

**2012
ONR Naval
S&T Partnership
Conference & ASNE Expo**

***Science, Technology, Engineering,
& Mathematics (STEM)***

***Building our Future
Naval STEM Workforce***



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Deputy Director of Research - STEM**

Oct 2012

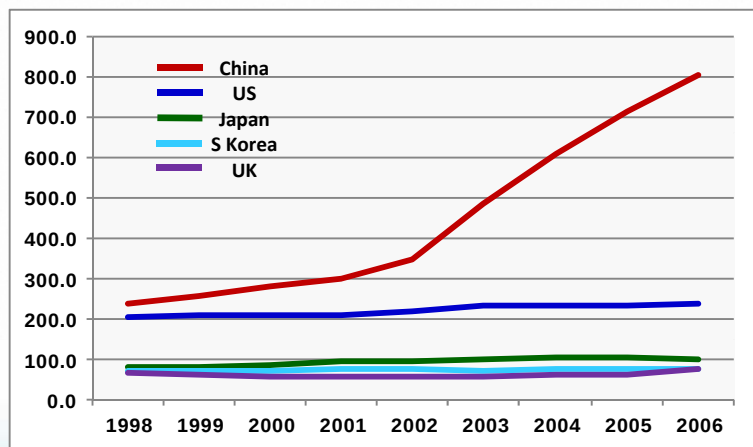
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Why Naval STEM?

- >50% of DoN's current S&T workforce will be retirement eligible by 2020
- Reductions in the STEM talent base will negatively impact DoN's technological superiority
- DoN must rely on U.S. citizens for classified technical work



First university degrees in natural sciences and engineering, selected countries

We must grow our future STEM leaders



The Navy's Vision

“...The need is clear – large numbers of Naval STEM professionals will be retiring over the next few years, and fewer American students are graduating with the preparation and interest needed to pursue STEM careers... ” – SECNAV 2011



SECURING OUR FUTURE:

The Naval Science, Technology, Engineering, and Mathematics (STEM) Workforce

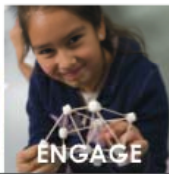


A Strategic Approach

June 2011



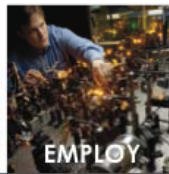
INSPIRE



ENGAGE



EDUCATE



EMPLOY



MESSAGE FROM THE SECRETARY OF THE NAVY

The Department of the Navy currently enjoys a high level of technological superiority across the full spectrum of its missions. To maintain this technological superiority, we must nurture a world-class Science, Technology, Engineering and Mathematics (STEM) workforce able to contribute to, and support, a culture of innovation. I am committed to the Department's aggressive leadership role in STEM education, to improve the quality and the quantity of the future STEM workforce, from which we will draw future Sailors, Marines, Engineers and Scientists.

The need is clear – large numbers of Naval STEM professionals will be retiring over the next few years, and fewer American students are graduating with the preparation and interest needed to pursue STEM careers.



In FY 2010, the Navy portfolio included over \$54 million in direct investments as well as an additional \$20 million from the Department of Defense spread across 180 STEM programs nation-wide. An additional \$108 million was invested annually to support domestic graduate students and research assistants under research grants to academic institutions. These investments are significant but not sufficient. As a result, I have committed to doubling the Department of the Navy's direct investment in STEM over five years, to more than \$100 million dollars.



This Strategic Roadmap presents a path forward for the Navy and Marine Corps – a way to increase our impact on STEM education. This plan provides strategies to address gaps and weaknesses in the current Naval STEM portfolio, and includes exciting new programs that will help increase participation by students and teachers. As the Naval STEM Executive, the Chief of Naval Research will continue to align service-wide STEM education and outreach efforts using this Roadmap as a guide.

I challenge each of you to enter the discussion and consider how you can take bold steps to partner with us to expand, enhance and increase the effectiveness of the nation's investments in STEM education. More importantly, I challenge you to remember what first excited you about STEM subjects and to consider how the experiences and technologies of tomorrow can inspire the same excitement in our future scientists and engineers.

