

How can scientists collaborate with STEM Educators?

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How can scientists collaborate with STEM Educators?

Ideas and experiences of a serial border
crosser and collaboration junkie.

-disclaimer-

- *Business as usual* is good for business. Evolution is just as important as revolution.
- Overgeneralization can make for an interesting talk, but it isn't personal. Please don't let it be.

How can scientists collaborate with STEM Educators?

Where have I seen this question
before??

How can scientists collaborate with STEM Educators?

Less Turf, More Trust

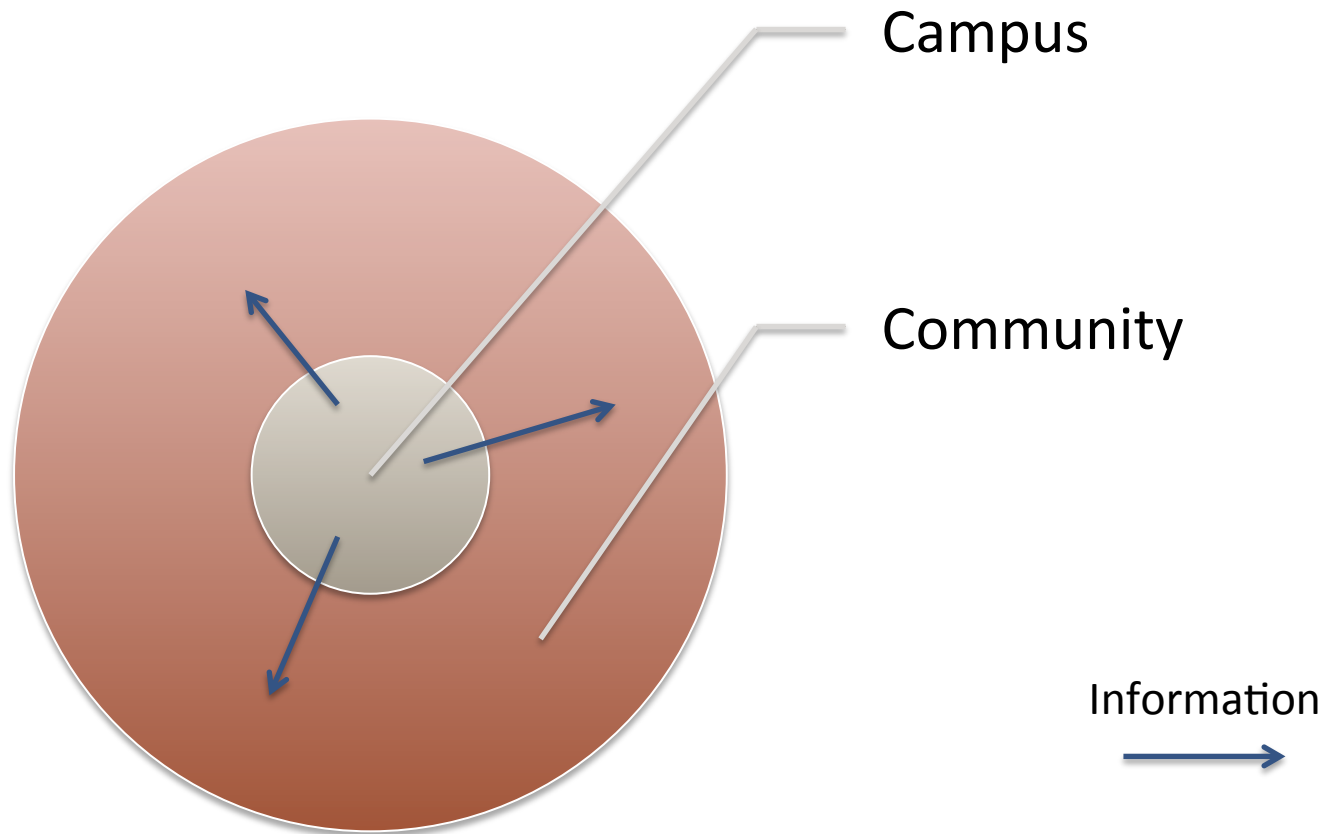
Design for Broad Impact

Prioritize Innovation

How can scientists collaborate with STEM Educators?

