STELAR and ITEST Overview

NSF ITEST PI & Evaluator Meeting

Enhancing the Quality and Reach of STEM Innovations

Tuesday August, 19th 2014

STEM Learning & Research Center (STELAR)
Education Development Center, Inc.

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STELAR Overview

- ITEST Learning Resource Center (2003-2012)
- Partners: EDC, Inc. + EdLab Group + Goodman Research Group, Inc.
- Staff
  - PIs – Sarita Pillai, Carrie Parker, Karen Peterson
  - Senior and supporting staff – Joyce Malyn-Smith, Bernadette Sibuma, Kate Goddard, Becca Schillaci (absent)
  - Evaluator - Karen Gareis

Meeting Goals

- Meet with NSF program officers, understand the short and long-term goals of the ITEST program and how projects contribute to those goals
- Examine issues related to design and implementation of high quality research and evaluation within the ITEST context
- Discuss strategies for broadening participation in the ITEST COP
- Make new, and deepen, existing connections with colleagues from across the country to share lessons learned and best practices
- Continue working together to synthesize findings on topics of mutual interest via working groups

Your Goals


itest
evaluation
learn
networking
network
project
understanding
evaluators
ideas
better
learning
like
share
pis
meet
opportunities
practices
approaches
meeting
innovative
colleagues
professional
interested
staff
nsf
new
make
work
people
stelar
stem
research
connect
officers
development
expectations
collaborations
community
funded
challenges
used
ways
grant
methods
help
funding
using
others
hope
looking
also
use
design
similar
data
provide
current
possibilities
involved
working
connections
understand
collaboration
especially
future
regard
collect
exchange
experiences
content
best
tools
hear
well
talk
etc

STEM Learning and Research Center (STELAR) Goals

- Facilitate projects' success through **technical support** with a focus on synthesis of findings
- Inform and influence the field of STEM stakeholders by **disseminating** project findings nationally
- Deepen the impact and reach of the ITEST program by **broadening participation** in the ITEST portfolio

STELAR: Core Areas of Work

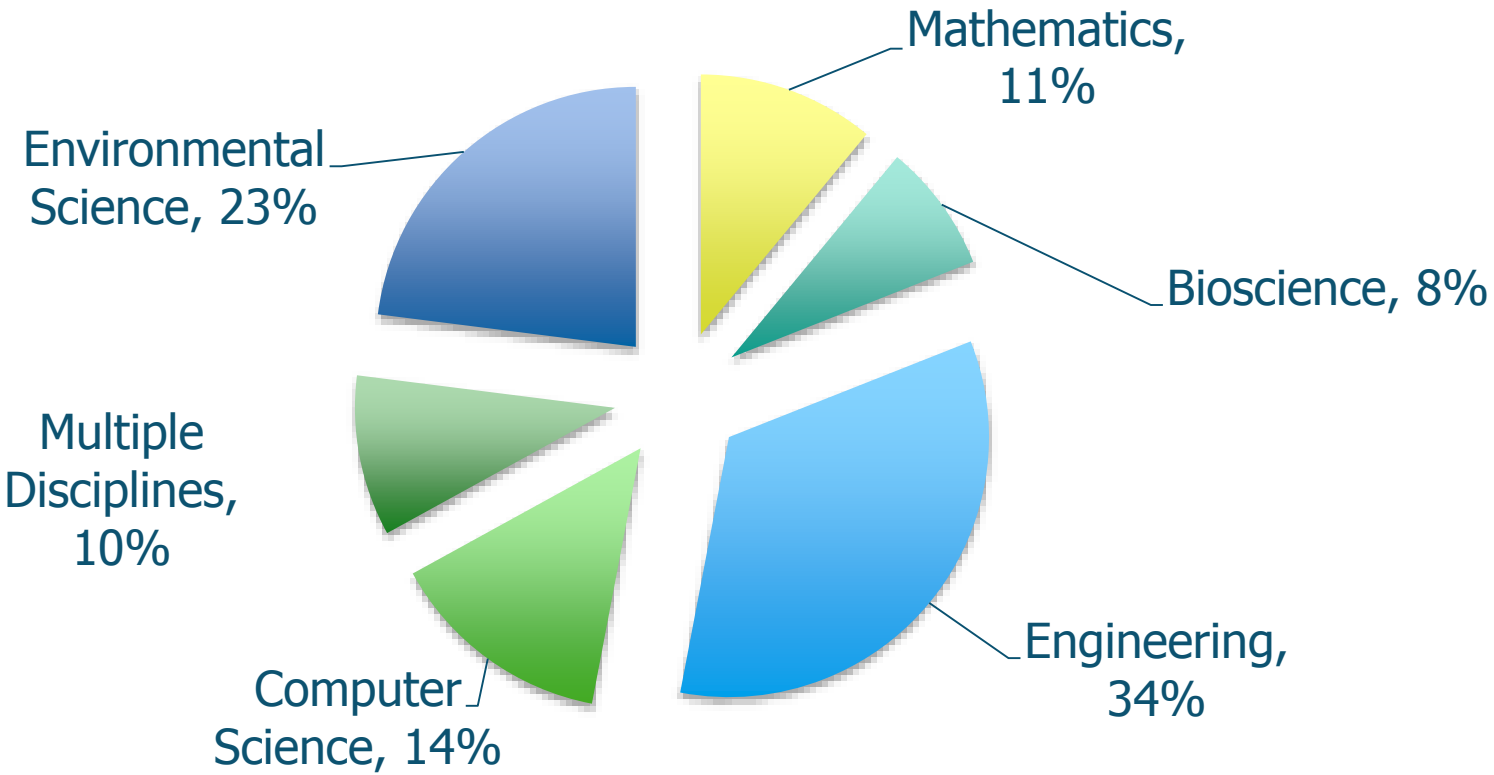
- **Technical Support** - Management Information System (MIS), webinars, F2F meetings, working groups
- **Dissemination** – partnerships, dissemination network, capacity building, use of technology and social media
- **Outreach** – targeted outreach to institutions underrepresented in the portfolio (e.g., MSIs and community colleges)

http://stelar.edc.org

NSF's Innovative Technology Experiences for Students and Teachers (ITEST) Program