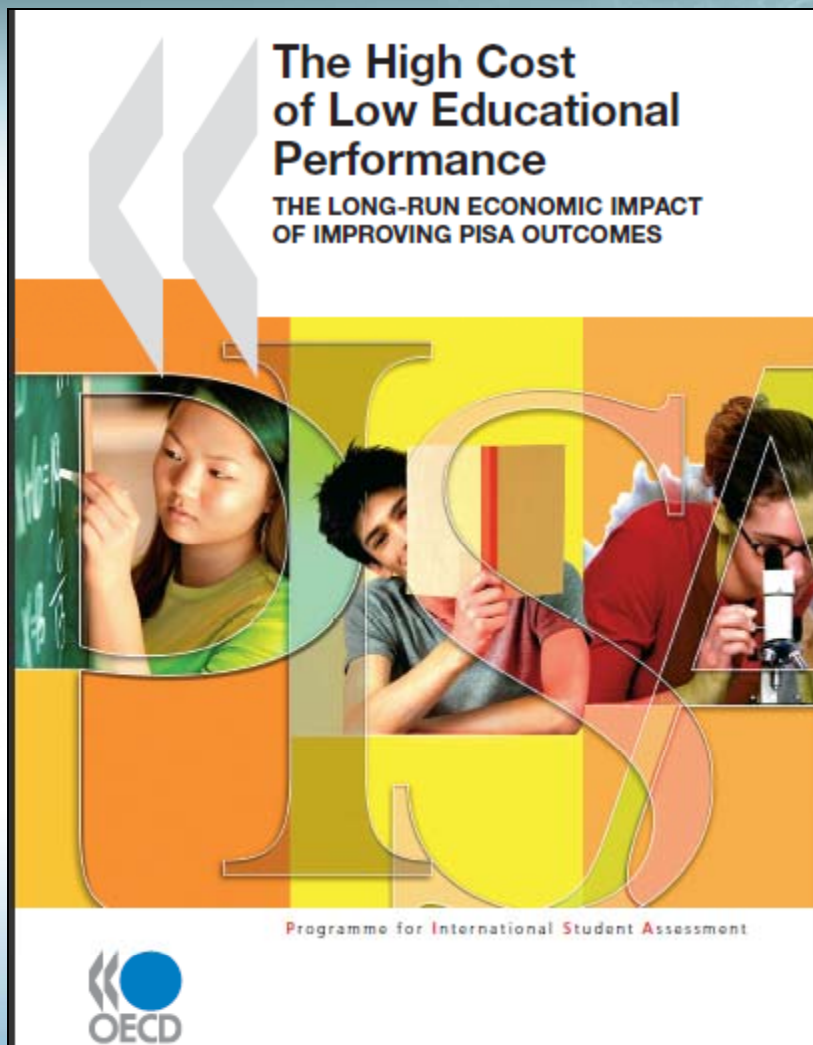
The Honorable Ray Mabus
Secretary of the Navy

Page 1 - Securing Our Future: The Naval STEM Workforce



Consequences of Success...

