

CNS EOC Annual Report

2014-2015



College of Natural Sciences
Education & Outreach Center



Colorado
State
University



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Above

We are working to level the playing field by helping populations traditionally underrepresented in the sciences, including girls, ethnic minorities, and students from rural communities.

On the Cover

The enthusiastic members of the new STEM Educators Club.

Mission

The College of Natural Sciences Education & Outreach Center is an incubator for innovation in STEM education. We serve both CSU and K-12 students and faculty through a wide variety of programs. A common thread that weaves through all of our programs is increasing the quality, quantity, and diversity of students in STEM disciplines. Particular emphasis is on finding new ways to promote scientific creativity and innovation, attributes essential for meeting global challenges in the 21st century. Many of our programs focus on providing authentic scientific research experiences for both students and teachers.



The EOC staff is supported by the College of Natural Sciences and constitutes 0.5% of the college's annual resident instruction budget. Additional funds are derived from participation in grants led primarily by CSU faculty at large (see page 16) and self-funded programs such as SciTrek, Triunfo, and various collaborations with faculty.

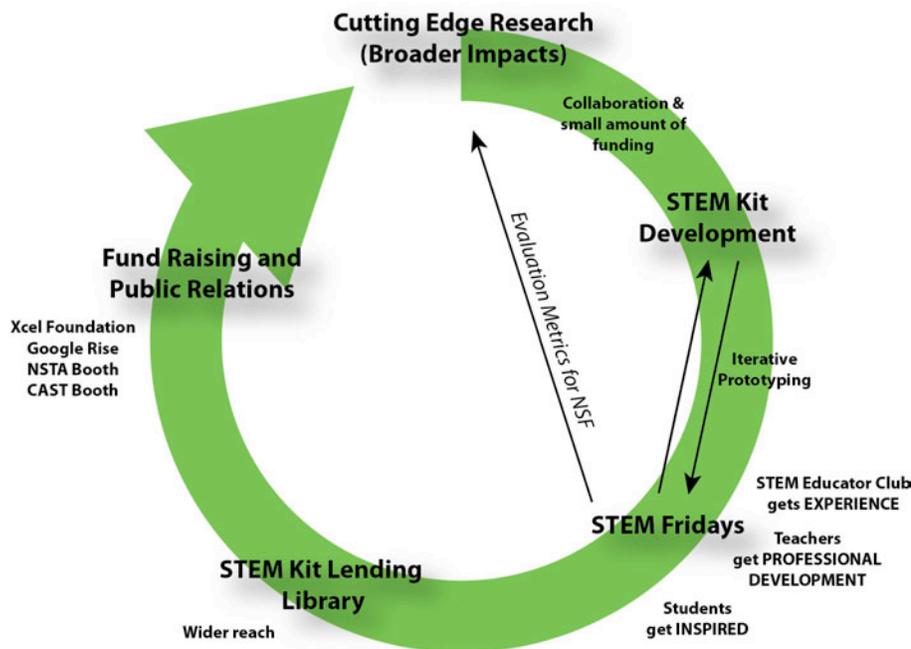
Message from the Director

Five years ago we were given a difficult challenge: reinvent an existing center and make it more relevant to the College of Natural Sciences. Today, we believe that we have accomplished this and are heading in an exciting direction. This report aims to describe what we have done and chart a course forward.

A major dilemma that the previous center faced was how to serve the university when relying on large NSF, NASA, and EPA grants to remain sustainable. Finding faculty willing to collaborate on major *science education* grants was next to impossible and the grants were so demanding that there was no time left to serve the university or even let everyone know what great things were accomplished.

Over the last four years, we have been reinventing everything we do. Of particular note, we have had great success at engaging CNS faculty in our programs by helping them to write the *broader impacts* sections of their grant proposals. This has allowed us to showcase their cutting-edge research in many of our programs.

The following diagram illustrates how we can turn \$6-\$10k from a large federal grant into an effective educational and public relations tool at multiple levels.