- To build understandings of best practices, factors, contexts and processes contributing to K-12 students' motivation and participation in STEM
- Helps students to be aware of STEM careers, and to pursue formal school-based and informal out-of-school educational experiences to prepare for such careers
- Includes **288** current and past projects across **44** states have served **247,700 students**, **9600 educators**, **3000 parents and caregivers**

ITEST Portfolio: Active Projects 2014



* Based on Spring 2014 MIS data

ITEST Portfolio

- **Computer Science** gaming & simulations, general programming, web development, multimedia – audio, video and animation, computer hardware.
- **Bioscience** bioinformatics, biotechnology, DNA analysis/sequencing, neuroscience and biomedicine
- **Environmental Science GIS/GPS, remote sensing technology, climate modeling**, ecological research/analysis
- **Engineering** aerospace, astronomy, design, robotics and nanotechnology

NSF Leadership & Program Officers

Dr. Joan Ferrini-Mundy
Assistant Director, EHR

Dr. Sarah Kay McDonald
Division Director, DRL

Dr. David Haury
Program Director, ITEST

THE STATE OF ITEST PROJECTS 2014

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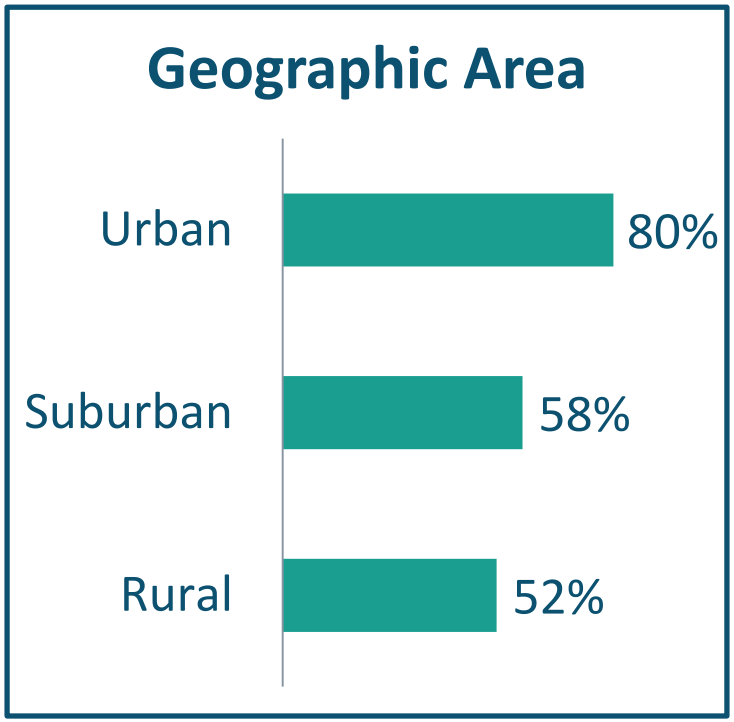
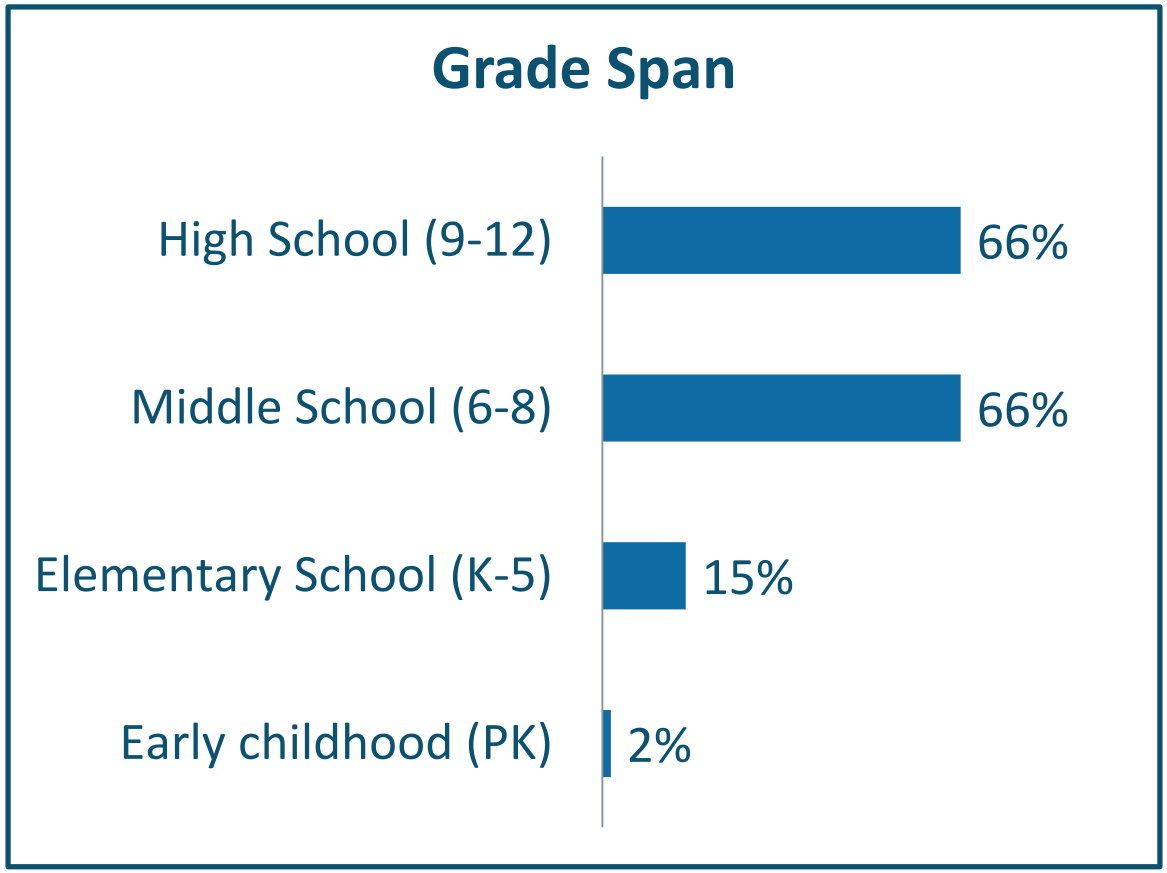
Management Information System (MIS)