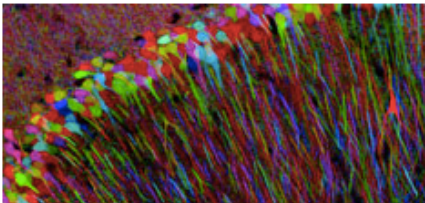
How should we think about this question?

The Classic Model of Education and Outreach

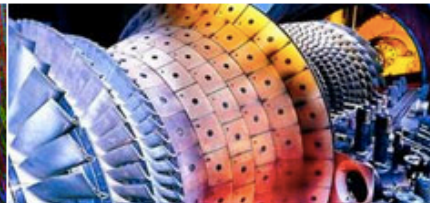


Think of science...

Current Grand Challenges



NIH, DARPA, and NSF's BRAIN Initiative, to revolutionize our understanding of the human mind and uncover new ways to treat, prevent, and cure brain disorders like Alzheimer's, schizophrenia, autism, epilepsy, and traumatic brain injury



DOE's SunShot Grand Challenge, to make solar energy cost competitive with coal by the end of the decade, and **EV Everywhere Grand Challenge**, to make electric vehicles that are as affordable as today's gasoline-powered vehicles within the next 10 years.



NASA's Asteroid Grand Challenge, to find all asteroid threats to human populations and know what to do about them.



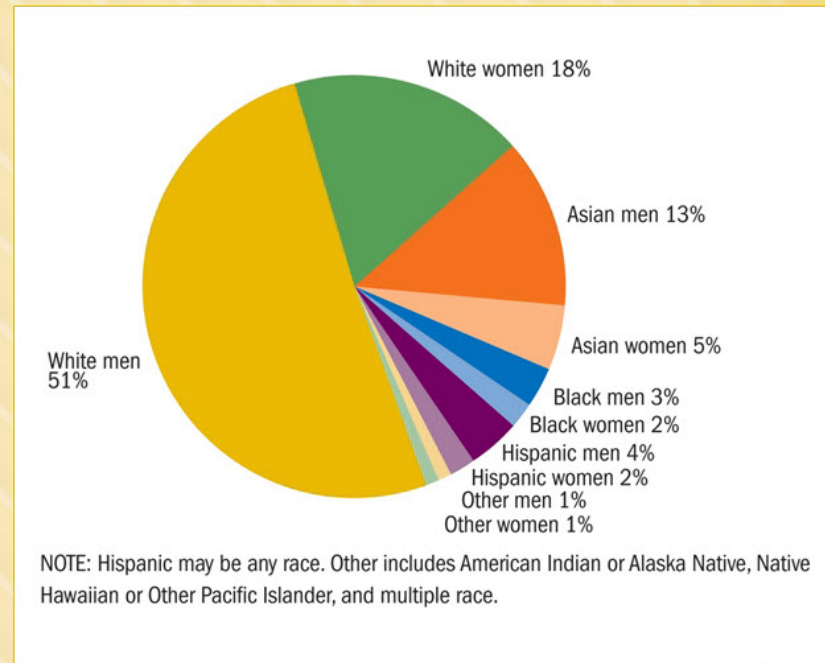
USAID's Grand Challenges for Development, including **Saving Lives at Birth** that catalyzes groundbreaking prevention and treatment approaches for pregnant women and newborns in poor, low resource communities

Grand Challenges are ambitious but achievable goals that harness science, technology, and innovation to solve important national or global problems and that have the potential to capture the public's imagination.

-The White House, Office of Science and Technology Policy

Seek to achieve broad impact...

Scientists and engineers working in science and engineering occupations: 2010



Women, Minorities, and Persons with Disabilities in Science and Engineering: 2013
www.nsf.gov/statistics/wmpd/