Each STEM kit that we develop in collaboration with faculty has similar traits. They emphasize mathematics and reading comprehension. They model the use of scientific illustration in lab note taking. They are intended to be used by groups of two or three students to promote

teamwork. They do not compromise on materials or rigorous scientific content. They include interviews with female or underrepresented graduate students who are studying the topics showcased in the kits. The presentation of the kits is highly appealing regardless of age.

Kits are accompanied by a website and professional development videos for teachers. The kits have helped us raise funds from foundations like Xcel Energy and Google and attract considerable attention at regional STEM conferences. Our **STEM Kit Lending Library** allows us to reach more classrooms than we could otherwise. Most importantly, the kits have allowed us to establish the **STEM Friday** program and the **STEM Educators Club**.



In four short years, we have already expanded our service to **27%** of the Biology faculty, **17%** of the Physics faculty, **15%** of the Biochemistry & Molecular Biology Faculty, **14%** of the Chemistry faculty, **10%** of the Mathematics faculty, **8%** of the Computer Science faculty, and **6%** of the Psychology faculty.

Not only have we engaged more CNS faculty than ever before, but we have also begun working more directly with pre-service science education students. By offering these students more than just standard academic advising, we are rapidly growing a community of leaders that will help attract more and better candidates to the STEM teaching profession.

Lastly, we have received some funding from the provost's office to establish an **Alumni Relations System**. This system will allow us to better track and support our STEM Education graduates and help us to improve the programs we offer.

Interest in our services and programs is at an all-time high, despite the fact that our staffing is at an all-time low. The breadth and depth of the programs described in this report is accomplished on just 2.75 FTE spread over four people with a few student assistants.

Andrew Warnock

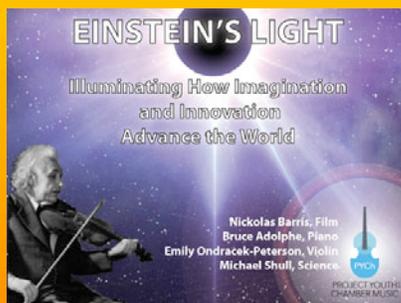
Andrew Warnock, Ph. D.
Director / Research Scientist III
CNS Education & Outreach Center



Sigma Xi was founded in 1886 to honor excellence in scientific investigation and encourage a sense of companionship and cooperation among researchers in all fields of science and engineering. The Greek letters "sigma" and "xi" form the acronym of the Society's motto, "Spoudon Xynones," which translates as "Companions in Zealous Research."



Dana Murphy brought a Monitor Lizard, a Tenrec, and a Tiger Salamander and talked about how the zoo can be used as a resource for science teachers.



Bruce Adolphe performed excerpts from his score to the movie, "Einstein's Light" that celebrates the UNESCO International Year of Light.

For a complete list of past flyers visit: www.cns-eoc.colostate.edu/sigmaxi.html

Programs: CSU Faculty

Services for Faculty

The CNS EOC provides consulting services to CSU faculty. Here are some of the things we can help with:

- Writing the **Broader Impacts** section of federal grant proposals;
- Designing effective outreach programs;
- Suggesting ways of leveraging existing programs;
- Assisting with science and math teacher professional development programs;
- Offering graduate continuing education credit for workshops;
- Design of inquiry and standards-based classroom kits;
- Recruitment of math and science teachers for **Research Experiences for Teachers (RET)** programs;
- Use of our **cutting-edge STEM Education facility**.

Sigma Xi Chapter Office

In collaboration with Dr. Shing Ho, the EOC is working to revitalize the CSU Sigma Xi Chapter. In order to bring together the more than 170 active Sigma Xi members on campus, we have begun Sigma Xi keynotes each semester focused on current issues in STEM fields.

