

Developing Geo-STEM Learning Ecosystems

...

Creating More Diverse, Inclusive, and Resilient
Communities Engaged in the Geosciences

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Origins of STEM Learning Ecosystems

2014: STEM Learning is Everywhere, a Summary of National Academies of Science Convocation on Building Learning Systems, focused on K-8

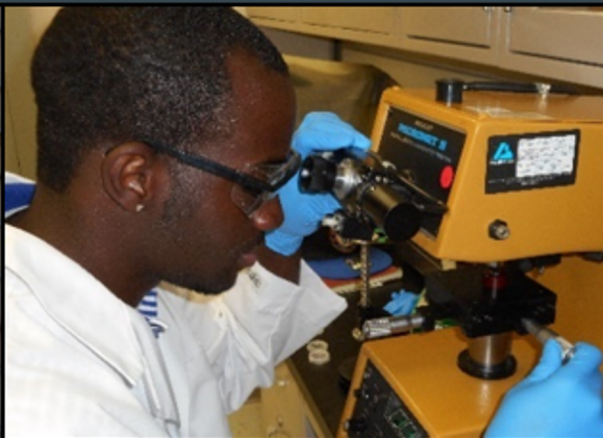
2018: Charting a Course for Success: America's Strategy for STEM Education, the new Strategic Plan for STEM education. It presents a vision for a future where all Americans have access to high-quality STEM education; expands STEM learning ecosystems to all citizens

GOALS FOR THE STRATEGIC PLAN FOR STEM EDUCATION

**Build Strong
Foundations for STEM
Literacy**

**Increase Diversity,
Equity, and Inclusion in
STEM**

**Prepare the STEM
Workforce for the
Future**



Pathways and Objectives Representing Cross- Cutting Approaches

PATHWAYS

OBJECTIVES

Develop and Enrich
Strategic
Partnerships

Engage Students
where Disciplines
Converge

Build
Computational
Literacy

Operate with
Transparency and
Accountability

Foster STEM
Ecosystems that
Unite Communities

Advance Innovation
and
Entrepreneurship
Education

Promote Digital
Literacy and Cyber
Safety

Leverage and Scale
Evidence-Based
Practices Across
STEM Communities

Increase Work-Based
Learning and Training
Through Educator-
Employer
Partnerships