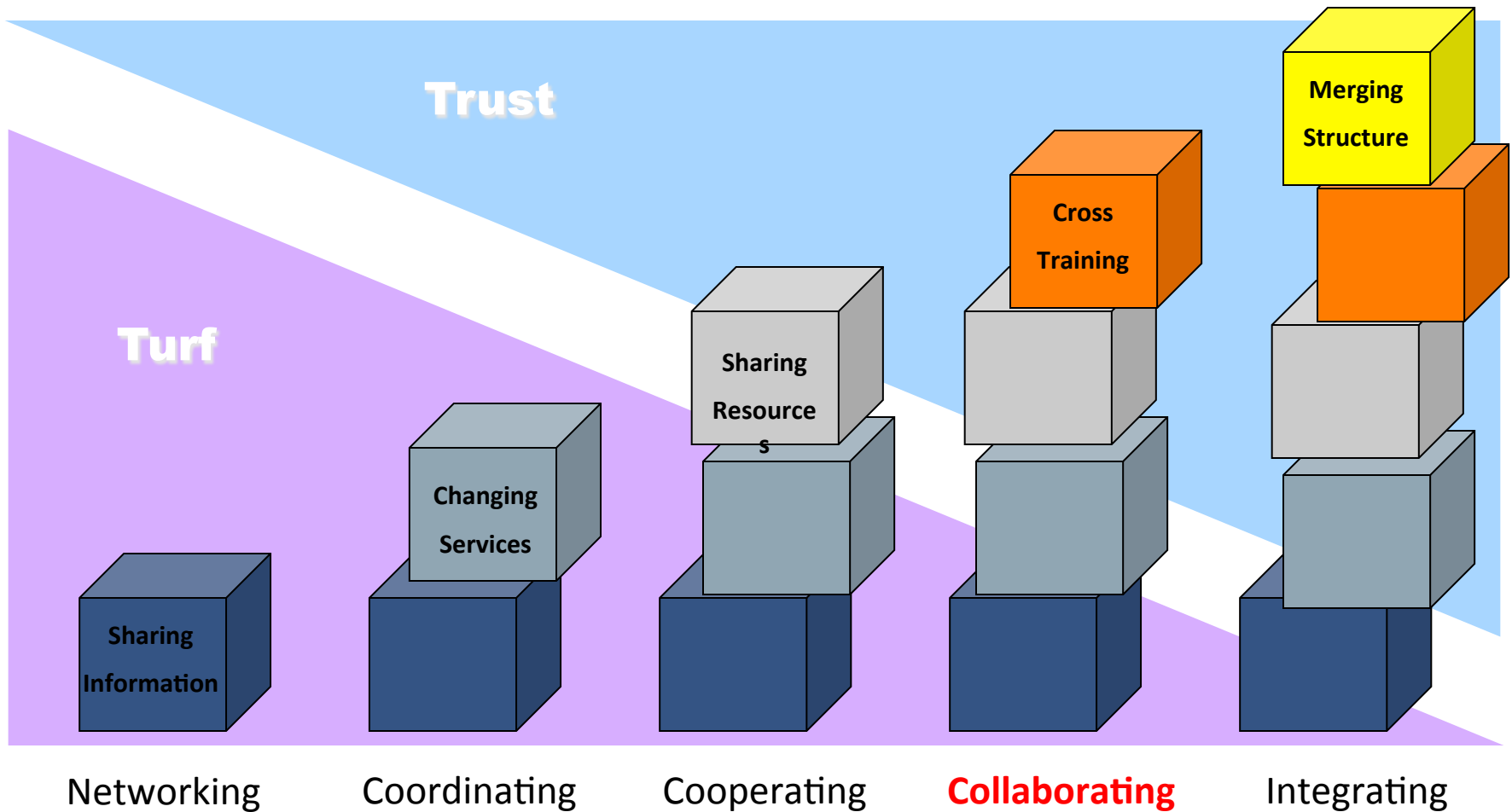
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Collaboration Continuum



TIME

Recognize the Need for Diverse and Distributed Expertise

Innovation Space

Psychologists
Educational Psychologists
Learning Sciences

Learning

**NEED Authentic Contexts
For their work.**

Scientists
Outreach Specialists

Content

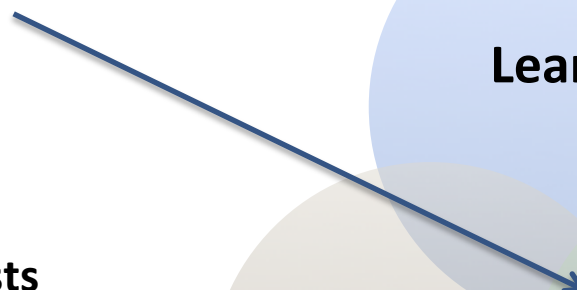
Curriculum
&
Instruction

**NEED to work outside of
the K12 context and
teacher education.**

Science Education

Know the Strengths and Limitations

Level the Playing Field



Psychologists
Educational Psychologists
Learning Sciences

Theories and models for learning
Limited knowledge of content
Limited knowledge of C&I