EOC/Sigma Xi Keynote Presentations

Spring 2015: Project Youth & Chamber Music

"Einstein's Light: Illuminating How Imagination and Innovation Advance the World"

Fall 2014: Dana Murphy

"The Zoo's Role in Inspiring Science Students"

Spring 2014: Dr. Jaime Ruiz

"Scratch Pong on a Pico"

Fall 2013: Mike Whatley

"Interpretive Solutions"

Spring 2013: Dr. Stephen Thompson and Gary Raham

"Scientific Illustration 101"

Fall 2012: Dr. Andrea Schweitzer

"Reaching for the Stars: Community Based Space Science"

Spring 2012: Sparkfun

"The Maker Faire Phenomenon and Engaging Students in STEM with eTextiles"

Fall 2011: Dr. Kirk Johnson

"The Discovery of Snowmastodon"

Spring 2011: Dr. Nancy Kellog

"Is Science Education in Colorado on the Right Track?"

Fall 2010: Dr. Paul Dorherty

"Science for Everyone"

Canvas Course Support

The EOC is home to the CNS Canvas coordinator, Ms. Barry Carroll, who is available to assist faculty in their use of CSU's online learning management system. This system has many useful tools to facilitate cooperative learning, non-linear inquiry-based learning, self-assessment, and use of web resources.

Mentoring Opportunities

There are numerous opportunities for faculty to mentor in the area of STEM education. Here are a few ideas:

- Mentor a student doing a science fair research project;
- Be a judge at a regional science fair or the Colorado Science and Engineering Fair;
- Present a session at Math-Science-Tech Day; and/or
- Be a content expert at a teacher professional development workshop.

*****For a complete list of current and pending grants in collaboration with CSU Faculty, please see page 16.***





One of over 75 future science teachers receiving expert guidance.



STEM Friday pre-service teachers sharing their college experiences over pizza.

Programs: CSU Students

Bachelors of Science in the Natural Sciences Advising

For students interested in teaching science at the middle and/or high school levels, this is the right major. The BSNS degree program combines the CSU Core Curriculum with strong scientific content, strong educational pedagogy, and real classroom experience to meet the increasing demand for licensed science teachers nationwide.

Students can be assured that their BSNS degree will provide a firm foundation for continued graduate work in science education leading to a Masters in Education and/or Ph.D. degree. Concentrations in the Natural Sciences major include Biology education, Chemistry education, Geology education, and Physics education.