- MIS covers ITEST work completed between September 2012 and August 2013
- MIS completion rate: 87% of active ITEST Projects
- Project Stage:
  - Baseline (no work with participants from 9/12-8/13): 21 projects
  - Annual (work with participants from 9/12-8/13 and beyond): 22 projects
  - Final (worked with participants from 9/12-8/13, but not after): 22 projects

Project Design (n=65)





Project Design: Activities (n=65)

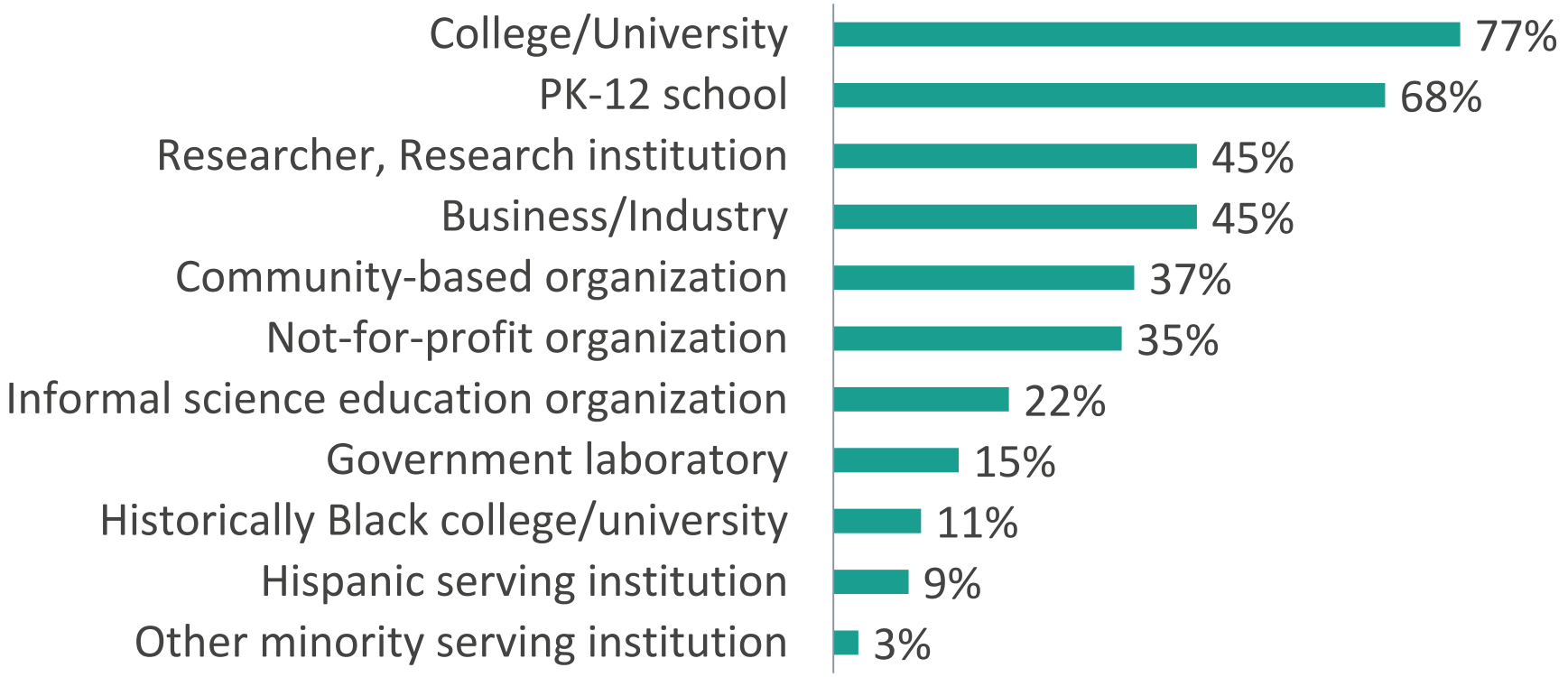
Most common project activities:

- Hands-on activities using technologies common in the STEM workplace (75%)
- Curriculum development (68%)
- Problem-based learning (65%)
- Career skills development (62%)

