building new skills

- Youth encouraged to try new skills
- Mistakes allowed

#### Encouragement

- Staff actively involved with youth
- Specific, non-evaluative language
- Open-ended questions

#### Reframing conflict

- Staff approach calmly
- Staff seek input from youth
- Frame actions and consequences
- Staff follow up

### INTERACTION

#### Sense of belonging

- Get to know each other
- Inclusive relationships
- Youth identify with program offering
- Publicly acknowledge achievements

#### Small groups

- Ways to form number of small groups
- Groups have purpose, cooperate

#### Youth lead and mentor

- Group-process skills
- Opportunities to lead & mentor

#### Youth-adult partnerships

- Staff share control with youth
- Staff explain guidelines

### ENGAGEMENT

#### Youth set goals and make plans

- Plans for projects and activities
- Planning strategies

#### Youth make choices

- Content & process choices

#### Youth reflect

- Youth reflect in multiple ways
- Youth make presentations
- Youth give feedback on the activities

## Learning Strategy, Theory, & Tools

### Inquiry-Based Learning

#### INQUIRY-BASED LEARNING CONTEXT

- Youth guide, shape, and lead their own learning in partnership with educators.
- Educators are facilitators of youth learning, not just transmitters of knowledge.
- Learning is engaging & fun for youth/adults.
- Youth engage in real-world applications and problem-solving - personally meaningful.

#### INQUIRY-BASED LEARNING PROCESS

- Activate prior knowledge of particular topics
- Develop explanations around questions posed by youth and educators.
- Engage youth in hands-on exploration and observation with data collection, analysis, and using evidence to form conclusions.
- Provide opportunities for youth & educators to reflect upon what has been learned.
- Empower youth to publicly demonstrate and articulate their content & process learning.

### Social/Emotional Skills

#### WHAT/WHY STUDENTS LEARN

- Self-management: internal and responsible decision making.
- Empathy: grow social & self-awareness.
- Communication: learn to resolve conflicts, express opinions, make an argument.
- Questioning: develop a sense of curiosity.
- Imagination: think critically and creatively.
- Tenacity: show dedication and commitment to complete a task/goal despite difficulty.
- Passion: feel a sense of personal drive and internal motivation.

### Learning Tools – Day 5

#### DAILY FLOW

- Build-in flexibility, balance theory/hands-on
- Encourage spirited, friendly competition.

#### ACTIVITIES USED

- Captain's log, round table, board lesson.
- Reading out loud, US Sailing book time.
- Data collection/recording, Hands-on sailing.

#### SUPPORTIVE LEARNING STRATEGIES

- Discussion, lecture, small and large groups.
- Youth planning opportunities.
- Simulation or role playing.
- Cooperative learning, youth reflection.

#### MATERIALS USED

- 22' Hunter 216 sailboats, PFD's.
- LSR-BS, SBS-RB, pencils.
- Anemometer, thermometers.
- Special - See Reach M3.

#### REFLECTION & FEEDBACK

- Logbooks will prompt reflection.
- Discussion, feedback, review, questions.
- Talk time to share experiences.

## Day 5 – STEM Sailing Group Experience

### Curriculum – Day 5

#### OBJECTIVES (180 min. session)

- Review of Day 4
- Intro to tacking
- Intro to points of sail

#### WELCOME (10 min.)

- Round table discussion of day 4 events.
- Distribute LSR-BS & SBS-RB books.

#### PRIMING QUESTIONS (10 min.)

- What's shortest distance between 2 points?
- What shape are sails and why?

#### DATA COLLECTION/ RECORDING (10 min.)

- Split into small crews.
- Wind speed, air & water temperature.