Make Mathematics a
Magnet

Make Computational
Thinking an Integral
Element of All
Education

Report Participation
Rates of
Underrepresented
Groups

Blend Successful
Practices from Across
the Learning
Landscape

Encourage
Transdisciplinary
Learning

Expand Digital
Platforms for
Teaching and
Learning

Use Common Metrics
to Measure Progress

Make Program
Performance and
Outcomes Publicly
Available

Develop a Federal
Implementation Plan
and Track Progress

STEM Learning Ecosystems

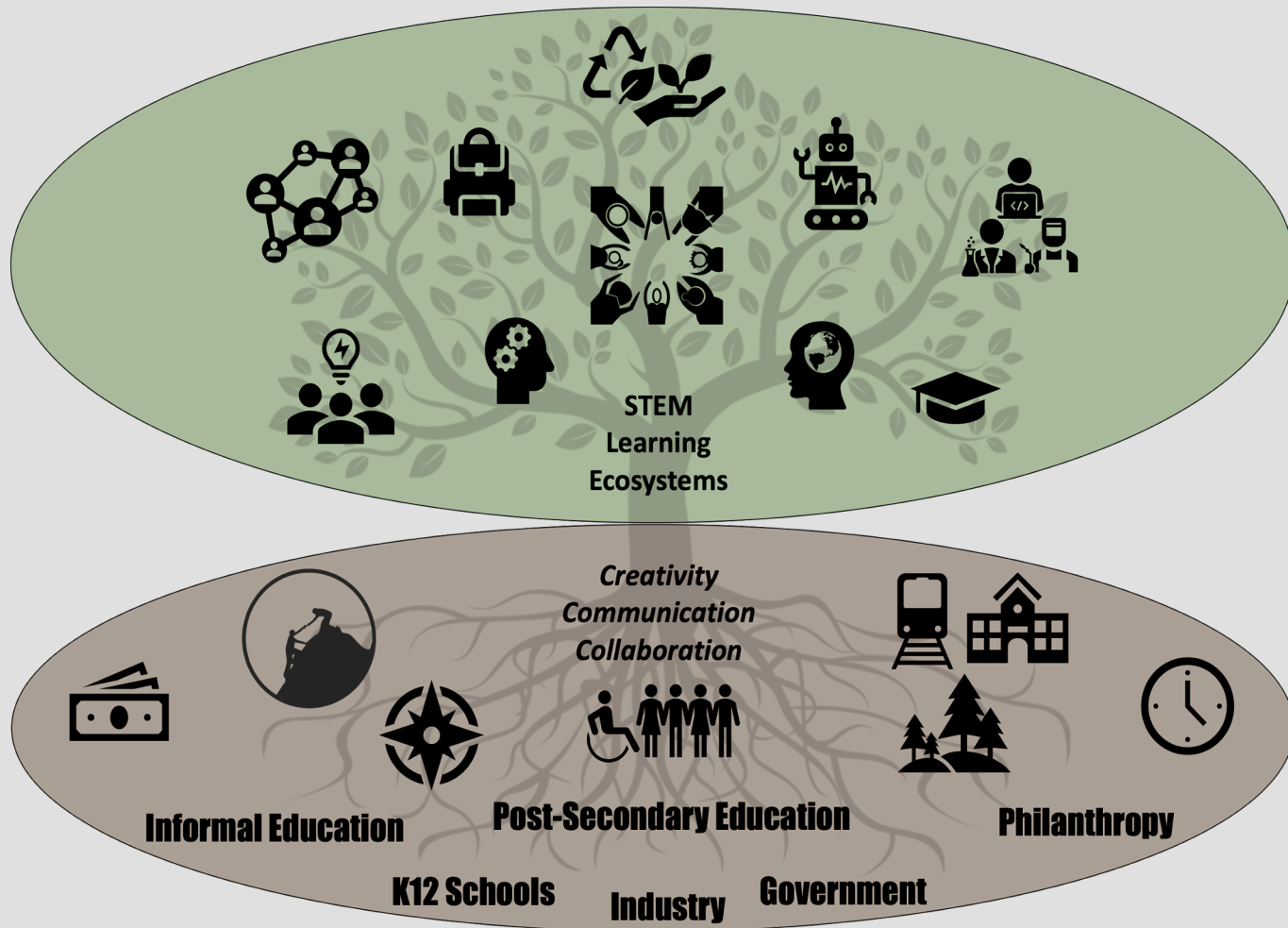
- Most provide K-8 education
- Focus is on medicine, technology, robotics, and engineering
 - Incredibly effective in changing peoples' thinking about computer science and
 - Who can do CS?
 - What kinds of jobs are there in CS?
 - How old do kids have to be before introducing and learning CS?
- Minimal focus on geosciences or environmental, resource, disaster issues