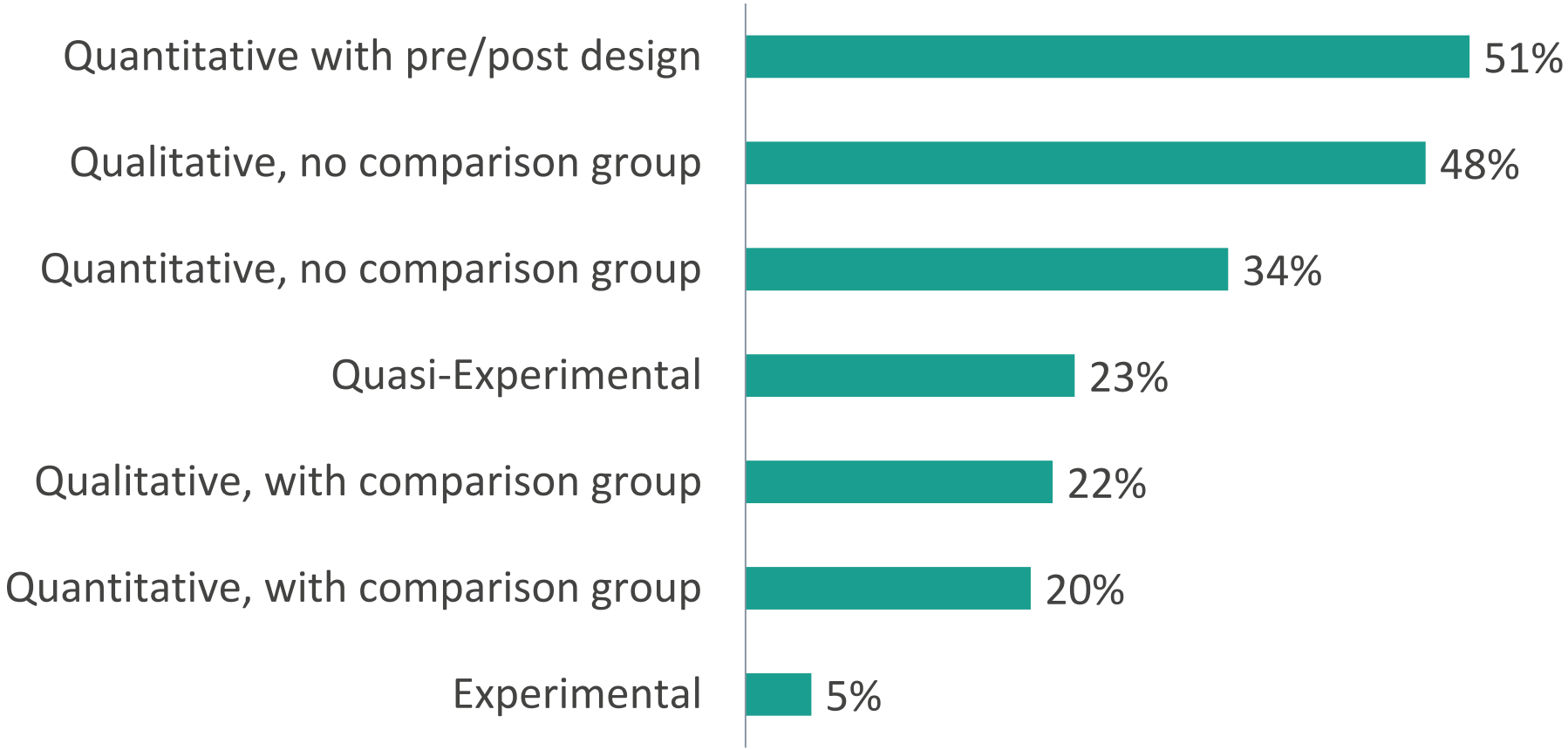
- Participation of visiting scientists or STEM professionals (60%)

Project Design: Partnerships (n=65)

97% of projects work with at least one partner institution



Research/Evaluation Design (n=65)

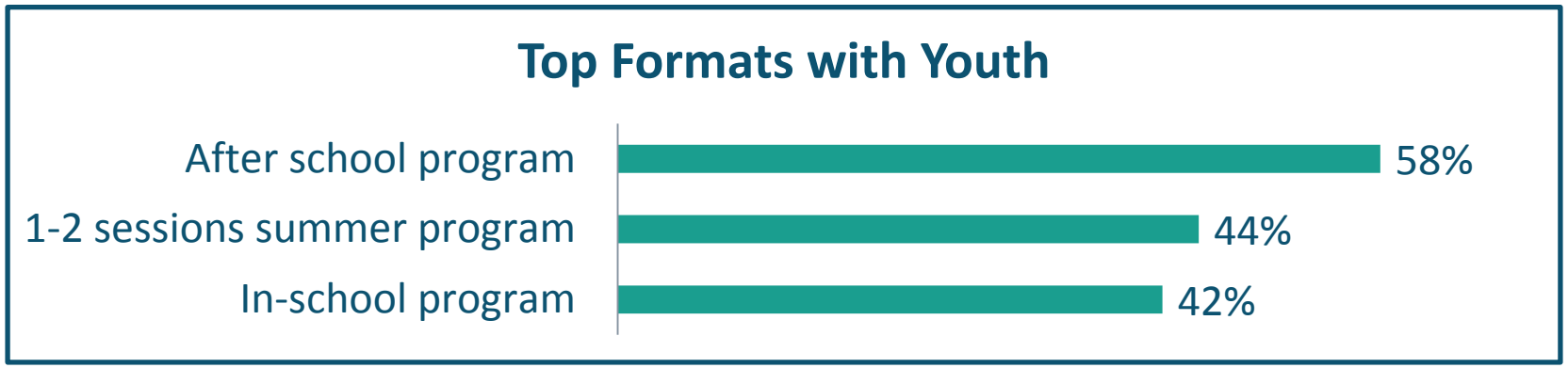


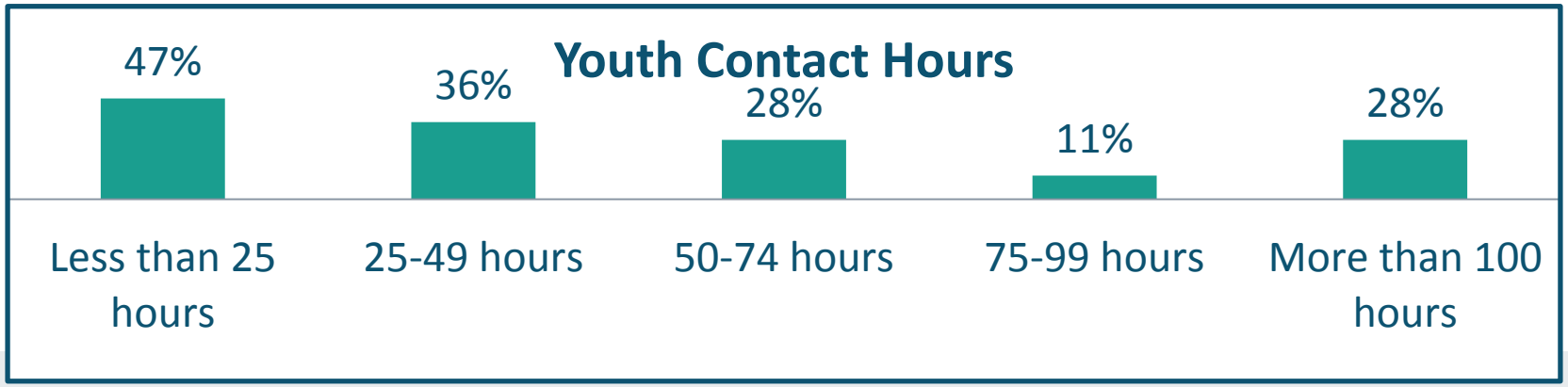
Research Design (n=65)