#### CHALK TALK – LSR-BS (10 min)

- **Review chapter 6** - steering
- Intro chapter 11 – tacking
- **Intro chapter 5** – points of sail

#### Reach – M3 – PERIMETER & AREA (60 min.)

- Part I – Sails as triangles (10)
- Part II – Area of sails (10)
- Part III – Pythagorean's Theorem (40)

#### ON-THE-DOCK (15 min.)

- Instructor demo – tacking

#### ON-THE-WATER (50 min.)

- Tacking – "Tack Tiller Toward" sail
- Points of sail – "When in doubt – let it out"
- 360 deg. circle illustrated w/ points of sail
- Right angle illustrated w/ "No Go Zone"
- 45 deg. angles for close-hauled position

#### DE-BRIEF (10 min.)

- How are angles important to our sailing?
- Questions? Reflection time - captain's logs.

### Expanded Learning – Day 5

#### SCIENCE – PERIMETER & AREA

- Measure the area of a triangle.
- Compute Pythagorean's Theorem.
- Review triangle base, height, hypotenuse.
- Identify the parts of a sail, head, foot, luff, and leech – compare to triangle.
- Compare sail area of a main and jib sail.

#### LITERACY COMPONENT

- Youth logbooks – SBS-RB.
- Volunteers read LSR-BS aloud.
- New mariner vocabulary words taught daily.
- Word Wall – always present, youth owned.



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## Go Sailing – A General Guide to Youth Outreach

Interested in reaching out to a diverse and expanded sailing audience? Embrace these simple, yet effective tips to jumpstart or improve your outreach efforts and enhance your overall program quality.

### Go There

Resist the “if you build it they will come” trap. You know your program is the best-kept secret around - does everyone else? It’s called outreach for a good reason - You must “reach out” to local schools, community groups, and programs by going out to their turf in a setting that is comfortable for your target audience. Sailing is not a natural draw for everyone. Outreach is a key element to reaching your recruitment goals.

### Go Big

Set a target for your class size – then bump it by 20%. Attrition will whittle your class down by a factor more significant than you may expect. Transportation, sick days, and the usual time competition suspects pale in comparison to the challenges that disadvantaged youth face today. The need to contribute to family income and scheduling difficulties of having parents with third-shift jobs are common, real-world factors that must often be dealt with prior to even considering your program.

### Go Real

Trust is earned. The only way to connect with you students is to be real. False pretenses or inflated promises will not fly. Be yourself, tell it like it is, and be wary that students need to trust you for your program to succeed. Stepping into a small boat and sailing in open water may be second nature to you, but it can be downright scary for youth with little to no experience around the water. Build trust in small, welcoming ways that make your students feel at home.

### Go Low

If you think nomenclature and wind direction form your baseline curriculum – think again. Go back to basics by addressing the most basic safety needs of students unfamiliar with sailing safety and the rigors of being on-the-water. Girls and boys naturally want to impress each other with heels or body sculpting t-shirts, and of course, cannot survive without being electronically connected 24/7. Simple concepts including proper footwear, thermal layering, sun protection, and the perils of salt-water immersion for cell phones are better taught than learned the hard way.

### Go Out

Skip the “chalk talk”, nomenclature, and knot tying on day one – Go Sailing! You never get a second chance to make a first impression. Get everyone out on the water right away with a qualified skipper at the helm. Most sailors of all ages remember their first sailing experience and the thrill of slicing through waves with nothing but wind in the sails. Give everyone a turn at the tiller and make them want to come back for more.

### Go Grill

For centuries, society has turned to food for social bonding opportunities. Get to your students through their stomachs! People tend to remember the beginning and end of any experience. Start with an ice-cream social and end with a BBQ or pizza party. A few bucks spent on a gallon of Ben & Jerry’s or a box of burgers goes a long way to enhance your students overall experience with you and your team.

### Go Hollywood

The concept of teaching sailing to inner-city youth is always well received. There are many potential celebrities, funders or supporters who are vying to align with an idea this good. Invite the Mayor, Senator, corporate president, or community leader to sail with your kids. You don’t know if you don’t ask. Make it a big deal for your community and your kids.

