Building a Boat with Socrates: Experiential Education and 21st Century Skills

Sarah Rubenstein, Maritime Discovery Schools

Jann Lane and Peter Crim,

Wind and Oar Boat School

Friday, May 1, 2015

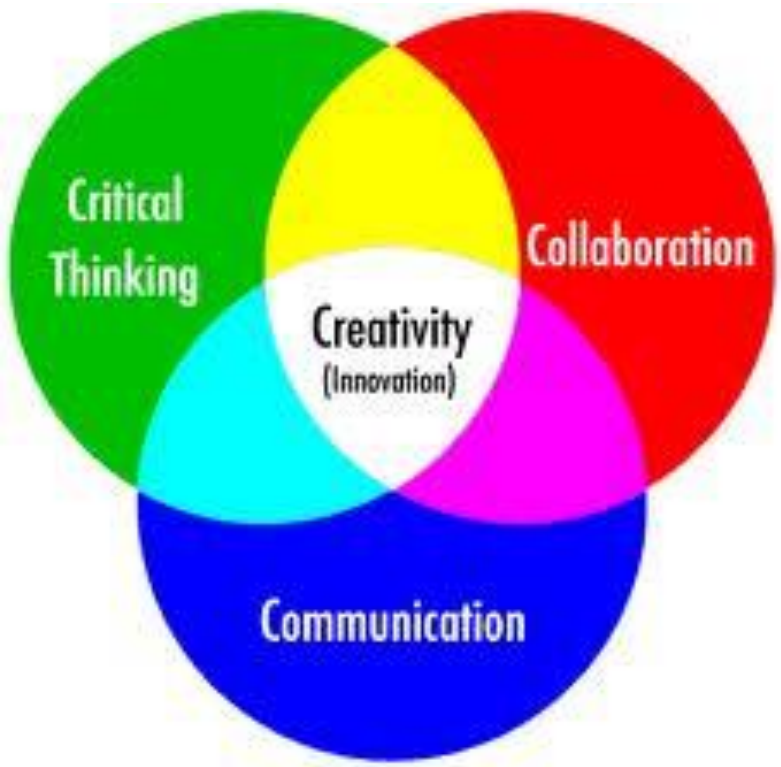
Discussion Overview

- Title: *Building a boat with Socrates: Experiential Education and 21st Century Skills*
- Moderators: Sarah Rubenstein, Maritime Discovery Schools and Jann Lane, Wind and Oar Boat School
- Topics:
  - What are 21st century skills and how are they related to other standards and skills?
  - How are your program, and other programs, articulating 21st century skills?
  - What shifts in your program will grow 21st century skills?
  - How is your program preparing participants for life, career, and college?
  - What is the sweet spot for your program when addressing national and state standards and skills?

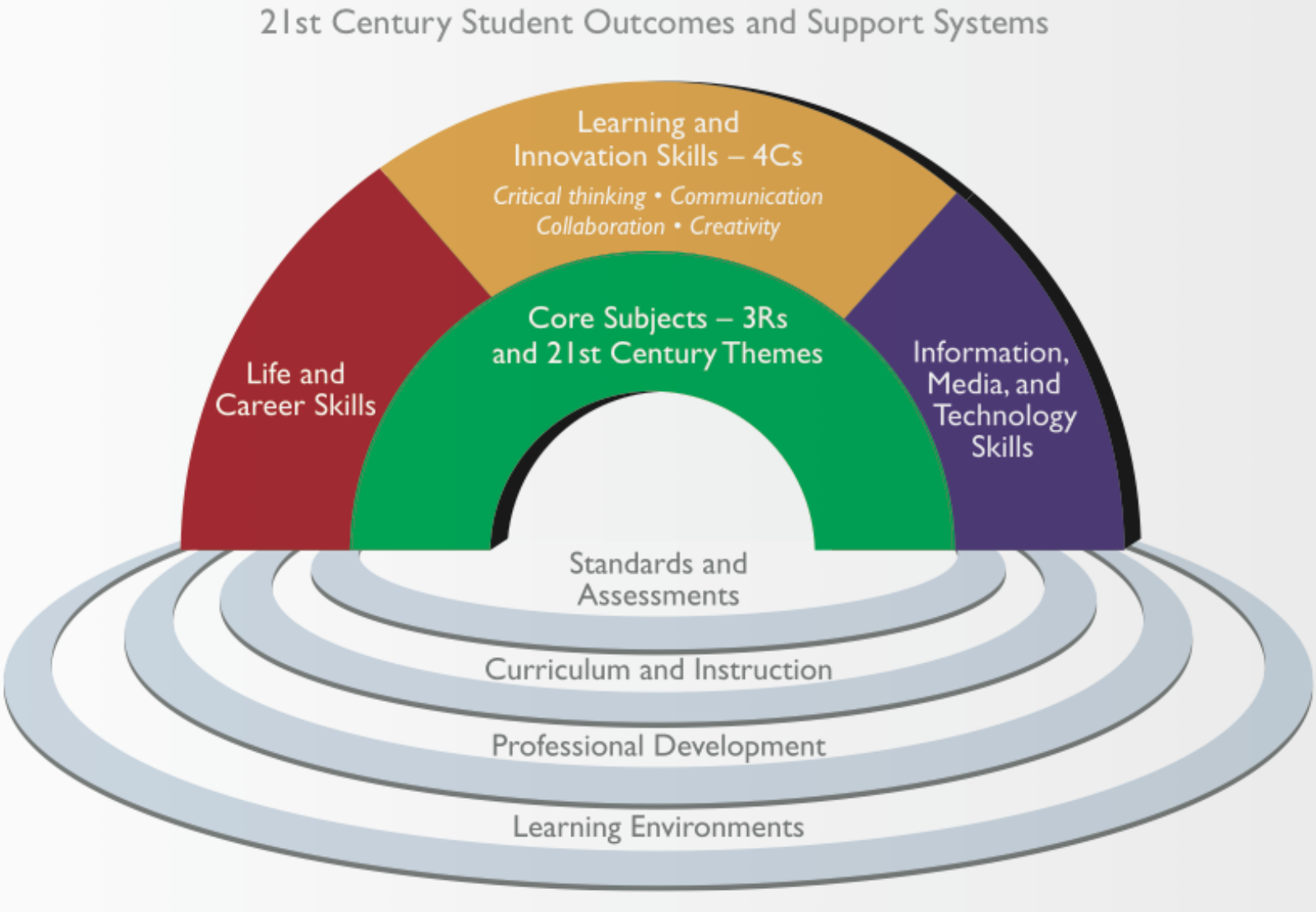
What are 21st century skills? How do these skills arise out of experiential learning…