STEM Learning Ecosystems: A Conceptual Model

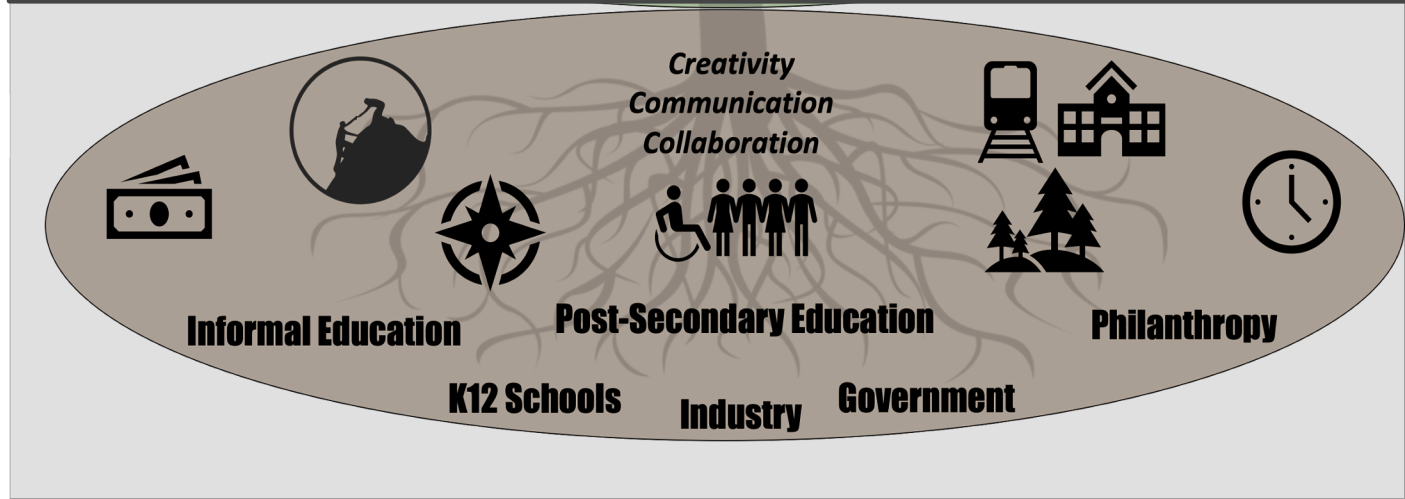
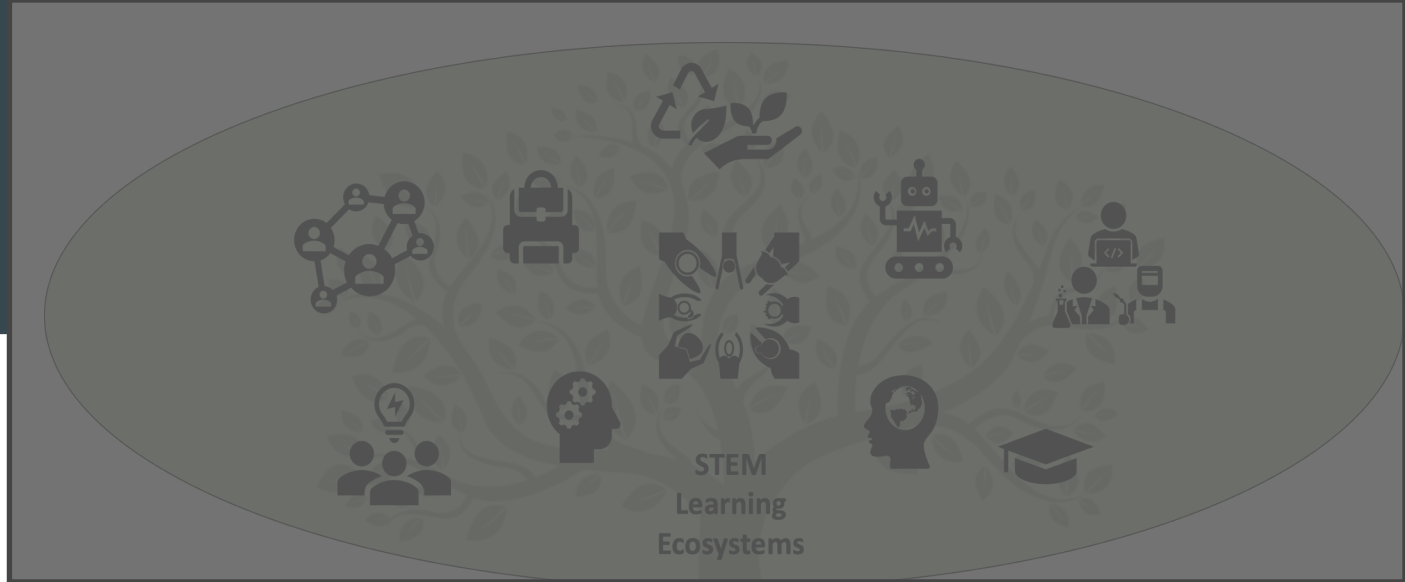
Community organizations develop systemic collaborations that engage learners from all walks of life, facilitate enduring and effective STEM learning opportunities, elevate community literacy and innovation, improve networks, and activate sustainable and transformative solutions for the broader community.