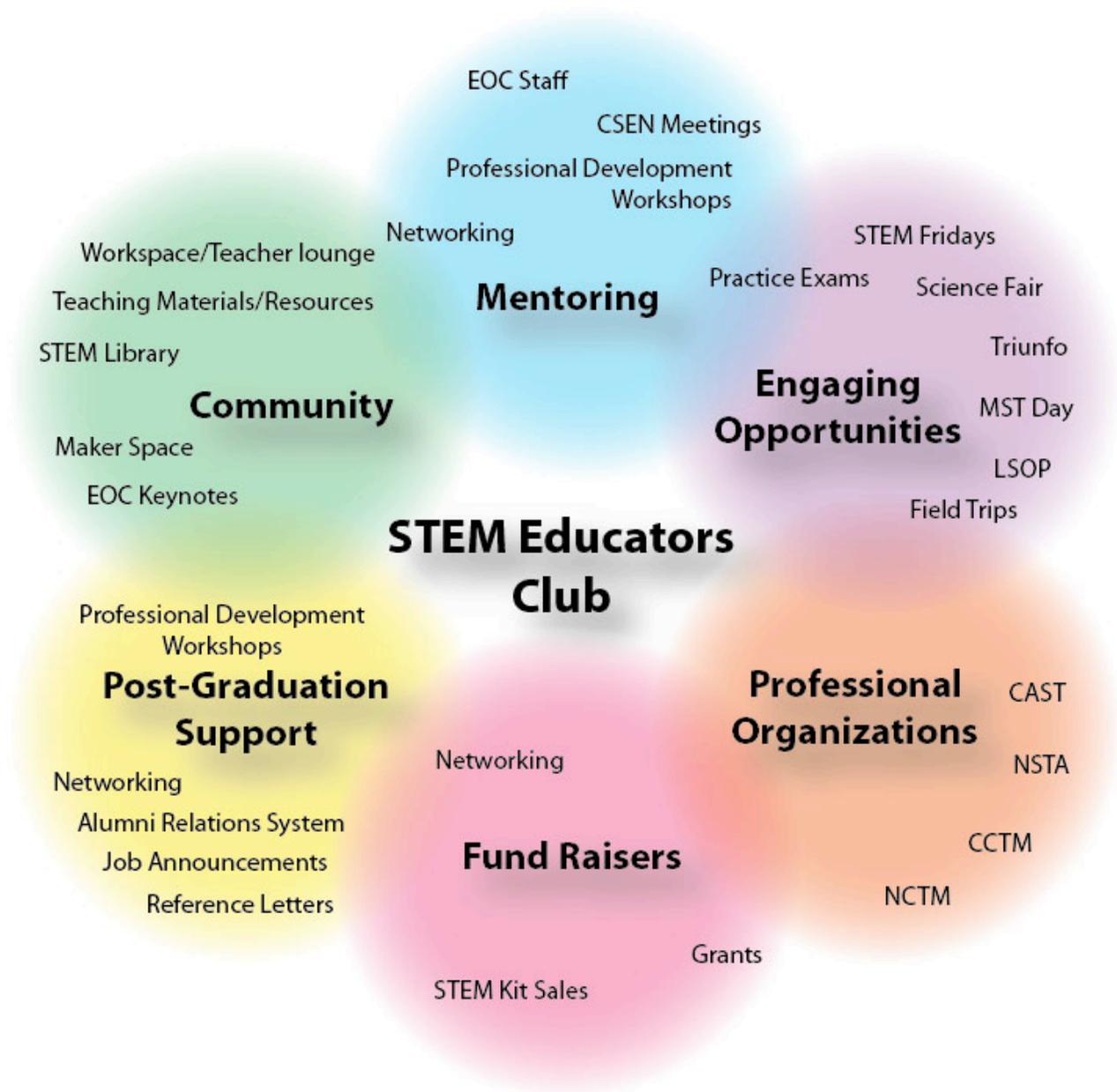
The BSNS degree also has a concentration in Physical Sciences, where a student completes the CSU Core Curriculum along with the requirements for two minors chosen from Biochemistry, Chemistry, Computer Sciences, Geology, Mathematics, Statistics, or Physics. Students choosing this major can meet requirements for professional schools (e.g., medicine or law) or graduate programs in the basic or applied sciences.

There are currently over 75 undergraduate BSNS majors in the 5 concentrations. Our learning studio is open to BSNS majors for use as a study/work space and teacher lounge.

STEM Educators Club

Natural Science Education majors (n~75), Mathematics Education majors (n~65), Engineering Education majors (n~5), and any interested STEM major (n>1000) are welcome to join our new STEM Educators Club. This student run organization is designed to provide pre-service STEM Education students with a lively community, mentoring, engaging volunteer and professional development opportunities, introductions to professional organizations, worthy fund raisers, and post-graduation support (see diagram on next page). Most of these students take their Science or Math Methods courses at the EOC. Many take advantage of our teaching materials and resources.

This year, thanks to seed funding from the provost and the CNS Dean's office, we are actively encouraging STEM Education students to use our space, assist our programs, and reap the many benefits of being involved with the EOC.



The goal of the STEM Educators Club is to provide students with the tools and experiences that they will need to enter their own classroom prepared to do cutting-edge, hands-on science with students. By being introduced to practicing science teachers at our workshops and keynote events, getting to know the EOC staff, and joining professional societies, new teachers will be armed with the support needed as they navigate their first few years of teaching. Most new teachers quit within three years due to a lack of the kind of support that we offer.



Teachers measure the quantity of groundwater and make map of its distribution at the GetWET facility.



Students quantify the signs of spring and fall by observing budburst in the spring and color change in the fall.

Programs: K-12 Faculty

Masters of Natural Science Education

This online masters program is for in-service teachers wishing to hone their science skills. Courses feature a series of hands-on labs that are developed in partnership with CSU faculty and, assembled and shipped by the EOC.

