

Partnering to Improve the Learning of Mathematics

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Outline

- Who? (partners)
- Why? (motivations)
- How? (incentives)
- Models and Inspiration



Who are (some of) the Partners?

- Students
- Faculty
- Departments
- Institutions and **other orgs.**
- Federal agencies (states, also)
- Professional societies



Federal Context

- Administration's college completion agenda - opportunity, access, and retention
- STEM workforce – #s and quality

Fact Sheet - <http://1.usa.gov/1oJOtgL>

Increasing College Opportunity for Low-Income Students - <http://1.usa.gov/1dagqsh>



Strategic Re-envisioning for EHR*

- View Broadening Participation as a Solution, not as a Problem to be Solved
- View Broadening Participation as Central to Cultivating a Culture of Science (STEM)

* EHR Advisory Committee Report:

http://www.nsf.gov/ehr/Pubs/AC_ReEnvisioning_Report_Sept_2014_01.pdf



Incentives

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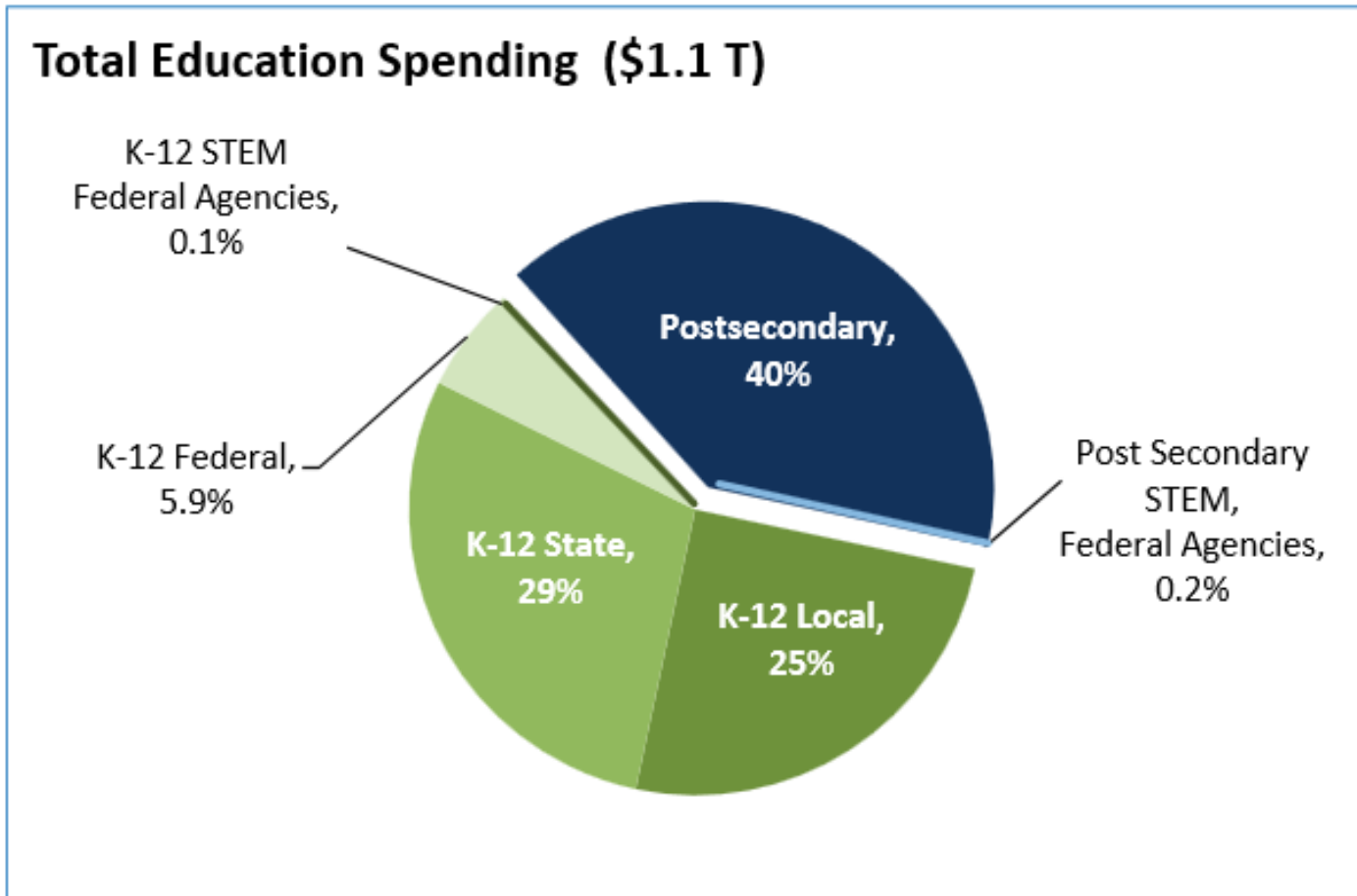