Scientists
Outreach Specialists

Deep content knowledge
Theories and models for science
Passion for science
Limited knowledge of learning
Limited knowledge of C&I

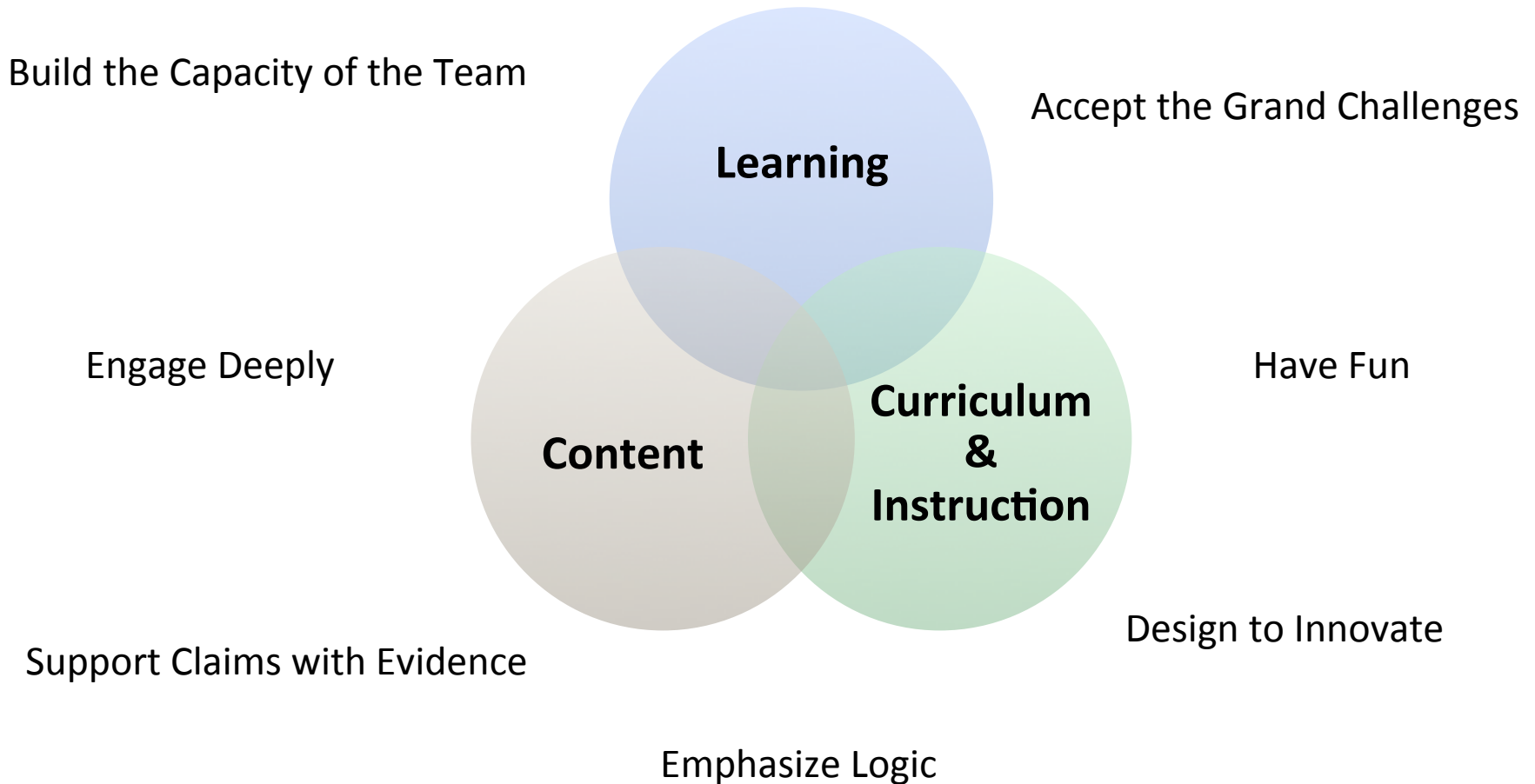
Content

**Curriculum
&
Instruction**

Science Education

Theories and models for C&I, technology use
Limited knowledge of learning
Potential for advanced knowledge of science
Experience and desire for teaching science