Annenberg Learner Distance Courses

The CNS EOC is the only center in the United States that offers graduate-level semester credit for teacher professional development courses developed by Annenberg Learner. These rigorous courses are cutting-edge and are produced by widely respected faculty from leading universities.



Teacher Professional Development

The center regularly offers workshops for in-service teachers in conjunction with CSU faculty. Recent topics include: Evolution, TI Calculators, Scientific Illustration, eTextiles, Computer Programming, Phenology, Biological Modeling, Energy, Water, and Earth Science.

Science Kit Lending Library

Many local and regional science teachers borrow classroom STEM materials from the EOC. One of our ongoing efforts is to add breadth to our library of science kits.

Information

EOC staff regularly fields questions from the Colorado science education community. These are generally related to lab or field equipment, science fair research issues, or questions about a specific scientific topic.

Water Science Education

The EOC has a strong emphasis in the area of water education. Our latest effort is working with the National Park Service on implementing a new Water Budget Activity at schools surrounding national parks.

Additionally, the GetWET Observatory is the only outdoor hands-on groundwater education facility in the Rocky Mountain Region and is located on CSU property along Spring Creek. The EOC hosts approximately 20 field trips per year for the Poudre School



District, Front Range Community College, and Weld County Schools. Students study water quality and quantity issues and how they relate to use, conservation, and flooding. Pre and post field trip laboratory activities include the use of an innovative physical groundwater model. GetWET is a partnership between the department of Geosciences and the EOC.

Energy Science Education

Like water, energy is a basic necessity. Our focus is on helping students to discover basic principles that govern sources of renewable energy. We currently offer several energy-related science kits. The Get Energized! kit covers rechargeable batteries and solar cells. The Regenerate! kit explores how regenerative braking works in hybrid electric vehicles. Our Solar Cars kit is an engineering design challenge to make a working car that meets specific design criteria. An important objective with these efforts is to inspire students in Colorado to consider beginning their clean energy career at CSU.



Summary of Current Content Efforts by Discipline:

Astronomy: World Window

Biology: Evolution Workshop, Hominid Evolution Kit, NetLogo Modeling of Biological Processes, Transpiration Kit (*in development*), Crayfish Molting Kit (*in development*)

Chemistry: Get Energized Kit, GetWET Backpacks

Computer Sciences: Scratch Pong Kit, NetLogo Modeling

Earth & Environmental Sciences: GetWET Backpacks, Groundwater Modeling Kit, Tree Rings Backpacks, Really Ancient Fossils Kit, School Water Budget Kit, Soil Carbon Kit.

Engineering: Solar Cars Kit, 3-D Printing, Maker Space.

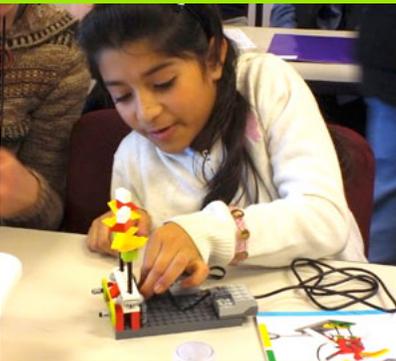
Mathematics & Statistics: All Kits.

Physics: Regenerate Kit, Get Critical Kit.





Students practice being interviewed at the EOC by CSEF alumni who are now STEM majors at CSU and also receive feedback on how they can improve their display and presentation.



Triunfo students have one on one help with Lego WeDo sets that integrate sensors and motors with a very powerful, yet kid friendly computer programming interface.



We integrate Science Notebooks into all of our programs.

Programs: K-12 Students

Colorado Science & Engineering Fair

Colorado has an extensive network of local and regional science fairs that feed into a state-level science fair that is hosted by CSU and directed by Ms. Courtney Butler. The Colorado Science and Engineering Fair also affiliates with the Intel International Science and Engineering Fair and Colorado sends approximately 25 projects to this competition each year.