### Go Now

Quality outreach is not difficult – it takes discipline. With a few quality enhancements, you can create the tools you need to introduce a diverse and expanded audience to our beloved sport. Start sharing your passion for sailing today.

DAVID N. CICILLINE  
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Congress of the United States  
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AND NORTH AFRICA  
SUBCOMMITTEE ON AFRICA, GLOBAL HEALTH,  
GLOBAL HUMAN RIGHTS, AND  
INTERNATIONAL ORGANIZATIONS

June 18, 2015

Jessica Servis  
REACH Program Manager  
U.S. Sailing Program (REACH)  
15 Maritime Drive  
Portsmouth, RI 02871

*RE: 2015 Youth STEM Education Sailing Program*

Dear Program Manager Servis,

I am writing in strong support of the grant application submitted by the Community Boating Center, Inc. (CBC) for the funding opportunity through the 2015 Youth STEM Education Sailing Program of the U.S. Sailing REACH Program. The Community Boating Center is seeking a \$1,712 grant for the purchase of supplies needed to offer ten (10) Remotely Operated Vehicle modules and six (6) Wind Turbines modules as part of the STEM curriculum for the After-School and Summer STEM Education Sailing Program in 2015.

The Community Boating Center offers many of Providence's most disadvantaged youth hands-on learning and outdoor experiences that would otherwise be unavailable to them. CBC's STEM program is a model of engaged learning and provides a vital opportunity for children to have access to resources and innovative educational tools both inside and outside of the traditional classroom experience. CBC's youth programming addresses three community goals: 1) provide safer, structured activities for low and moderate income urban youth; 2) address low educational attainment, especially in STEM fields; and 3) bridge the skills gap between education and workplace by fostering healthy social development. Last year alone, the CBC served over 2,000 mostly low-to-moderate income minority youth during their summer and after-school programming season. The Community Boating Center's STEM Program is a great example of a community-based organization working to close the achievement gap between lower-income students and their peers, as well as create opportunities and build a solid foundation in STEM education for all of Providence's youth.

Through my work in Congress, I have strongly supported efforts to expand and improve STEM education in our country. For example, I am a cosponsor of H.R. 565, the Stepping Up to STEM Act, which would promote innovation in STEM education by calling for an office at the Department of Education focusing exclusively on STEM education, and create grants for state-level STEM programs and networks with utilize private and public partnerships.

As the U.S. Representative serving Rhode Island's First Congressional District, it is my pleasure to support the grant proposal put forth by the Community Boating Center, Inc. I encourage you to perform a full and fair review of the application, according to the applicable federal rules and regulations of your agency. Thank you for your time and attention to this matter.

Sincerely,

David N. Cicilline  
Member of Congress

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## COMMUNITY BOATING CENTER

INDIA POINT PARK, PROVIDENCE

### STEM Testimonials

“As a high school Partnership Manager, I have seen firsthand how Community Boating positively influences a student’s school engagement. Community Boating not only teaches sailing and STEM skills, it builds a student’s confidence that leads to future success.

Take for instance “Sam”, a 9th grade student. Before Community Boating, Sam lacked motivation and did not engage in school; he was in danger of failing for the year. Once Sam experienced success in the REACH program, he gained the confidence and motivation to participate in school. It was a critical turning point for him. I am pleased to report that Sam is now engaged in his education and has found the confidence to be a motivated student.”

-Kim Reall-

Real World Learning Manager

The Metropolitan Regional Career & Technical Center

"The Community Boating Center has offered my students an opportunity to participate in US Sailing's Reach program, which has facilitated project based-learning and provided students outdoor opportunities that they otherwise would not be able to enjoy. The students have participated in a number of activities from giving back to their community by picking up debris along the Providence Harbor and exploring water quality and ecology. They have enjoyed being a part of the Reach program, which fosters leadership and passion for being on the water!"