	Projects with Youth (n=56)	Projects with Educators (n=54)
Outcomes	• Changes in interest in STEM (57%) • Changes in interest in STEM careers (54%) • Changes in STEM content knowledge (42%)	• Changes in self-efficacy in teaching STEM content (50%) • Changes in practice/pedagogy (44%) • Changes in knowledge for using technology tools in STEM teaching (41%)
Data collection methods	• Pre- and/or post-assessments (88%) • ITEST project observations (50%) • Youth interviews (50%)	• Pre- and/or post-assessments (59%) • Educator interviews (54%)
Instruments	48% use externally developed and validated instruments	24% use externally developed and validated instruments

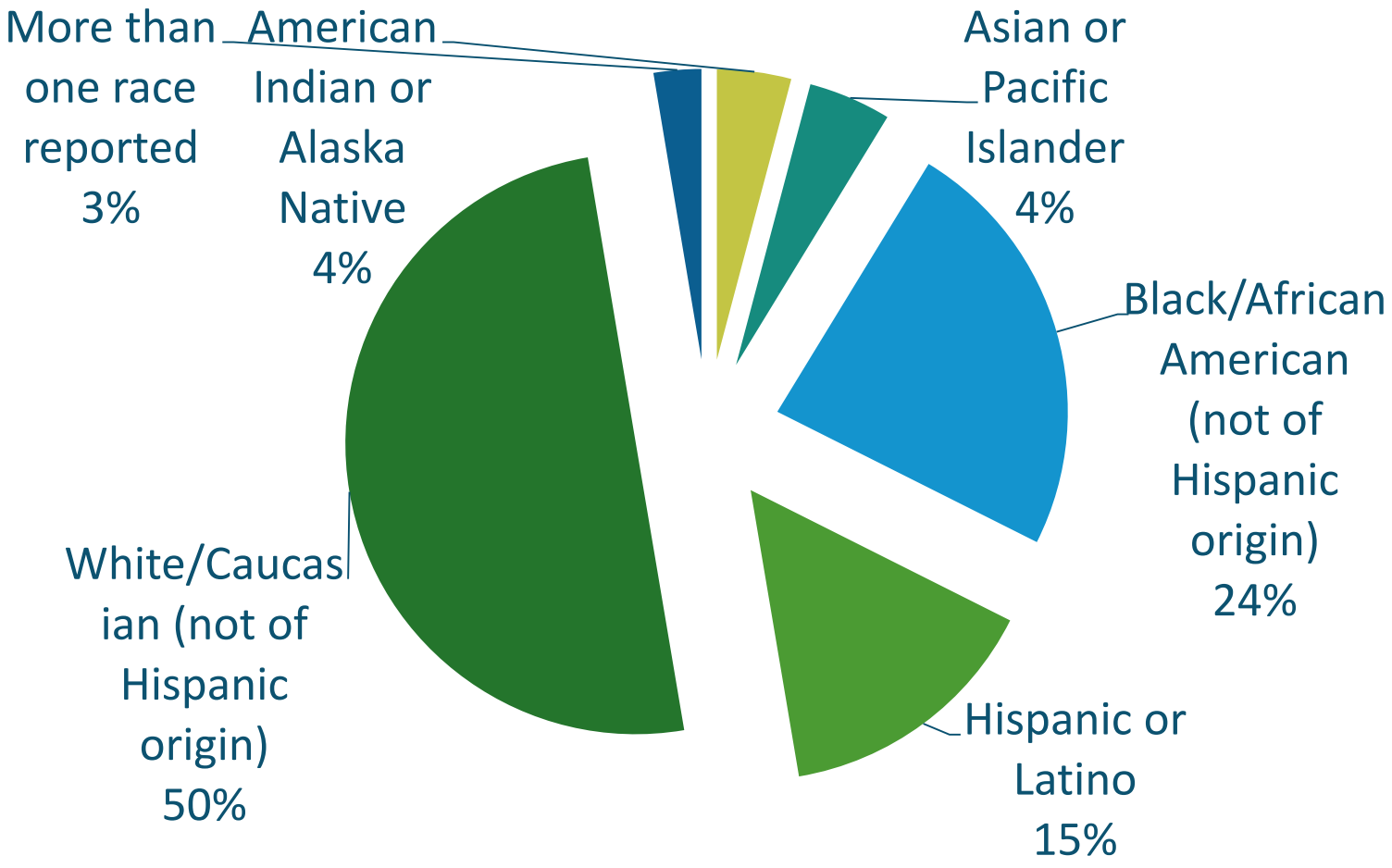
Active Projects with Youth

- 36 of 44 active projects (82%) worked directly with youth
- 22,000 youth served in 2012-2013