Science fair research projects are the ideal science, math and engineering educational activity. Students work individually or within small groups to develop a research question, formulate hypothesis or create an engineering goal, design an experiment, collect and interpret data, and then communicate their conclusions both verbally and in writing. Science fair competitions also allow students to use multiple visual and physical representations.

Students who participate in a science fair competition interact with teachers, mentors, family members, judges, scientists, and the public. Awards, scholarships and internships are available to students and are great incentives to continue studying in the STEM fields.

CNS EOC is interested in increasing diversity and participation in Science Fair. To this end, the EOC is actively encouraging schools to integrate research projects into the curriculum rather than just supporting self-motivated students after school.

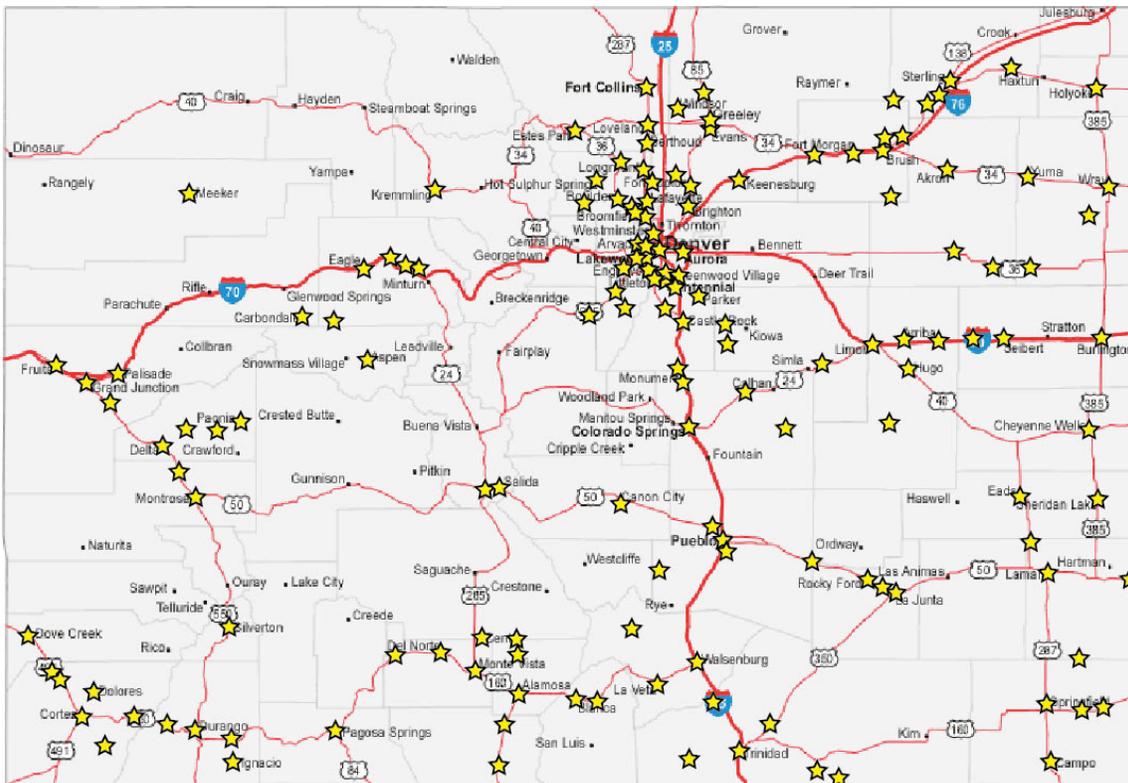
The following map shows the distribution of students that have recently made it to the Colorado Science and Engineering Fair.



Sara Volz (top right) and Easton LaChappelle, both CSEF alumni were invited to the third annual White House Science Fair



Sara Volz won first place at the 2013 Intel Talent Search



Anyone who has had the opportunity to interview any of the students that visit CSU every April for the Colorado Science and Engineering Fair will know that these are just the sort of students we want to attract to the College of Natural Sciences. The fair brings over 300 of the best students from every part of the state to campus and faculty, graduate students, CSEF alumni attending CSU, and staff serve as judges. The Departments of Chemistry, Biochemistry and Little Shop of Physics provide special awards, and the College of Natural Sciences provides scholarships to the top senior division winners. The center would like to encourage more CNS faculty and departments to host **Lab Tours** to help entice these students to come to CSU.