Use the Process of Science to Create a Learning Culture



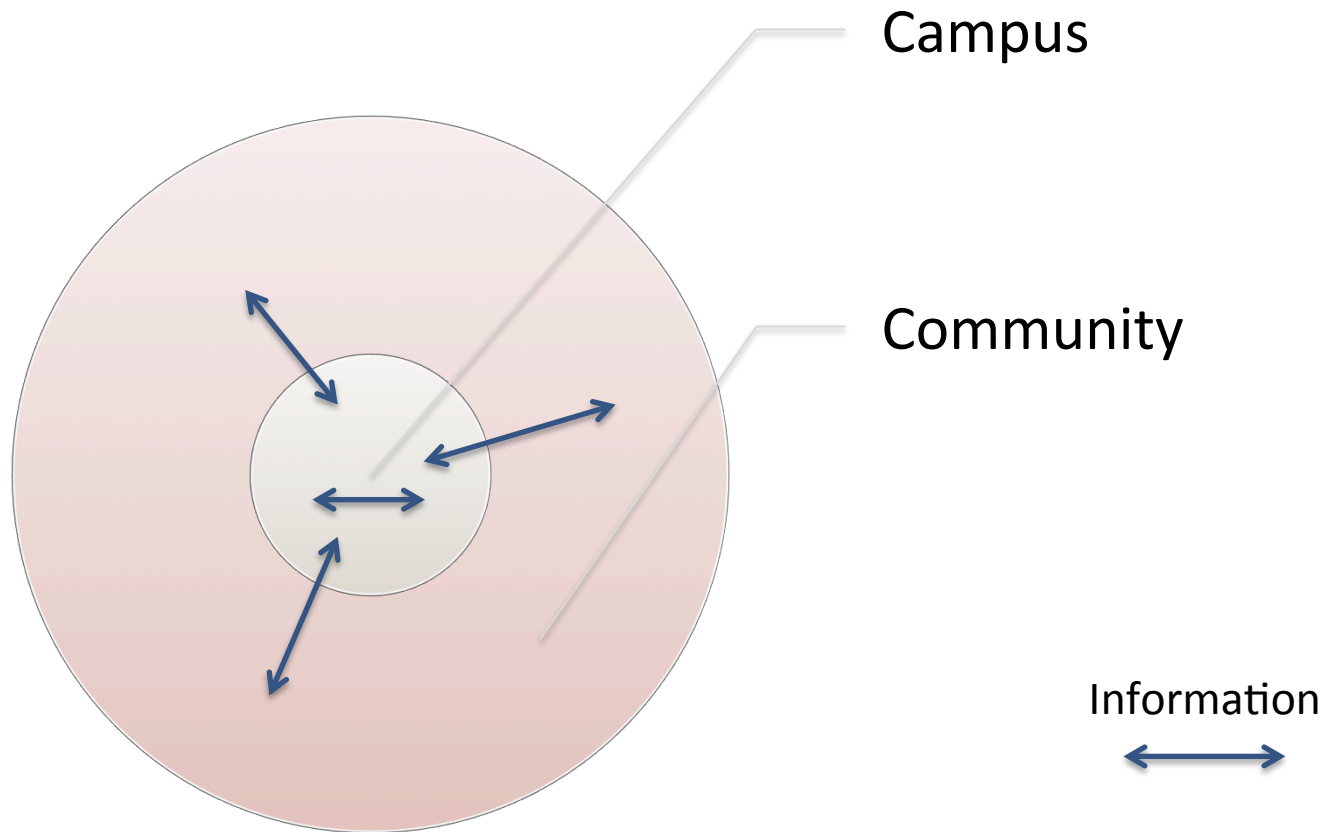
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Design for Broad Impact

Prioritize Innovation

A New Model of Education and Outreach



Questions and Comments?

Thank you.