

Teaching
with Small
Boats Alliance
Conference
2017

April 26-29, 2017

Chesapeake Bay
Maritime Museum
St. Michaels, Md.



Building Sailing Models of Bevin's Skiff

Flexible Teaching Tools introducing:
Hand Tools
“Real-World” Problem Solving
Boat Building



Participants

- High School Marine CTE-
 - David Fawley, Center For Applied Technology South, Anne Arundel Schools, MD
- Middle School CTE-
 - Matt Cupples, Kenmore Middle School, Arlington, VA
- After School, Community Based Organization
 - Greg Pimentel, Science Out of School, Community Boating New Bedford, MA

“Case studies”

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Center of Applied Technology – South, Anne Arundel County Public Schools Marine Service Technology Program

Career Exploration, 9th grade



Level 1, year-long “A” days



Level 2, year-long, every day



Creating the Building Form

- Reading a Ruler
- Division of Fractions
- Combination Square
 - As marking gauge for parallel lines
 - Making Perpendicular Lines
- Bevel Angles
- Drill Fundamentals
- Screw as Inclined Plane wrapped around Cylinder



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Forming the Boat

- Boat Terms and Vocabulary
- Geometry
 - Hand Plane
 - Flat Panels into 3-D Shapes
 - Congruency
- Band Saw Fundamentals
- Full Scale Bevin's Skiff Under Construction in Shop for Reference and Relevance





Finishing and Testing

- Boats Finished to Rails and Filling of Holes
 - Holes are Filled with Epoxy and Filler
 - Exothermic Reaction
 - Adhesive vs. Sealant
 - Cross Linked Polymer Chain
- Tow Tank (for fun, if time allows)
 - Mechanical Advantage of Falls
 - Dynamics of Resistance
 - "Form Follows Function"
 - Video Lesson on Science of Tow Tanks





Card Stock Model at Beginning of Level 1

- Names of Boat Parts and Directions
- Differentiated and Kinesthetic Games
Finding Boat Parts on Completed Boats in
Shop in Tandem with Card Stock Build
- Sequence and Process of Build
- Larger Conversation about Buoyancy and
Hull Design Theory



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Assessment

- Bevin's Model with Freshman is Low Pressure
- "S" or "U" grading on criteria mostly relating to work habits and participation
- No one left behind
- "If we can build it, we can fix it."
- Wide variance in skill levels and aptitude
- Mistakes along the way are part of the process, not "failures".





Hammond Middle School, Alexandria, VA

- 6th Grade CTE
- Underserved, On “Bubble” on State Math Test Score
- 100 served over 4 years





Educational Goals

- Math Remediation

Assessment

- Daily Journal,
- Math Class Grade,
- State Standardized Math Test





Kenmore Middle School, Arlington, VA

- Afterschool Enrichment
- Self Selecting, High Performing



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Educational Goals

- Engagement with Building Process
- Hands on Application of Math

Assessment

- Project Based Rubric



Community Boating, New Bedford

- A year-round youth development organization
- Ages 7+, predominantly inner city, at-risk students
- Improves students' lives through boats and boating