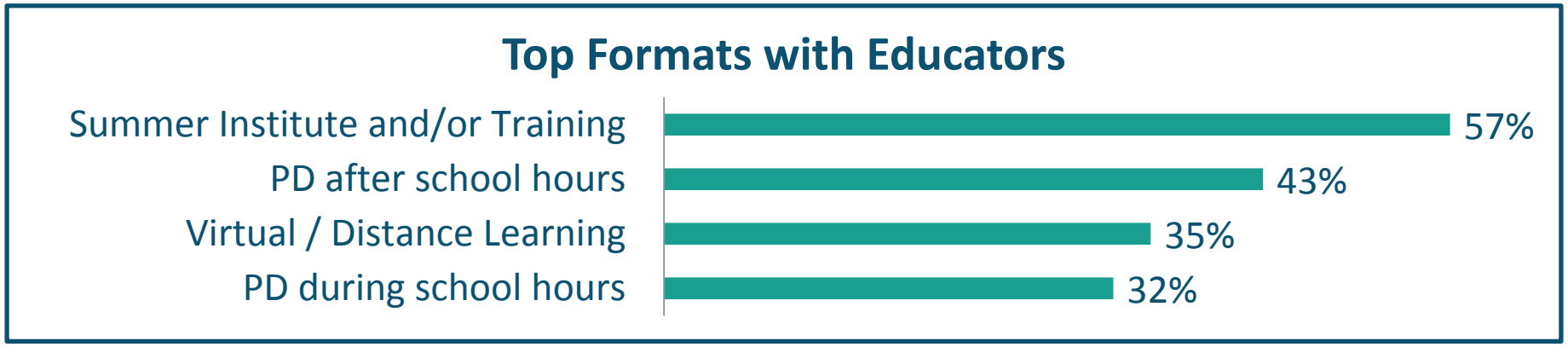


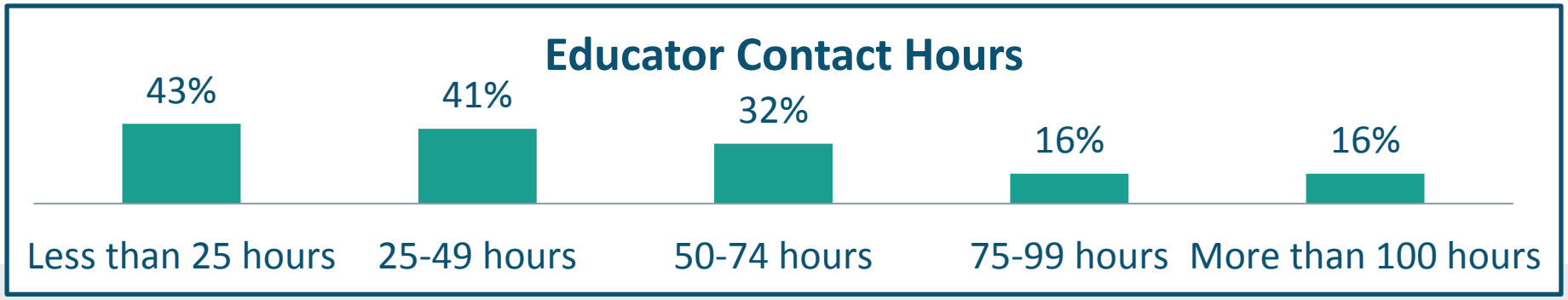
Diversity of Youth Served Out of School



Active Projects with Educators

- 37 of 44 active projects (84%) worked with educators
- 1,700 educators served in 2012-2013
- 22,700 youth taught, in 21 projects





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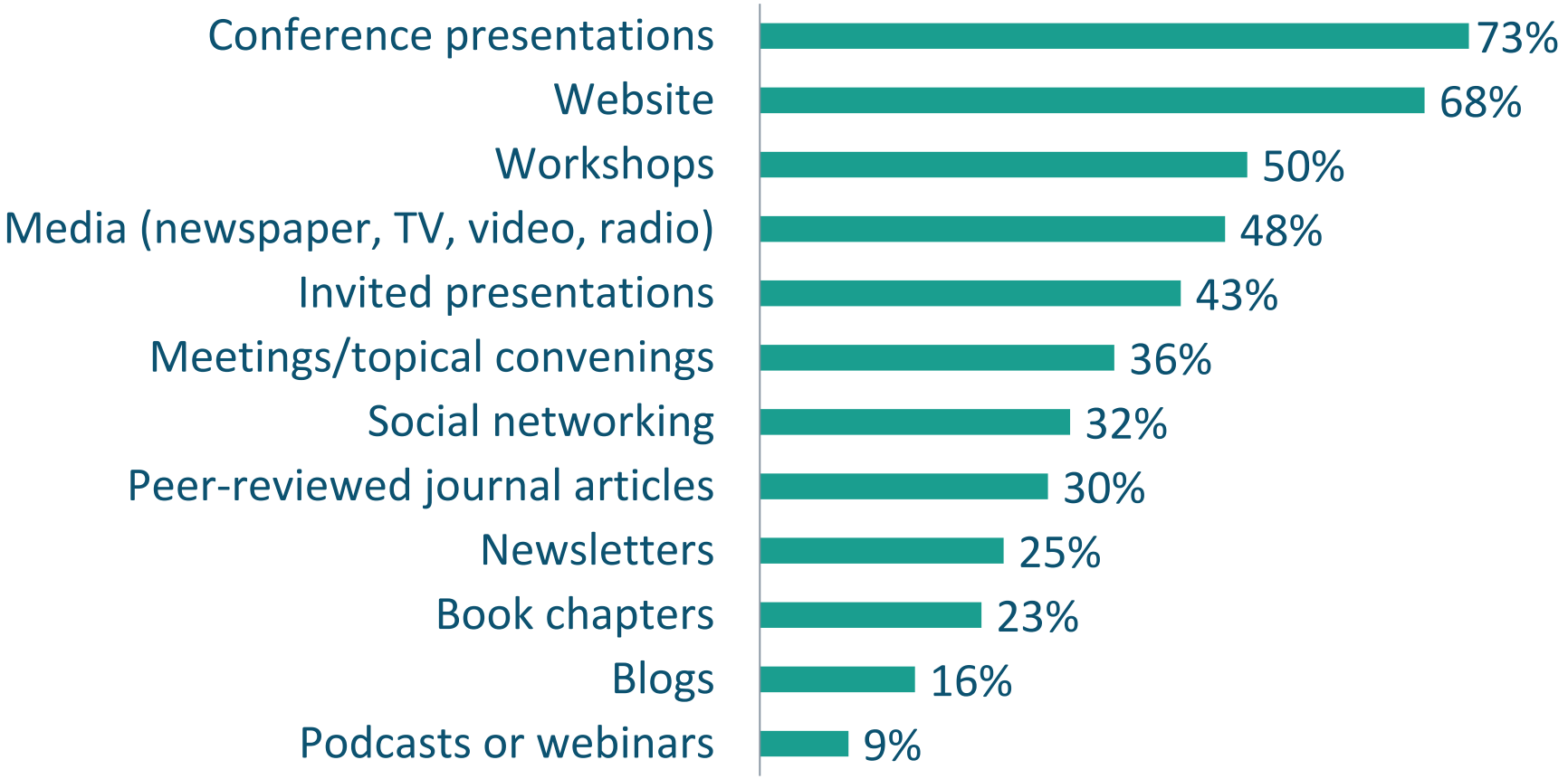
Dissemination Activities (n=44)