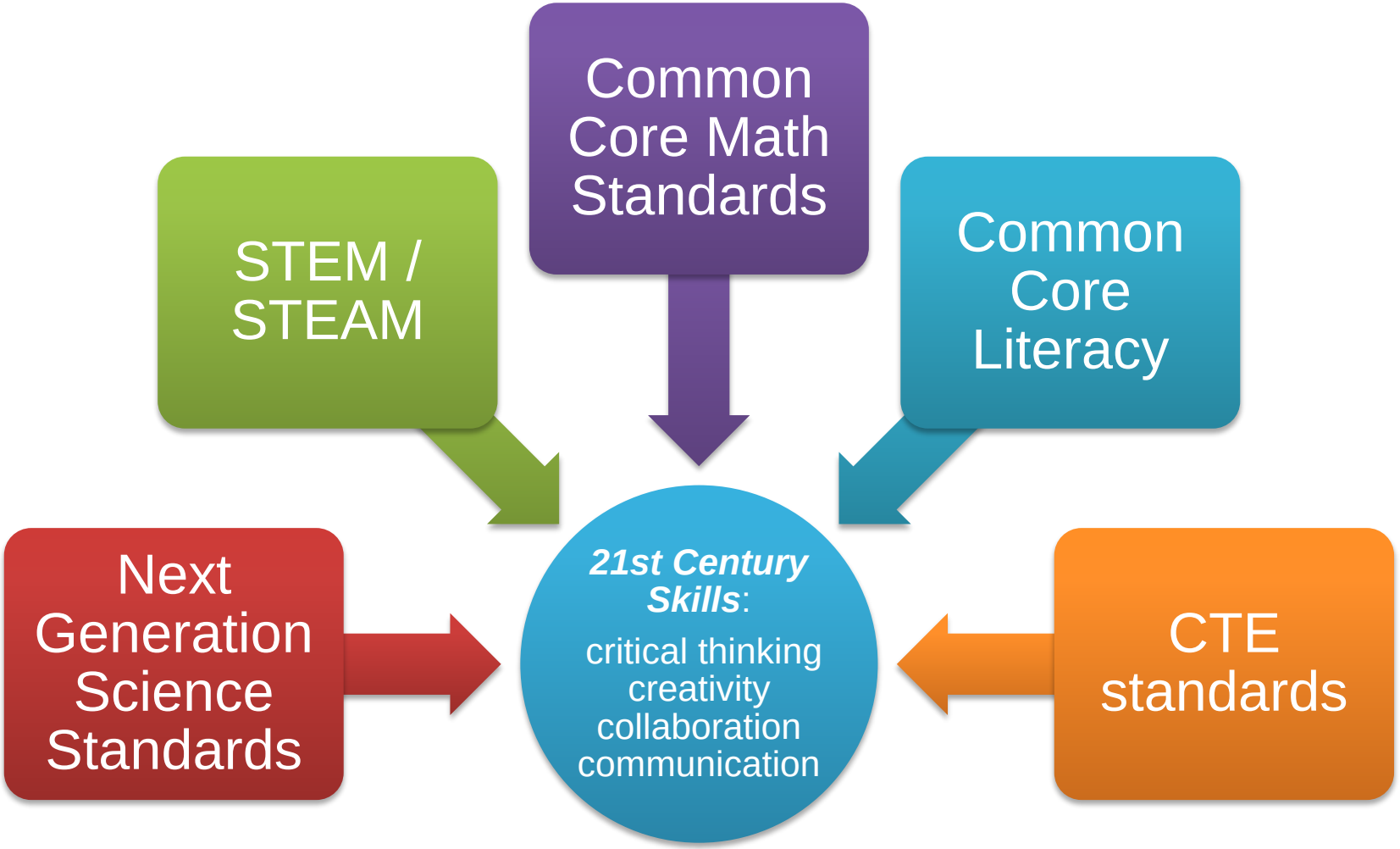
21st Century Skills

- Focuses on skills, content knowledge and expertise.
- Builds understanding across and among core subjects
- Emphasizes deep understanding
- Engages students in solving meaningful real world problems
- Allows for multiple measures of mastery



-From: Partnership for 21st Century Skills

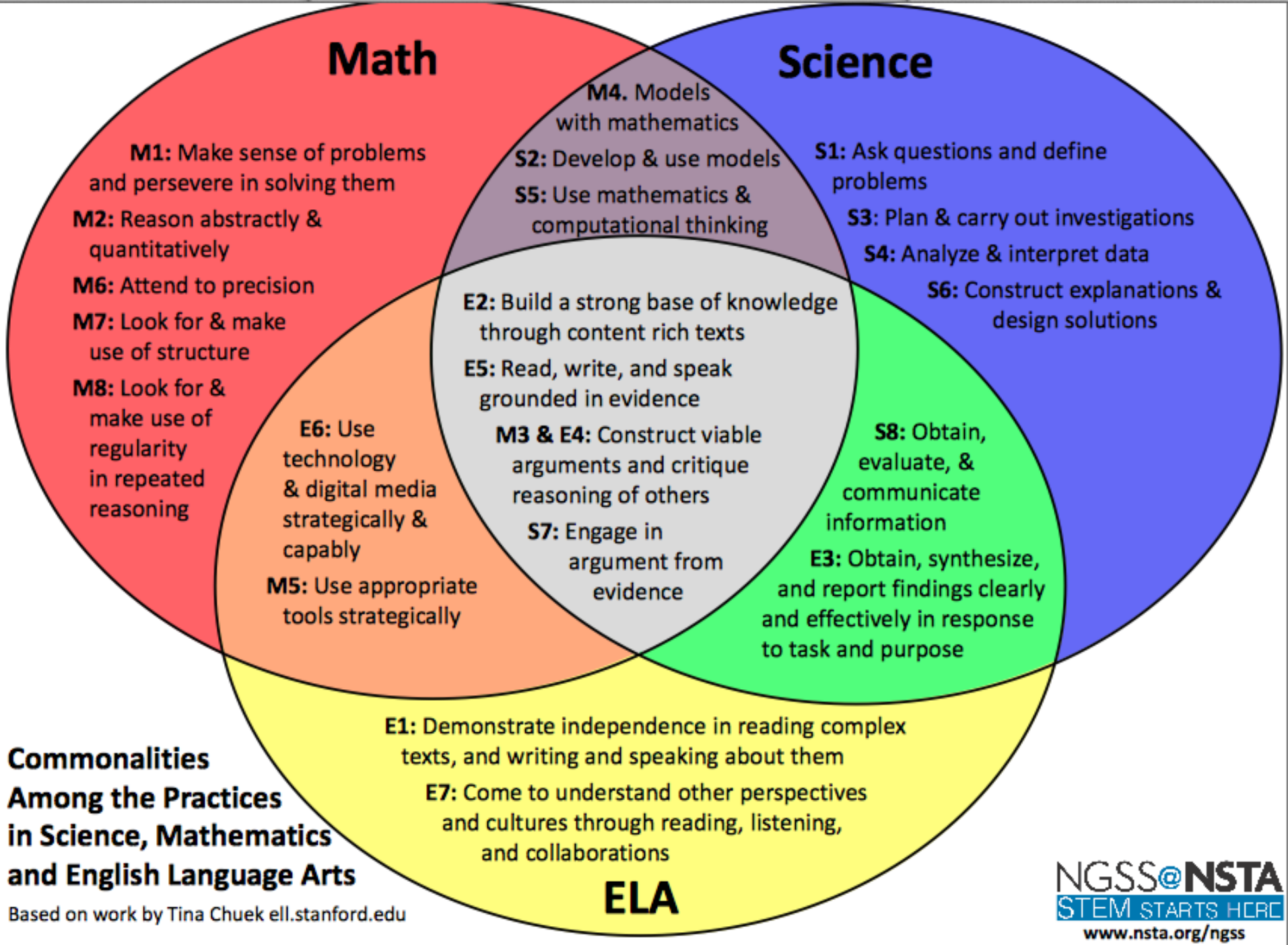

21st Century Student Outcomes and Support Systems
Learning and
Innovation Skills – 4Cs
Critical thinking • Communication
Collaboration • Creativity
Core Subjects – 3Rs
and 21st Century Themes
Life and
Career Skills
Information,
Media, and
Technology
Skills
Standards and
Assessments
Curriculum and Instruction
Professional Development
Learning Environments