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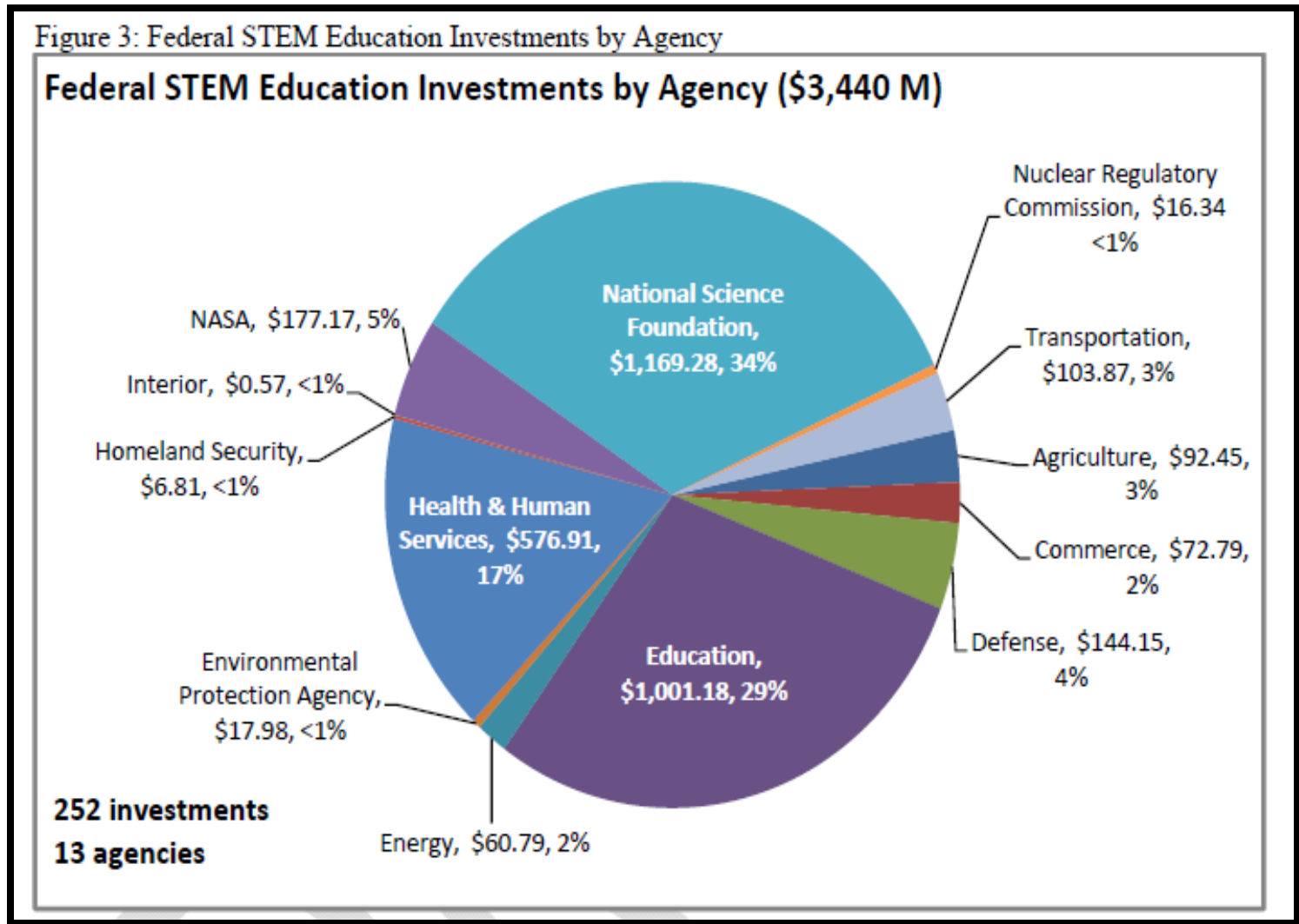
Figure 1: Total Education Spending in the United States



US Department of Education
Digest of Educational Statistics, 2009
via CoSTEM Report (2011)



Federal Investment in STEM Education



Source: CoSTEM Report (2011)



Figure B10: DOE Investments in STEM by Objective

Department of Education Investments by Objective (\$1,001 M)