-Musheng Alishahi-

Village Green Charter School

Science and Special Education Teacher

This is where it all started the Community Boating Center of Providence. Just a 13 year old kid who's grandma forced him to go to a summer sailing camp. I remember it like it was yesterday, I hated the first week! But as time went on I started to like the idea of sailing. The following summer I was asked to be a junior instructor. This only led me to love the idea of passing what you know on to the young. When I was 16 they presented me with an opportunity.. An opportunity which has changed my life forever. They offered me a sailing instructor position. I learned a lot about myself in the years it was a sailing instructor. I learned from the children who I was instructing. Over time CBC started to trust me not only with the children but they also taught me how to maintain sailboats and from that they taught me how to repair them. There it was, my eyes opened up to a whole new world. My life has had its moments but when I'm sailing nothing else matters, I forget about the world, I am stress free and truly happy. With my love for sailing growing everyday I am proud to say that on the 17th of March I will be starting my first full time job at the Martha's Vineyard Shipyard as one of there riggers. I would like to thank CBC for everything they have taught me and also my family for always being there for me. I am one step closer to my goal..

-Anthony Johnson-

Student/STEM participant



**COMMUNITY BOATING CENTER**  
INDIA POINT PARK, PROVIDENCE

Andrea Summers [summersa@cfschools.net](mailto:summersa@cfschools.net) 401-727-7726

**Calcutt Spring REACH STEM Sailing Proposal – 3/5/15**

Thank you for your interest in helping integrate STEM into our full season of classroom and hands-on sailing programs. We are thrilled at the prospect of having more STEM sponsored youth connect with Narragansett Bay and make use of our facility as a “waterfront classroom” and natural extension of the school day. We look forward to a great season of expanded learning. Included please find our proposal for your review and approval:

**Spring 2015 – Calcutt REACH STEM Sailing** Each group (approx. 15 students max.) will meet four (4) days/week, (Monday - Thursday 6/1 - 6/11/15), 3:30 pm - 5:00 pm. 8 Sessions total.

<u>Item Description</u>	<u>Cost</u>	<u>Units/Session</u>	<u>\$/Session</u>	<u>\$ - 8 Sessions</u>
Classroom/ Facility Rental	\$n/c	1	\$0.00	\$0.00
22' Hunter 216 Keelboats (3)	\$210.00	1	\$210.00	\$1,680.00
Head Instructor	\$21.00/ hr.	3	\$63.00	\$504.00
Sailing Instructor	\$16.00/ hr.	3	\$48.00	\$384.00
Sailing Instructor	\$16.00/ hr.	3	\$48.00	\$384.00
Curric./Prgm. Development	\$32/ hr.	3	\$96.00	\$768.00
Program Supplies	\$30	1	\$30.00	\$30.00
Total cost (for 8 sessions):				<b><u>\$3,750.00/ program*</u></b>

**CBC Sailorship Scholarship Discount** (for 8 sessions): **(\$2,550.00)**

**Calcutt cost** (for 8 sessions): **\$1,200.00**

**Special Notes:**

- CBC secured grant funding will cover partial cost of this program (Calcutt responsible for transportation costs)
- Sailing times noted are approximate sailing/program times only. (3 hr. instructor minimum for set-up, etc.)
- Advisors are welcome to participate (including use of different advisors on alternate days)
- Sailing studies and alternative activities will be provided at CBC in case of inclement weather.
- Additional snack/meal period before or after program times is available on CBC site at no charge.
- Included please find a liability waiver required of all sailing/program guests prior to participation.
- Fall 2015 dates also available. Please reserve your days promptly to hold your dates. Thank you!
- Please sign and return this document upon your approval to secure your requested dates and times.

We wish you the very best for your upcoming season. Thanks again!

Community Boating Center

Central Falls School District

John O'Flaherty

\_\_\_\_\_ Date \_\_\_\_\_  
by its Duly Authorized Officer