Common Core Math Standards
STEM / STEAM
Common Core Literacy
Next Generation Science Standards
21st Century Skills:
critical thinking
creativity
collaboration
communication
CTE standards

www.K12.wa.us/Science/NGSS.aspx	www.k12.wa.us/CoreStandards/		http://www.careertech.org/career-ready-practices	http://www.p21.org/storage/documents/1.__p21_framework_2-pager.pdf
NEXT GENERATION SCIENCE STANDARDS For States, By States	CCSS COMMON CORE STATE STANDARDS WASHINGTON	COMMON CORE STATE STANDARDS INITIATIVE PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER	Learning that works for America CTE® CCTC Common Career Technical Core	21st CENTURY SKILLS
Science and Engineering Practices	**Mathematical Practices**	**English Language Arts Practices/Portraits**	**Career Ready Practices**	**Skills**
SE1. Asking questions (for science) and defining problems (for engineering)	M1. Make sense of problems and persevere in solving them	E1. They demonstrate independence	1. Act as a responsible and contributing citizen and employee.	**1. Learning & Innovation**
SE2. Developing and using models	M2. Reason abstractly and quantitatively	E2. They build strong content knowledge	2. Apply appropriate academic and technical skills.	Creativity and innovation
SE3. Planning and carrying out investigations	M3. Construct viable arguments and critique the reasoning of others	E3. They respond to the varying demands of audience, task, purpose, and discipline	3. Attend to personal health and financial well being.	Critical thinking and problem solving
SE4. Analyzing and interpreting data	M4. Model with mathematics	E4. They comprehend as well as critique	4. Communicate clearly, effectively and with reason.	Communication and collaboration
SE5. Using mathematics and computational thinking	M5. Use appropriate tools strategically	E5. They value evidence	5. Consider the environmental, social and economic impacts of decisions.	**2. Information, Media and Technology**
SE6. Constructing explanations (for science) and designing solutions (for engineering)	M6. Attend to precision	E6. They use technology and digital media strategically and capably	6. Demonstrate creativity and innovation.	Information literacy
SE7. Engaging in argument from evidence	M7. Look for and make use of structure	E7. They come to understanding other perspectives and cultures	7. Employ valid and reliable research strategies.	Media literacy
SE8. Obtaining, evaluating, and communicating information	M8. Look for and express regularity in repeated reasoning		8. Utilize critical thinking to make sense of problems and persevere in solving them.	Information, communications and technology literacy
			9. Model integrity, ethical leadership and effective management.	**3. Life and Career**
			10. Plan education and career path aligned to personal goals.	Flexibility and adaptability
			11. Use technology to enhance productivity.	Initiative and self-direction
			12. Work productively in teams while using cultural/global competence.	Social and cross-cultural skills
				Productivity and accountability
				Leadership and responsibility
				Core Subjects and 21st Century Themes
				Global awareness
				Financial, economic, business and entrepreneurial literacy
				Civic literacy
				Health literacy
				Environmental literacy

Washington State LASER STEM Education Institute

Based on an original concept created by Caroline Kiehle, *Institute for Systems Biology*



Commonalities Among the Practices in Science, Mathematics and English Language Arts

Based on work by Tina Chuek ell.stanford.edu

NGSS@NSTA
STEM STARTS HERE
www.nsta.org/ngss

Socrates?

- Experiential learning provides a powerful tool for student engagement and perseverance
- Active learning goes beyond hands-on, project based
  - Significant content
  - Driving or essential questions
  - Need to know
  - In depth inquiry
  - Reflection
  - 4Cs
  - Voice and choice

What Would Socrates Say: How does your program address 21st Century Skills?

Three levels of text protocol

- Read the text and identify important passages.
- Round 1
  - First person shares (3 minutes)
    - Read the selected passage aloud.
    - What do you think about the passage?
    - What are the implications for your work/organization?
  - Group response (2 minutes)
- Continue until each person has had a round to share.

Break for Lunch

Panel: How does your program incorporate 21st Century Skills?

- Jann Lane and Peter Crim, Wind and Oar Boat School
- Sarah Rubenstein, Maritime Discovery Schools
- Joe Youcha, Building to Teach

A nonprofit
Working with schools and other youth serving organizations

Northwest Maritime Center

It's bigger than the boat!