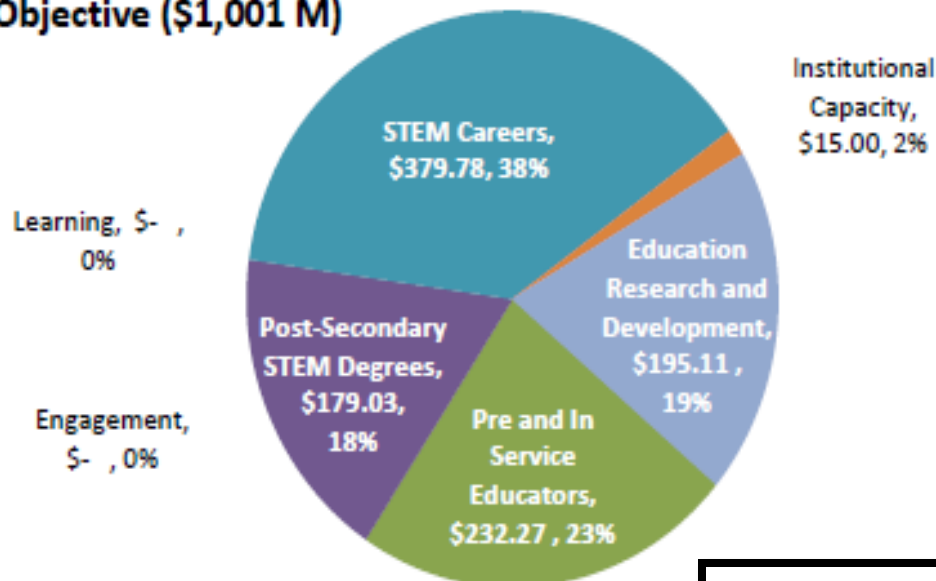
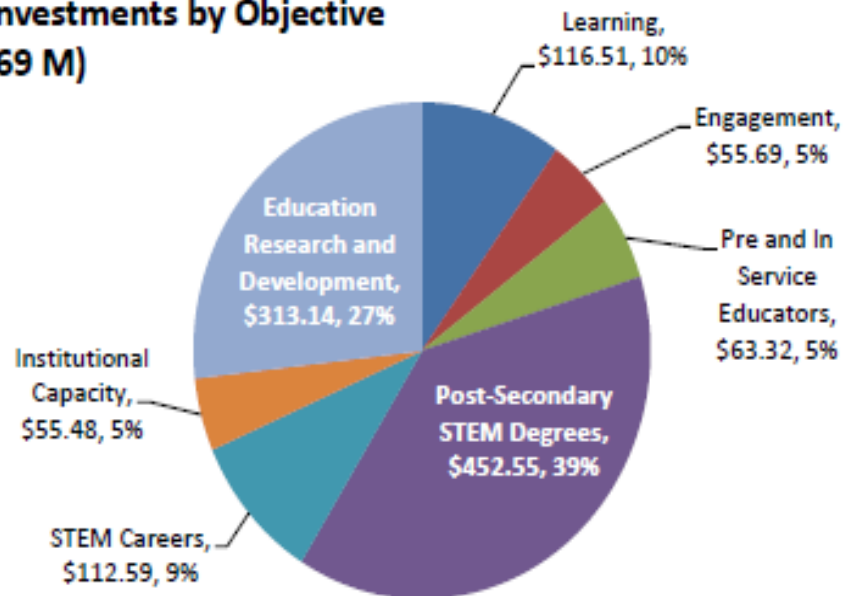


Figure B22: NSF Investments in STEM by Objective

NSF Investments by Objective (\$1,169 M)



Reality

- NSF is not a social agency
- NSF is not a policy-making body
- How best to act catalytically?



EHR Dear Colleague Letter:

Increasing College Opportunity
through Improved Mathematics
Success in the
First Two Years of College

(NSF 15-206)



The “Challenge” Space

- Innovative early-stage work to improve success in mathematics in the first two years of college
- Includes studies on ways to improve the learning of developmental mathematics, ...



Three Opportunities

- Supplements to EHR awards
- EAGER (Early-concept Grants for Exploratory Research)
- Workshop/conferences



Some ideas

- Community leadership and mobilization
- Consider proposals to current programs, e.g. IUSE

http://www.nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=505082&ods_key=nsf14588

- Joint efforts of MSRI with other Institutes



Two Interesting Experiments

- U. Maine using COPUS (Smith, et al)
- U. Texas building on David Yeager's work (see "Who Gets to Graduate?" Paul Tough, in NY Times, 2014-05-15, <http://nyti.ms/1qFUthM>)



**Begin at the end.
To improve education,
Put the learner first.**