At a national level



**0.5 σ increase in math /
science scores may
increase GDP growth
rates by up to 0.87%**



Naval STEM

Priorities and Themes



INSPIRE



ENGAGE



EDUCATE



EMPLOY

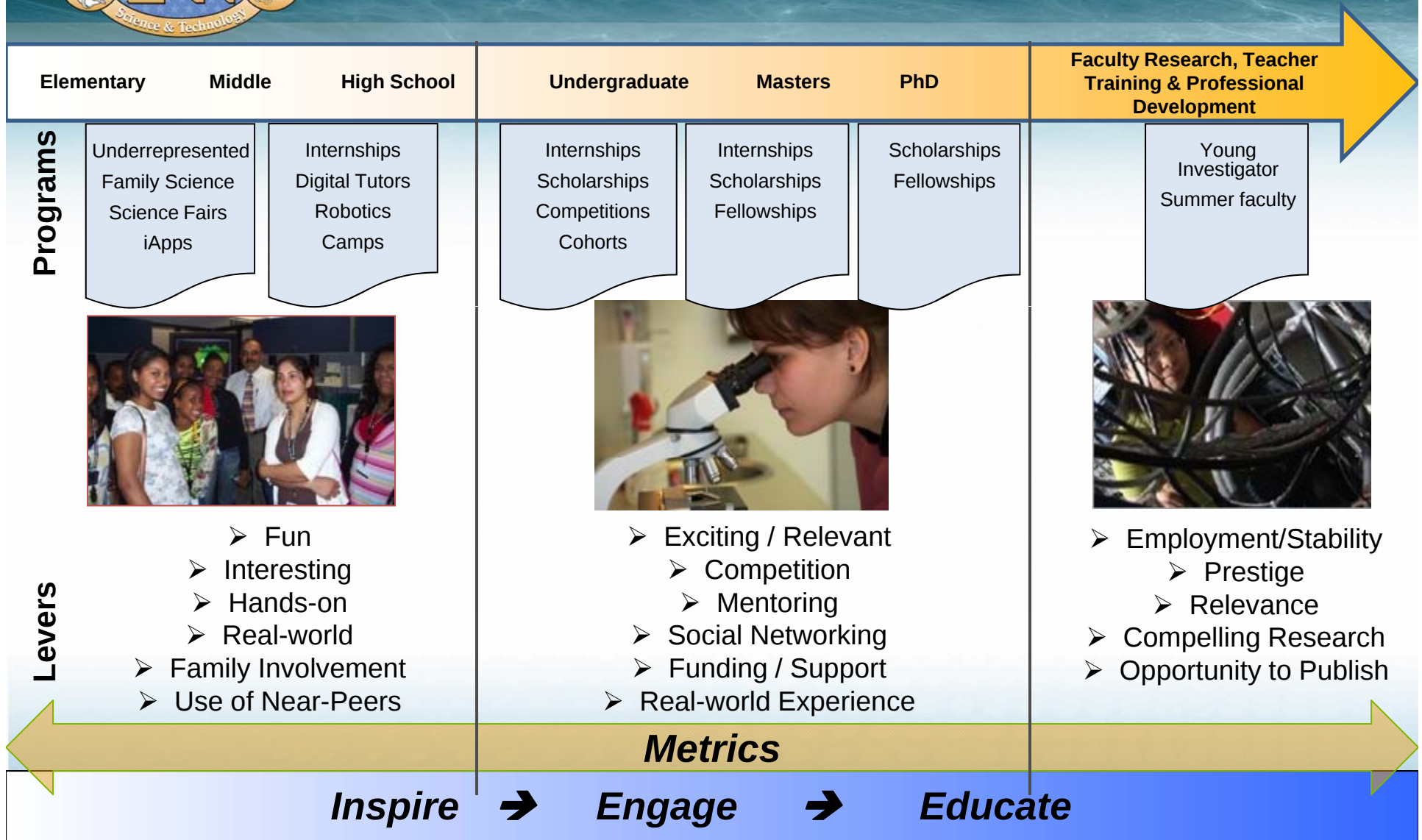


COLLABORATE

- **Diversity** -- Engage more with under-represented populations
- **Best Practices** -- Partner with nationally recognized, best practice organizations
- **Collaboration** -- Support the valuable implementation role of SYSCOMS and local organizations; leverage resources for maximum impact
- **Naval Relevance** -- Ensure programs are relevant to the Naval services; especially efforts supported with non-Navy funds
- **Metrics** -- Establish & implement metrics to assess progress & impact across the Naval STEM Portfolio
- **Go Viral** -- Invest in tools with potential for rapid growth & geographic expansion



STEM Landscape





ONR STEM

Selected Efforts

Program	Description	Students / Teachers	Minority Participation
K-12			
• SeaPerch	Middle School robotics competition -- Nationwide	35,000 / 4,000	45%
• Technovation	High School Girls App Development competition	730	40%
• Iridescent Family Science	Elementary and Middle School hands-on after school program	7,270	95%
• National Math and Science Initiative	High School AP courses for Military Dependents	800	26%
• SEAP	High School internship program	215	21%
• Sally Ride Science and ASM Teacher Training	Middle and High School Teacher Training Programs	200	From Rural AL, MS and LA
• Summer Camps (CSI, NSBE)	Middle School hands-on camps	300	80%



ONR STEM

Selected Efforts

Program	Target	Students / Teachers	Minority Participation
Higher Ed			
• NREIP	College Internship program at the Labs and Centers	155	15%
• NRL STEM Academy	Minority focused College Internship at NRL	45	100%
• Florida International University	Reinventing Curriculum for basic STEM Courses	Development beginning in Fall	83%
• UT Pan American	Developing 10-15 Navy Relevant STEM Courses	1700	97%
Tools			
• BHEF Higher Ed STEM Model	Developed Model of best practices for Higher Ed Retention Programs	To be used to select future Naval Programs	Launch Fall 2012
• Digital Tutor Grand Challenge	Development of Middle School and new recruit STEM Tutor	4 Awards	Oct. 1 Start Date
• Gooru	Online Student and Teacher Resource	4500 / 200	60%



ONR's FOA

Help us achieve our future

FOA (Funding Opportunity Announcement) requests innovative ideas to extend and enhance ONR's current STEM portfolio to:

- **Inspire** the next generation of scientists and engineers, including women and persons from populations under-represented in STEM.
- **Engage** students in STEM-related hands-on learning activities using Naval-relevant content.
- **Educate** students to be well prepared for employment in STEM disciplines in the Navy or in supporting organizations
- **Successful proposals will:**
 - Provide “game changing” solutions
 - Include active participation by DoN personnel, and/or collaborations with DoN Activities, Commands, or Labs
 - Contain a strategy for self – sufficiency



For More Information Visit the *STEM Spaces*

STEM Pitch-a-Principle

STEM Exhibit Area

Director of Research – Tidewater II