STEM Learning Ecosystems

A Conceptual Model



Inputs and Collaborations



Outputs & Goals



Critical Thinking



Broader Participation



Literacy



Sustainability and Resilience



Geo-STEM Identity



Technology Innovation



Strong & Enduring Networks



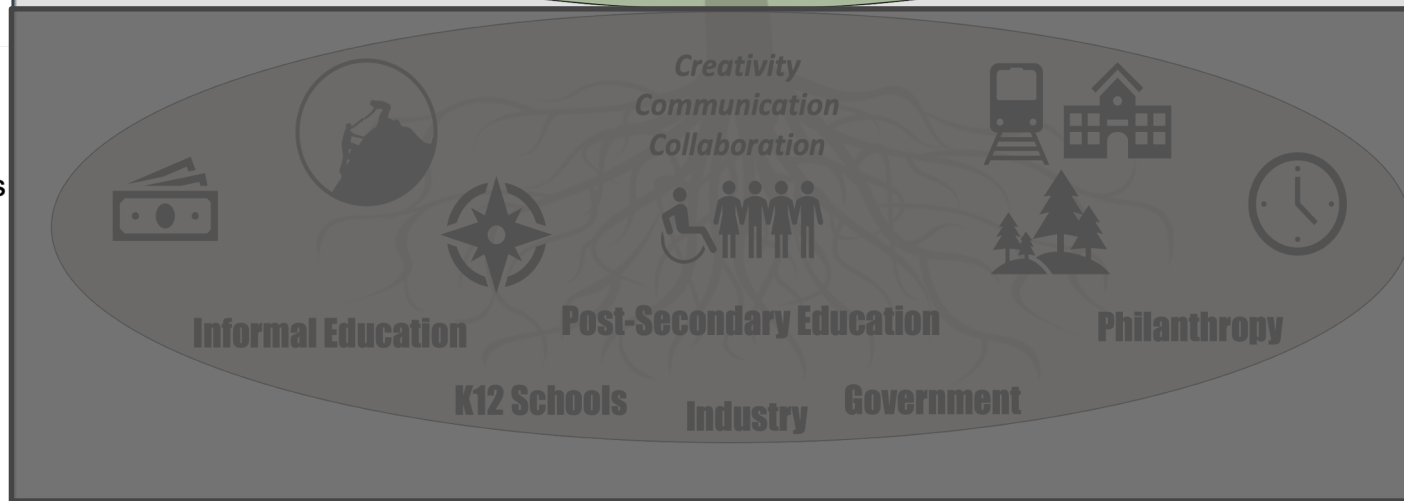
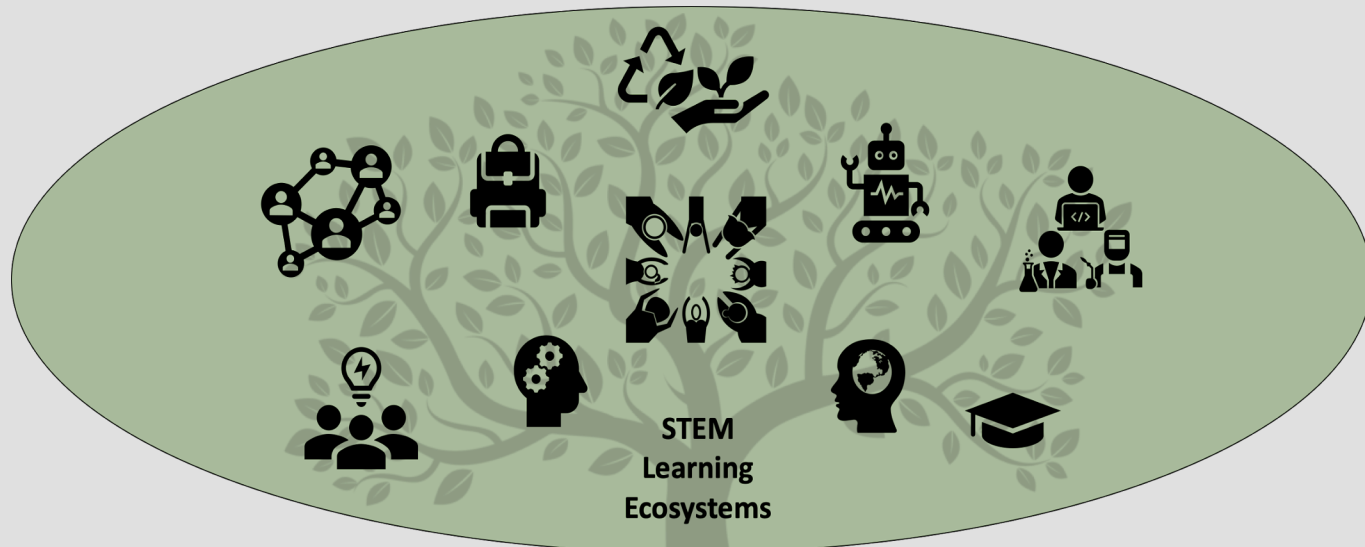
Collaborative Ideas