Northwest Maritime Center

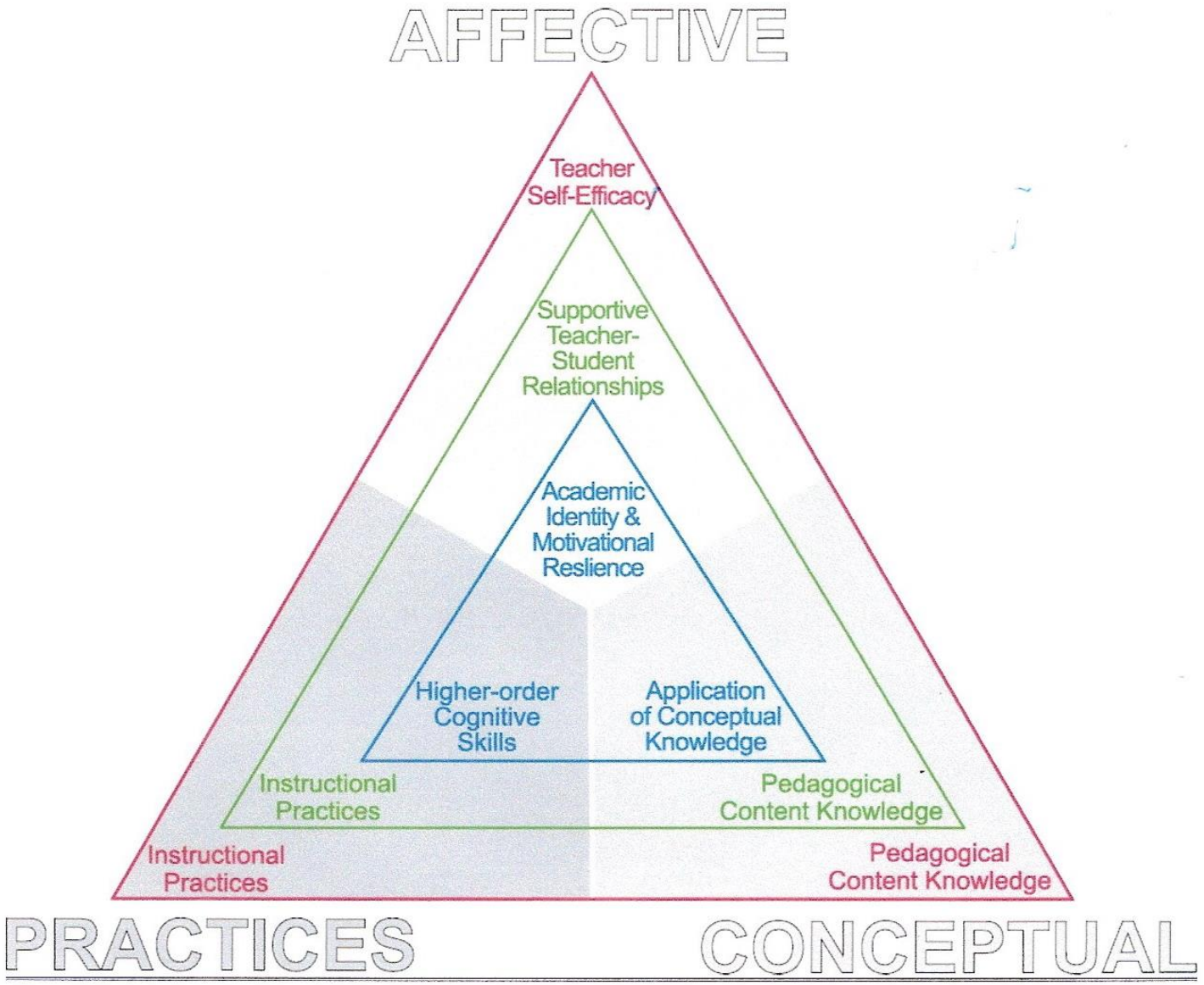
Engaging young people
And inspiring learning …

Through the art, science, and
Craft of building wooden boats.