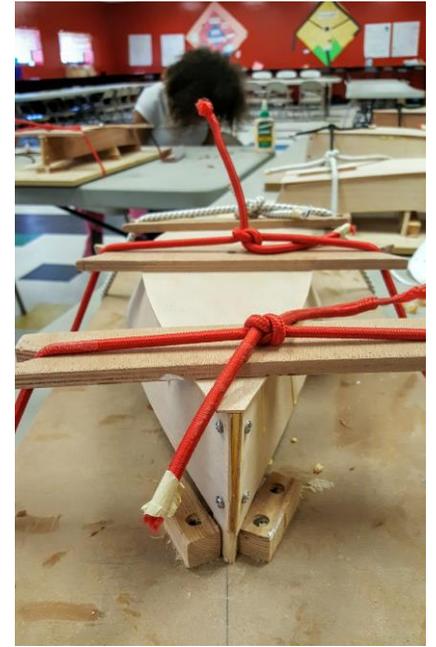
Community Boating 2017, New Bedford

- 4-day intensive vacation week
 - Beginning with the cleats installed with center frames and transoms.
- 12-week all-girls middle school program .
 - 5th graders build in teams of 2 students, from kits, to “rowboat” model.
 - 6th graders build their own boats to “rowboat”.
 - 7th graders take their 6th grade hulls and continue to the pond version.
 - 8th graders completed boats they had begun the previous year and made them RC sailboats.



Assessment

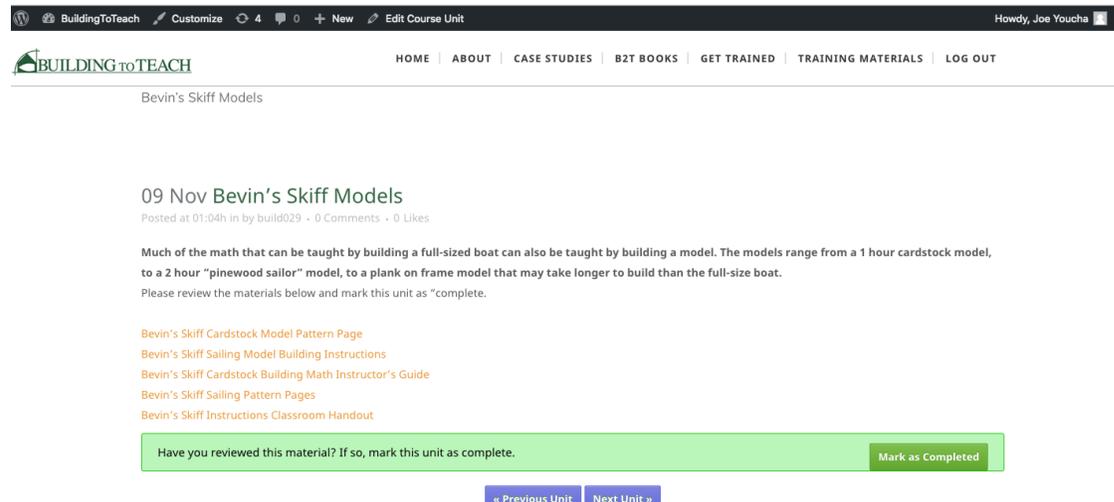
- Pre-test and post-test
 - STEM program
- Conferences and year on year growth
 - Boatbuilding program
- Daily vocabulary quizzes, and
- Independent observation by a school teacher
 - Middle school model boat building program





Resources

- B2T Online Training
- Cardstock Model
- Seaworthy Small Ships
Pinewood Sailer Model



BuildingToTeach Customize 4 New Edit Course Unit Howdy, Joe Youcha

BUILDING TO TEACH HOME ABOUT CASE STUDIES B2T BOOKS GET TRAINED TRAINING MATERIALS LOG OUT

Bevin's Skiff Models

09 Nov Bevin's Skiff Models
Posted at 01:04h in by build029 - 0 Comments - 0 Likes

Much of the math that can be taught by building a full-sized boat can also be taught by building a model. The models range from a 1 hour cardstock model, to a 2 hour "pinewood sailor" model, to a plank on frame model that may take longer to build than the full-size boat. Please review the materials below and mark this unit as "complete."

[Bevin's Skiff Cardstock Model Pattern Page](#)
[Bevin's Skiff Sailing Model Building Instructions](#)
[Bevin's Skiff Cardstock Building Math Instructor's Guide](#)
[Bevin's Skiff Sailing Pattern Pages](#)
[Bevin's Skiff Instructions Classroom Handout](#)

Have you reviewed this material? If so, mark this unit as complete.

[« Previous Unit](#) [Next Unit »](#)



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Discussion Questions

What Design Changes have you made?