Triunfo Mentoring Program

The Triunfo Mentoring Program is a partnership with CSU's El Centro office that aims to inspire students and close the achievement gap by offering weekly one-on-one tutoring in all academic areas to local elementary school students.

Triunfo is open to all students without restrictions, but only provides free transportation to the highest needs students from the highest needs schools. The program takes place every Thursday from 4-5:30 p.m. from September through May in the experiential learning studio at CNS EOC where students have access to STEM reading books, computers, 3-D printer and scanner, Lego robotics, construction sets, scientific lab materials, and educational expertise. Special presentations and lab tours take place throughout the year. This program is funded primarily by the Bohemian Foundation's Pharos Fund.

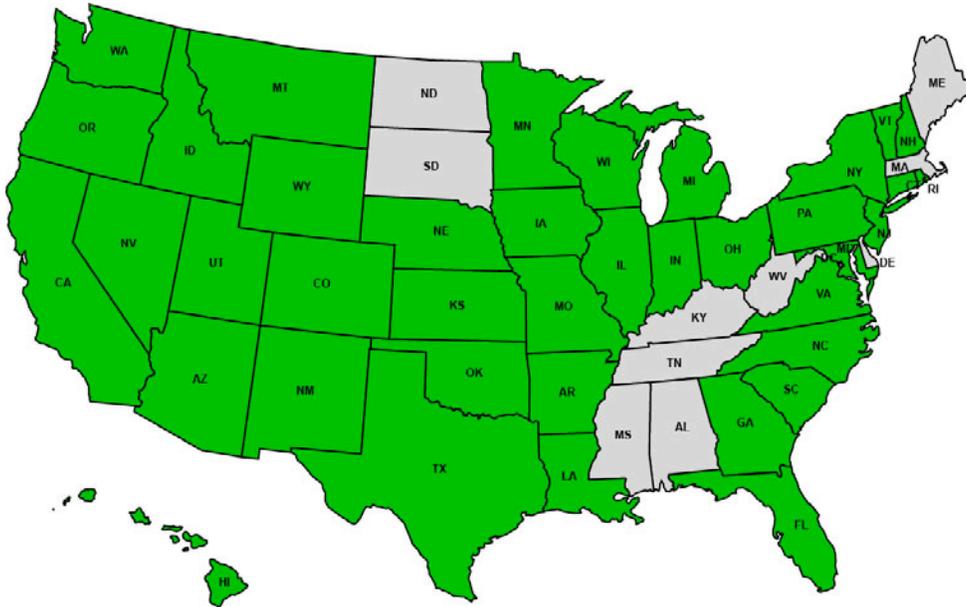
Math-Science-Tech Day

Math-Science-Tech Day brings hundreds of local underserved 4th grade students from Poudre School District to CSU for a fun-filled day to show them that college is something worth pursuing. The day includes exciting STEM content in three different sessions, admissions information, CSU student mentoring, and cultural programming.



Summer Camps

The EOC summer camps are one week long and attract junior and senior high school students from across the nation (see map below). They are highly popular and fill up within days after registration opens in early January. The majority of students enroll in both the morning SciTrek camp and the afternoon Summer Vet camp and stay on campus in one of the residence halls to give them the full college life experience.



Campers have hailed from 39 states indicated in green.

Due to the highly competitive nature of veterinary medicine, only a small percentage of students even make it into vet school. SciTrek's mission is to introduce these talented students an exciting alternative that they probably have not been exposed to in school.

Here are some impressive statistics:

Over the last 9 years, we have had 270 students go through the camps. Of those 270 students, 85 (31%) came to CSU, 21 (8%) are CNS majors, and 6 made it into CSU's Vet school!