Products (n=44)

Next Steps

- Analysis
  - Open responses, especially:
    - Strategies to broaden participation
    - Strategies to contribute to STEM workforce development
  - Longitudinal analysis of the five years of MIS results
- Next round of MIS data collection
  - Fall 2014 for all active projects, including any newly-funded projects
- What else would you like to see?
  - How can the MIS results serve you better?

Event Overview: Tuesday

- Collaboration Networking
- Workshops
- Emerging Technology Demonstrations
- Birds of a Feather Dinner (*optional*)
- Event Evaluation

Event Overview: Wednesday

- Breakfast at 8:00am
- Evaluator Meeting: 8:15am-9:15am (Taylor)
- NSF ITEST Program Officer Panel
- Working Groups
- AISL Technical Assistance Workshops (*optional*)

Let's get to know each other!

Collaboration Networking

- Your Name
- Your Organization/Program & Role
- Resources *(what do you have to **share**?)*
- Needs *(what do you **need** to meet your goals?)*
- 2 Minutes Each
- Bring your business card to exchange
- You might need a pen to write down great ideas!

Next Up - Workshops (1:45pm - 3:00pm)

Enhancing Project Implementation with Partnerships
(Taylor)

Implementing High-Quality Research and Evaluation
(Taft)

Next Up - Workshops (3:15pm - 4:30pm)

Strategies for Broadening Participation
(Taylor)

High-Quality Research and Evaluation Design
(Taft)

Emerging Technologies Demonstrations

- The CryptoClub: Extending Learning with Student-Generated Tutorials
- iDesign: Developing Technological Fluency Through Culturally-Relevant Game Design
- Innovative Flight Simulation Experiences for Students and Teachers
- Innovative Technology in Science Inquiry (ITSI-SU)
- NanoExperiences: Pathways to Workforce Success
- Predicting STEM Career Choice From Computational Indicators of Student Engagement Within Middle School Mathematics Classes
- STEM Digital Images in Geoscience Investigations: Teaching Analysis with Light (STEM DIGITAL)
- Visualization Basics: Using Gaming to Improve Computational Thinking

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ITEST PI Meeting
August 20th, 2014

Images courtesy of ISE PI Meeting 2012 attendees
From left to right: Geoffrey Haines-Stiles; Mohini Patel Glanz, NWABR; Scot Osterweil; April Luehmann

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Jamie Bell, Kalie Sacco, Grace Troxel (Association of Science-Technology Centers)

John Falk (Oregon State University, Free-Choice Learning Program)

Kirsten Ellenbogen (Great Lakes Science Center)

Kevin Crowley (University of Pittsburgh Center for Learning in Out-of-School Environments)

Sue Ellen McCann (KQED Public Media)

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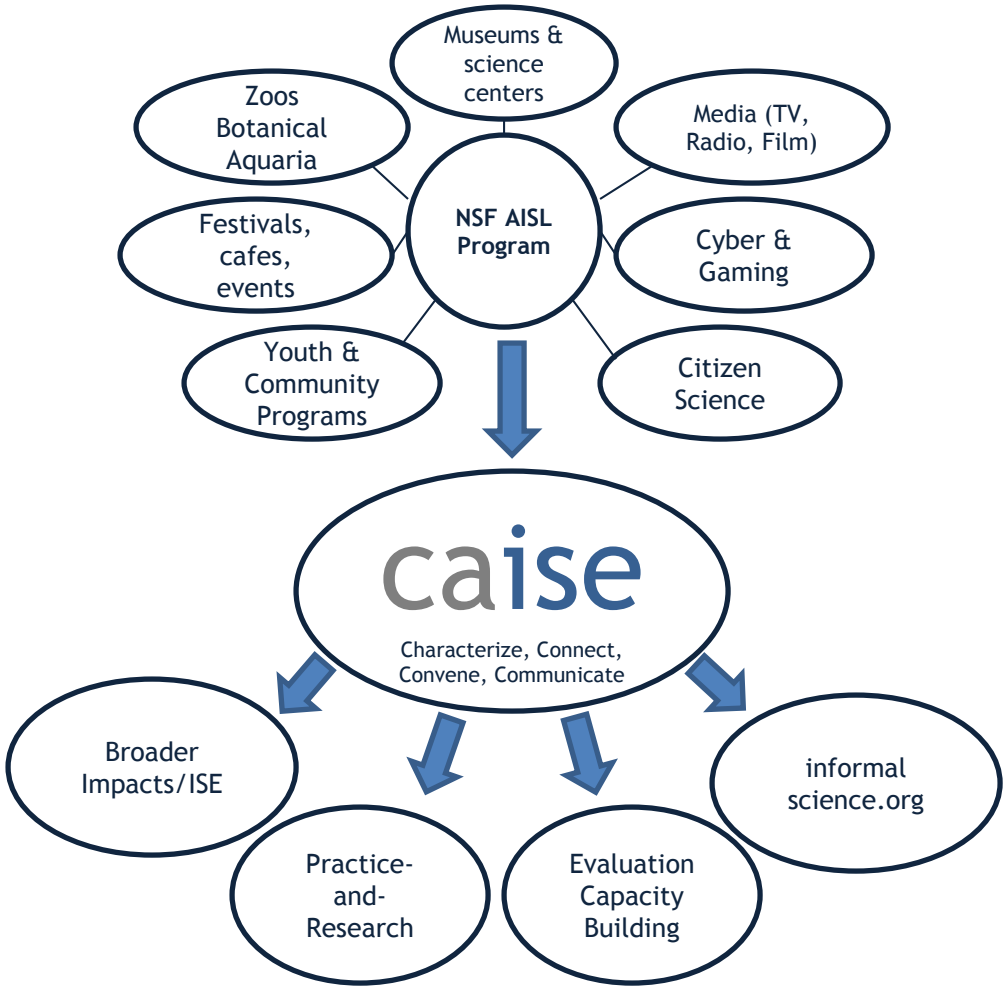

