

The Colorado STEM Ecosystem Approach

S.T.E.M.

This is a word used frequently in education, research, and industry. Its origin is the acronym "S.T.E.M." for science, technology, engineering, and math, but the term is often used without clarifying its meaning, and people may mean it in very different ways. The Colorado STEM Ecosystem's definition is borrowed from the many places where STEM simply means learning experiences and workforce pathways that support interdisciplinary problem-solving. While some affinity groups add additional letters to represent their focus (e.g., STEMM to include medical fields or STEAM to include arts), our definition is intentionally broad to support coalition building. Our hope is to get more people to the same decision-making table, not less.

Ecosystem

In ecology, an ecosystem is a diverse community that coexists in a physical environment, interacting in balanced ways that support all the organisms. The STEM Ecosystems community strives to draw from the scientific idea of ecosystems to represent its research-based efforts to build networks for the sharing of resources and expertise among leaders from education, business and industry, non-profits, philanthropy, and others.

Why Join?

Across pK-12 districts, out-of-school providers, museums, governments and businesses, Ecosystems are forging relationships and helping build sustainable partnerships. There is amazing STEM-based education and industry happening all over the state, but how does anyone find out about it? How can we partner with each other to share lessons learned and move forward more efficiently? These partnerships shouldn't depend on who you know, or how well resourced your organization is. Colorado can only solve its own problems if we have spaces that support and encourage our collaboration.



Registered Organizations

Adams 12 Five Star Schools Adams State University **Anythink Libraries** Byers School District Center for Advanced STEM Education, MSU Denver Charles Hay World School CIRES Education & Outreach City of Northglenn City of Westminster Colorado Afterschool Partnership Colorado Alliance for **Environmental Education** Colorado Space Grant Consortium Colorado Springs School District 11 Colorado State Forest Service Colorado Succeeds Community College of Denver CSU Extension Arapahoe County CU Science Discovery, University of Colorado Boulder Dakota Ridge High School Denver Area Council, Boy Scouts of America Denver Audubon Denver Botanic Gardens Denver Public Schools

Earth Force eduKatev, LLC Ellicott School District 22 **EnCorps STEM Teachers** Program Erie Elementary School Esri Fort Lewis College FutureForward at Bollman Garden To Table Garfield School District Girls Inc. of Metro Denver Global Green Education High Point Financial Group IBM **leffco Public Schools** Kids2GLOW, PBC Littleton Public Schools MAST Institute Metropolitan State University of Denver Microsoft Philanthropies **TEALS Program** MindSpark Learning Monaco Elementary MSU Denver Noyce U-R STEM National Renewable Energy

Laboratory

Northglenn High School Northstar Dental Paler High School Pinnacle Charter School Project IDEA Project Lead The Way (PLTW) Project Learning Tree Pueblo District 60 Red Rocks Community College Roncalli Stem Academy Sand Creek Regional Greenway Partnership Secrest Elementary Silicon STEM Academy Singing Hills Preschool Southwest Colorado Education Collaborative STEM Jobs Magazine STEM Lab STEM Launch STEM Outreach, Pre-Collegiate Success and Support Center STEM School Highlands Ranch Thompson R2J School District TinkerMill, The Longmont Makerspace U.S. Fish and Wildlife Service University of Colorado Boulder University of Colorado Colorado **Springs** University of Northern Colorado **US Drone Soccer** Vikan Middle School Well Works Wild Rose Education



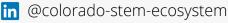
Colorado STEM Ecosystem 2.0

Janelle M. Johnson, PhD Director

Denver Urban Gardens

DSST Public Schools





Project WILD



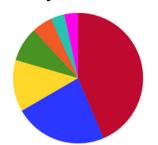
Potential Members¹

Adams State University Aims Community College Arapahoe Community College Arvada Chamber of Commerce Aspen Center for **Environmental Studies** Ball Aerospace Boys and Girls Clubs Cal-Wood Education Center Career Education Center Children's Museum of Denver Colorado Association of Science Teachers (CAST) Colorado Council of Teachers of Mathematics Colorado Environmental Film Festival Colorado Mesa University Colorado School of Mines Colorado State University Community College of Aurora Cool Science

CSU Construction Management **CSU STEM Center** CU Anschutz Medical School CU Office of Diversity, Equity & Community Engagement Denver Museum of Nature and Science **Expeditionary Learning** Foothills Parks and Recreation District Fort Lewis College Girl Scouts of Colorado Lockheed Martin Mobile Earth and Space Observatory NOCO CSP Novce Programs Pikes Peak Business and **Education Alliance** Pikes Peak Community College

Pueblo Community College **PVSD** Red Rocks Community College Scholars Unlimited Skinner Middle School Neighborhood Center Space Foundation St. Vrain Valley Schools Thorne Nature Experience Transportation and Construction Girl U.S. Department of Parks and Wildlife Weld RE-4 Western Colorado University Xcel Energy **YMCAs**

Ecosystem Members by Sector



- PreK-12 education (43.6%)
- Post-secondary/Higher education (23.1%)
- STEM programming provider (12.8%)
- Non-profit (8.5%)
- Business/Industry (5.1%)
- Government (3.4%)
- Other (3.4%)

75%

of Ecosystem Members

Completely Agree that it is
important for Colorado to have a
statewide strategic STEM plan



Colorado STEM Ecosystem 2.0

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msudenver.edu/colorado-stem-ecosystem

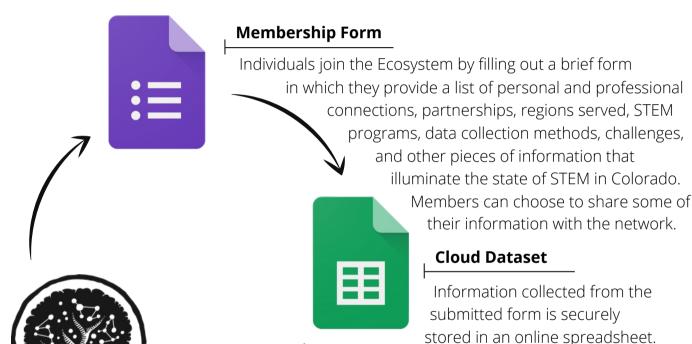
in @colorado-stem-ecosystem



¹ These are connections of Ecosystem members that were included on the Membership Form



Digital Infrastructure



Interactive Network Visualization

The Ecosystem's web of connections is visualized on Kumu.io which interoperates with the cloud dataset, reflecting, in real-time, the addition of new members. The technological foundation of this system embodies the evolving, collective, and transparent nature of the Ecosystem. Members have ample opportunities to network, collaborate, and share best-practices.



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Automated functions restructure and filter the data in a matter of seconds, instantaneously delivering updates to

the network's interactive visualization.

in @colorado-stem-ecosystem