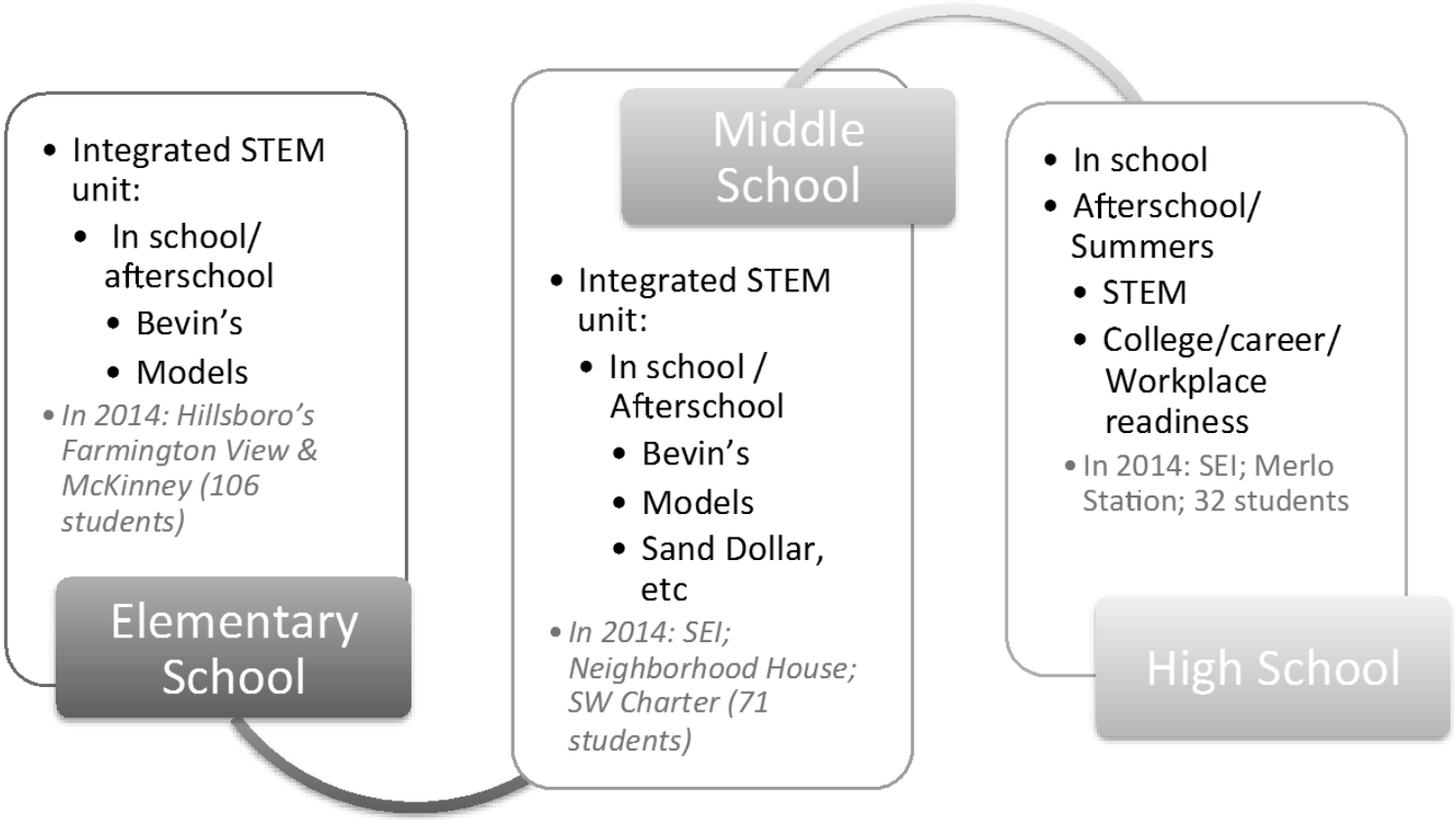
Northwest Maritime Center

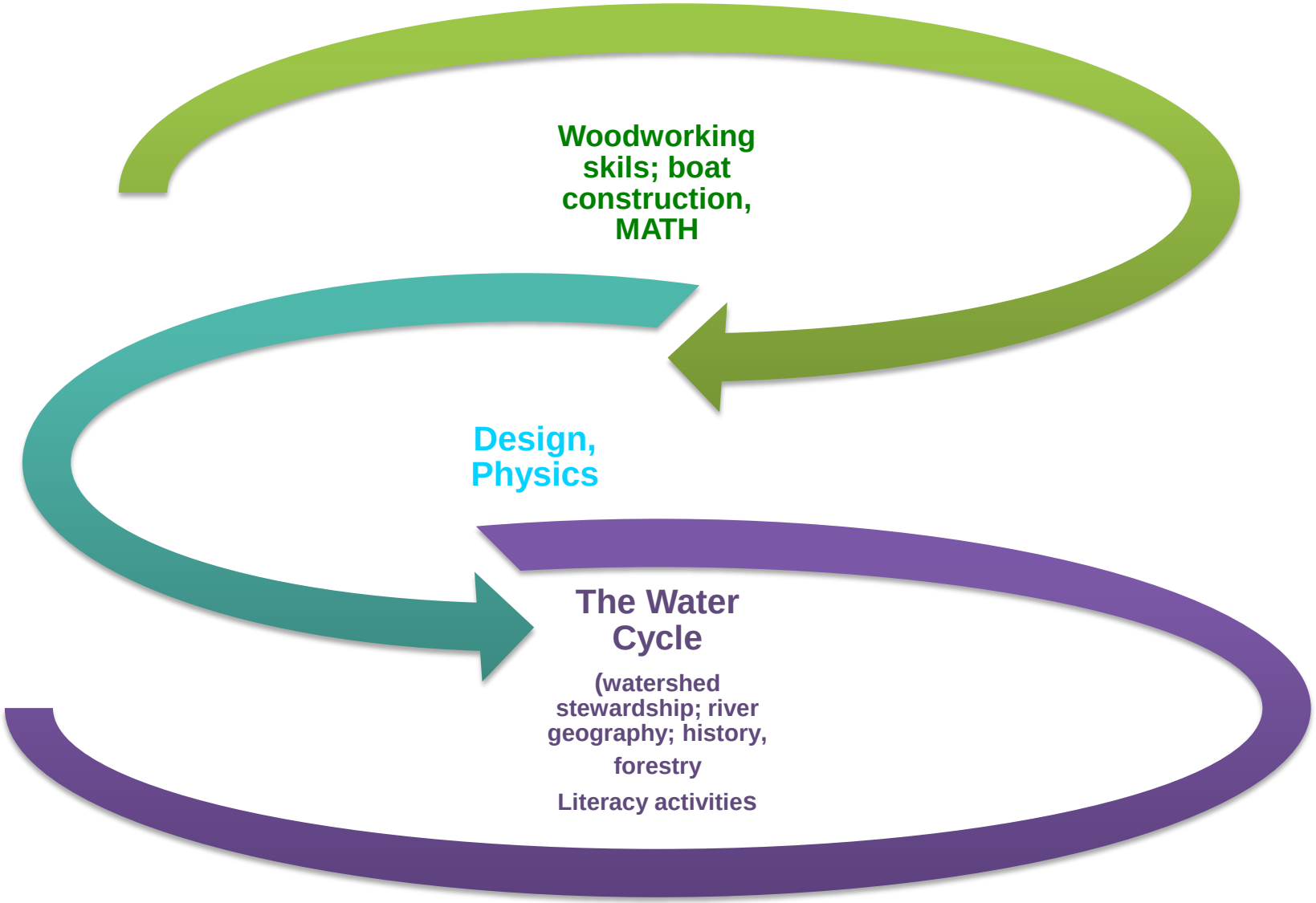
How we do it

- A tiered and integrated curriculum
- Aligned with state math and science standards
- Partnering with public schools and youth serving organizations


AFFECTIVE
Teacher Self-Efficacy
Supportive Teacher-Student Relationships
Academic Identity & Motivational Reslience
Higher-order Cognitive Skills
Application of Conceptual Knowledge
Instructional Practices
Pedagogical Content Knowledge
Instructional Practices
Pedagogical Content Knowledge
PRACTICES
CONCEPTUAL

Wind & Oar


Integrated STEM unit:
In school/ afterschool
Bevin's
Models
In 2014: Hillsboro's Farmington View & McKinney (106 students)
Elementary School
Middle School
Integrated STEM unit:
In school / Afterschool
Bevin's
Models
Sand Dollar, etc
In 2014: SEI; Neighborhood House; SW Charter (71 students)
In school
Afterschool/ Summers
STEM
College/career/ Workplace readiness
In 2014: SEI; Merlo Station; 32 students
High School


Woodworking skils; boat construction, MATH
Design, Physics
The Water Cycle
(watershed stewardship; river geography; history, forestry
Literacy activities

Students discover the learner within by participating in an integrated hands-on experience.

Perseverance

Northwest Maritime Center


I LOVE MATH
MATH

The Wind & Oar experience cultivates critical thinking, collaboration, creativity and communication.

Positive Youth Development

Northwest Maritime Center

It's Bigger than the Boat

Making Math Relevant

Teamwork

Exploring Design & Engineering

Problem Solving

Developing Craftsmanship

Perseverance

Inspiring STEM learners through hands-on education

STEM

Science, Technology, Engineering, & Math

The boat building experience is an exciting platform for integrating math, science, design, and craftsmanship.

Positive Youth Development

The Wind & Oar experience cultivates:

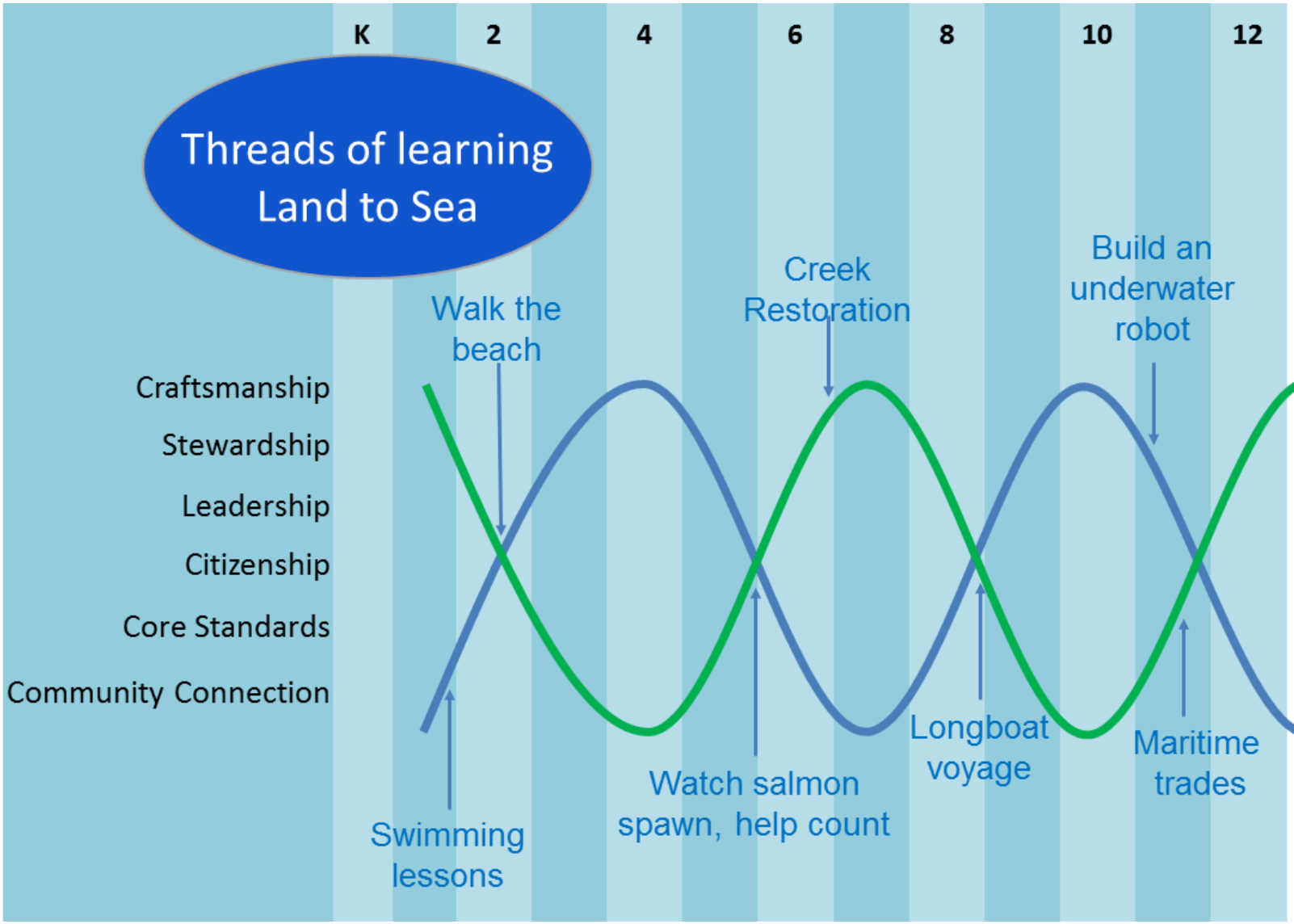
- critical thinking
- collaboration
- perseverance
- confidence & competence

College/Career Readiness

Completing a boat-building project is rewarding. Setting and achieving goals and understanding process gives students the confidence to pursue rewarding futures.

Wind & Oar

- Concept map placeholder


K
2
4
6
8
10
12
Threads of learning
Land to Sea
Craftsmanship
Stewardship
Leadership
Citizenship
Core Standards
Community Connection
Walk the beach
Creek Restoration
Build an underwater robot
Swimming lessons
Watch salmon spawn, help count
Longboat voyage
Maritime trades
MARITIME DISCOVERY SCHOOLS

Port Townsend Students

- Engage in rigorous, in depth, and authentic learning
- Cultivate curiosity
- Be independent thinkers, problem solvers, and lifelong learners
- Connect with meaningful ideas
- Work collaboratively
- Make an impact in the community

MARITIME DISCOVERY SCHOOLS

Local Themes

- Craftsmanship and creativity
- Stewardship of place, the environment, and the sea
- Citizenship and careers
- Leadership and self-reliance

MARITIME DISCOVERY SCHOOLS

Curriculum Development

- Teacher Professional Development
  - Project Based Learning and Backwards Design
  - Cooperative Learning
  - Workshop Model
  - Thinking Strategies

MARITIME DISCOVERY SCHOOLS

Joe Youcha


BUILDING TO TEACH
A Program of the Alexandria Seaport Foundation

Closing Activity: Connect, Extend, Challenge

- How are the ideas presented here **connected** to what your program is already doing?
- What new ideas do you have that **extend** your thinking about what your program is or can be doing?
- What **challenges or puzzles** have come up for you in your mind during this presentation about your program?

Questions?

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