CAISE's roles describe how we interact with our audiences.

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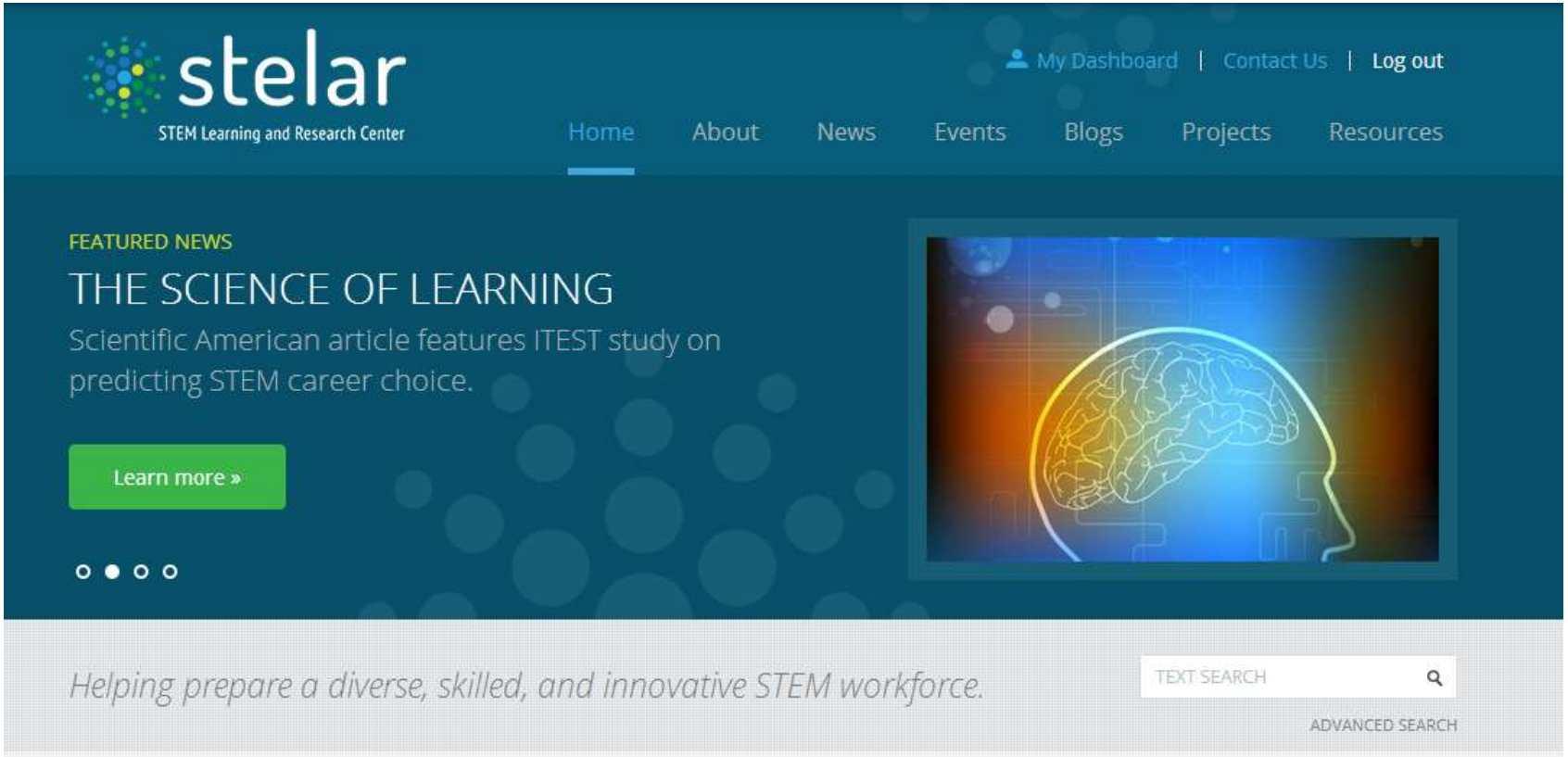
Resources for PIs on InformalScience.org

- Searchable database of 9,000+ project, research, and evaluation resources
- *PI's Guide to Managing Evaluation in Informal STEM Education Projects*
- ISE Evidence Wiki
- EBSCO database (access to thousands of peer-reviewed education journals)
- Community resources: member database, calendar, interest groups, newsletter, perspectives blogs

NSF Program Officers Panel

- David Haury
- David Campbell
- Edith Gummer
- Celeste Pea

STELAR Website Overview



Next Up - Working Groups

Research & Evaluation Design in ITEST

(Taylor)

Outreach and Dissemination

(Taft)

Using Data to Tell the ITEST Story

(Truman)

Working Group Report Outs

- Theme
- Key Dates
- Product
- One question you have for convening attendees

Next Steps

- Event Evaluation
- Event Materials on STELAR website
- STELAR Webinars:
  - ITEST Solicitation – September 3
  - Using Social Media to Disseminate Your Project Work – September 18
- MIS Fall 2014
- Working Groups

Closing Reflections