Transferrable Skills

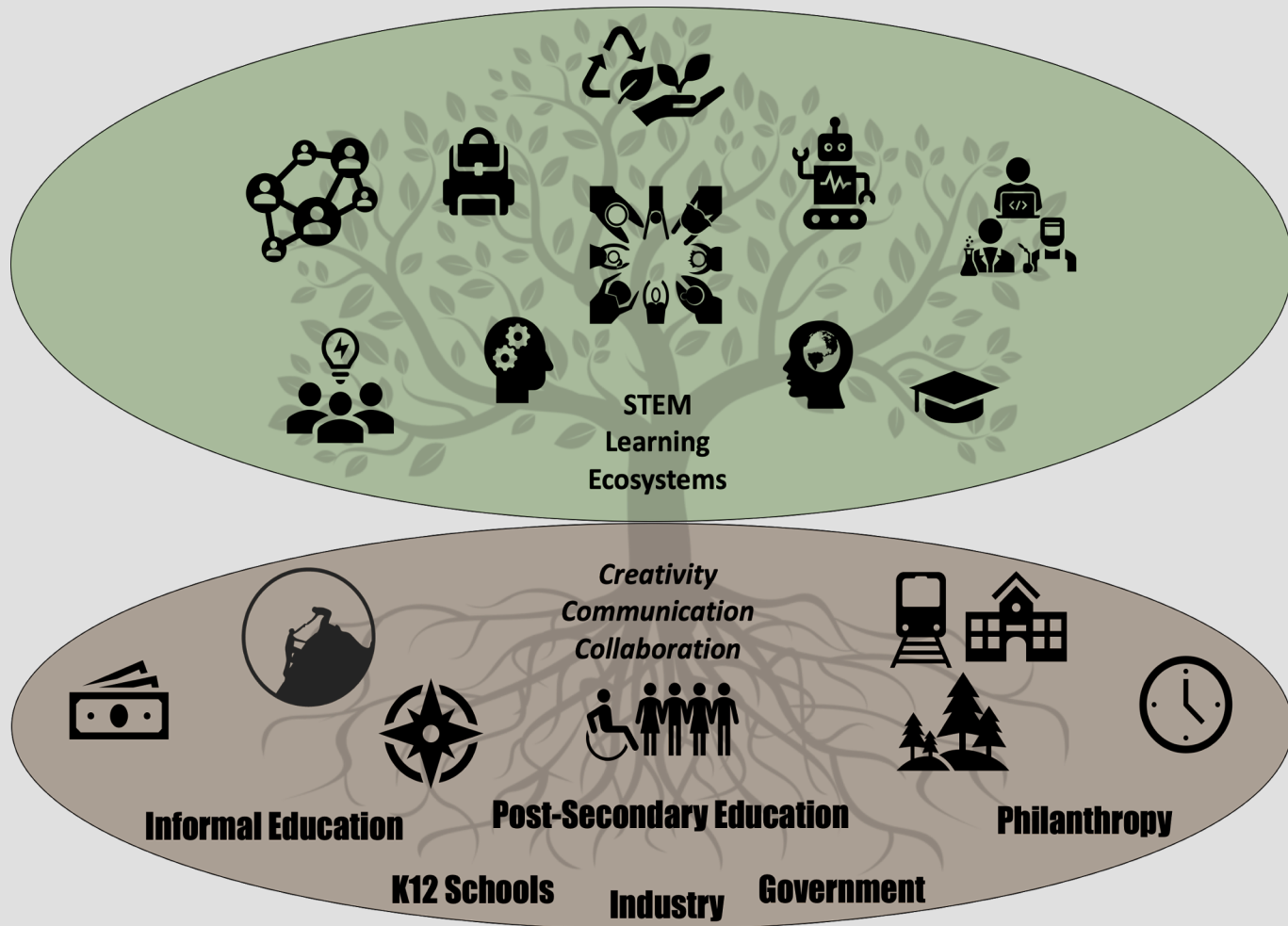


Jobs



STEM Learning Ecosystems

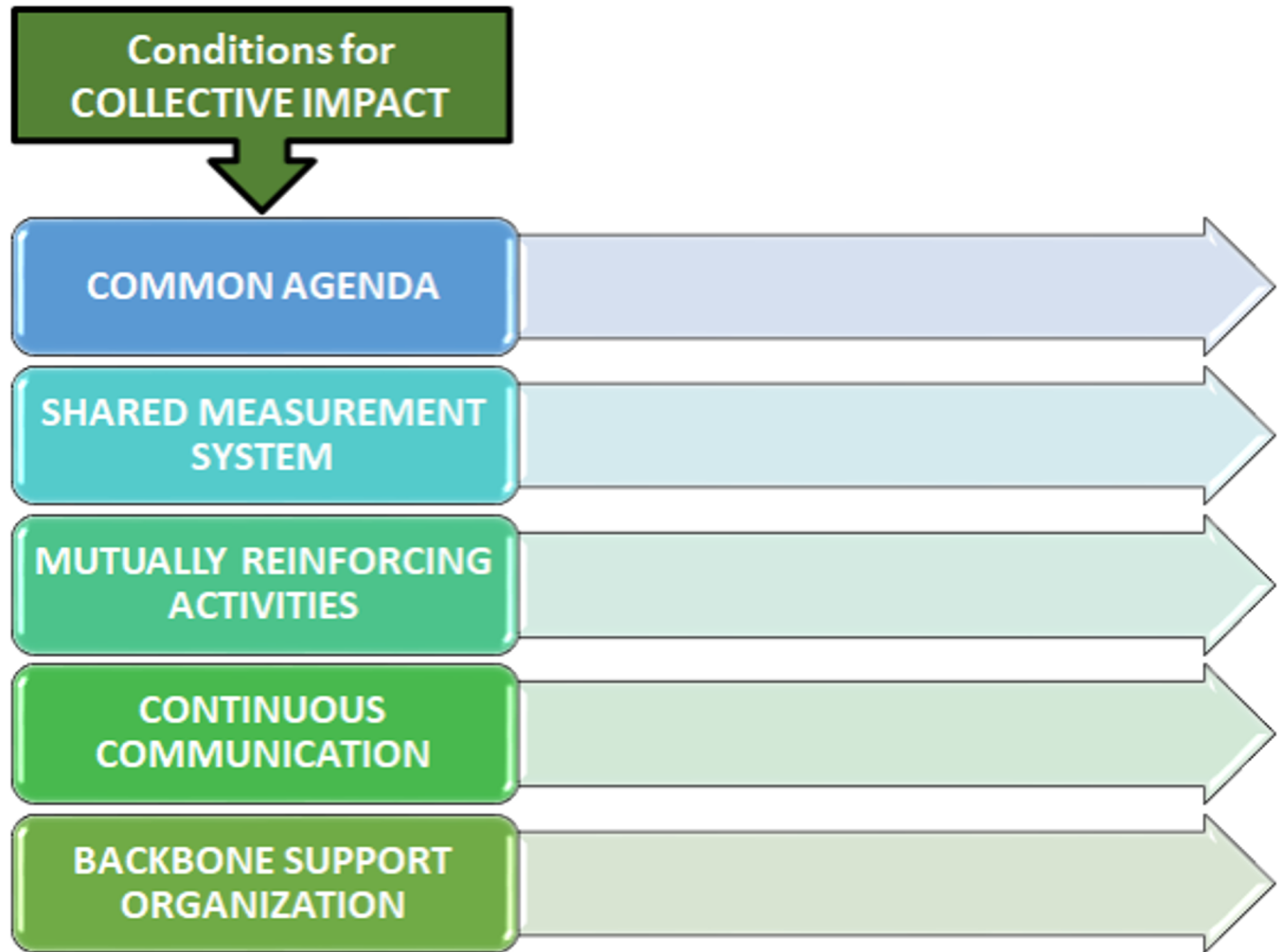
A Conceptual Model



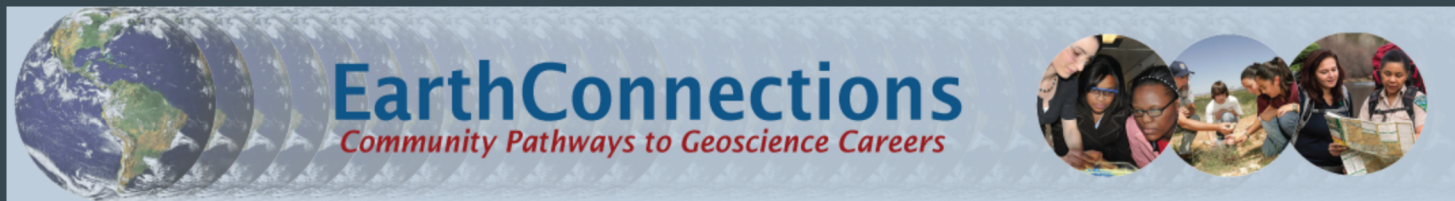
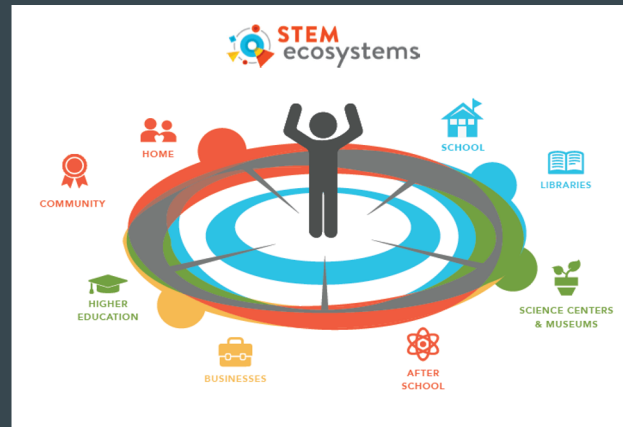
Broadening
Participation

Build a
stronger and
more diverse
workforce

Developing
Communities
of Practice



Examples of Geo-STEM Learning Ecosystems



Discussion --

What are you thinking so far?

What examples of STEM Learning Ecosystems are you a part of?

How can you build on these to make them stronger?

Links from our Round Table Discussion

- [STEM Learning is Everywhere](#)
- [2018 US STEM Strategic Plan](#)
- [STEM Learning Ecosystems Communities of Practice](#)
- [EarthConnections](#)
- [Thriving Earth Exchange](#)
- [SEAS](#)
- [Epic-N](#)
- [Communities of Practice](#)
- [GEOPaths Solicitation](#)
- [Assessing STEM Learning Ecosystems](#)
- [Assessing Communities of Practice](#)