While these programs are self-funded from student registration fees, CNS EOC in collaboration with the College of Veterinary Medicine & Biomedical Sciences offers fee waiver scholarships to deserving students using funds earned the previous summer. In 2014, scholarships totaling \$2,500 went to three students from Wyoming, Michigan, and Ohio.

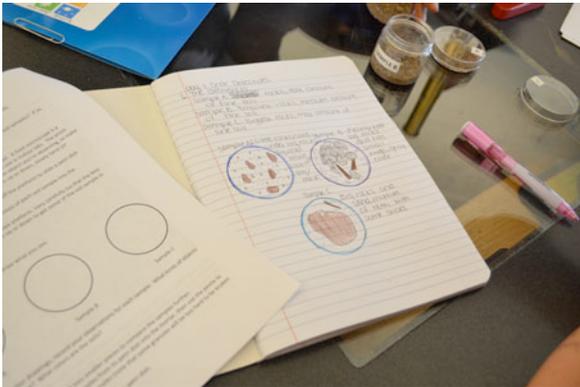


SciTrek

Students participating in this program learn how scientists do real research. Camp participants spend a significant amount of time in the field at Lory State Park developing a systems approach to scientific reasoning, using scientific models to help reveal natural processes and phenomena, assessing the health of a pine forest being invaded by pine beetles, using increment borers to date trees, testing the surrounding soil, and mapping the distribution of affected trees.

Summer Vet

The Summer Vet program is for students who are serious about becoming a veterinarian and is a great opportunity to look into the real and sometimes gritty field of veterinary medicine. Through presentations, demonstrations, laboratory visits, and in-depth, hands-on activities, students discover what modern veterinary medicine is about.



Budget Summary

General EOC Funding*	DA/RSP Funding	DCE Funding
FY14/15		
CNS Dean's Office \$167,063	Indirect Cost Recovery \$2,400	Annenberg \$TBD Summer Vet/SciTrek \$36,550 Other \$11,241
FY13/14		
CNS Dean's Office \$143,028	Indirect Cost Recovery \$3,243	Annenberg \$17,020 Summer Vet/SciTrek \$29,810 Other \$1,161
FY12/13		
CNS Dean's Office \$138,300	Indirect Cost Recovery \$974	Annenberg \$17,265 Summer Vet/SciTrek \$25,564 Other \$4,020
FY11/12		
CNS Dean's Office \$141,300	Indirect Cost Recovery \$974	Annenberg \$17,180 Summer Vet/SciTrek \$25,960 Other \$5,567
FY10/11		
CNS Dean's Office \$143,500	Indirect Cost Recovery \$0	Annenberg \$20,870 Summer Vet/SciTrek \$24,874 Other \$2,760

* Our general fund represents 0.5% of the college's annual resident instruction budget.

Collaborations with CSU Faculty and External Organizations

Collaborator	Project	Funding	EOC Share
Current			
National Park Service	Water Science Education & Outreach	NPS Task Agreement	\$107,133
Ashok Prasad	Understanding the mesenchymal stem cell response to the topography and geometry of their environment	NSF CAREER (\$423k)	\$5,000
None	Energy and Earth Systems Summer Session	Bohemian Foundation Discretionary Grant (\$20,000)	\$20,000.
Don Mykles	Signaling Mechanisms in the Crustacean Molting Gland	NSF (\$982k)	\$8,000
SUNY-Oneonta	Climate Change Education	NASA	\$25k/year for 3 years
El Centro	Triunfo Tutoring (2014-2015)	Bohemian Foundation (\$12,000)	\$12,000
LSOP & UV Program	Hands-on STEM Workshops	Xcel Foundation (\$21,000)	\$7,000
Continuing Education	Annenberg Media Teacher Center	Course Credit Tuition & Fees (~\$60k/year)	~\$20,000/year
Pending			
Derek Schutt	Magma Input and Crustal Response along the Snake River Plain-Yellowstone Hotspot Track	NSF Geophysics (\$123k)	\$7,000
Rachel Mueller	Speciation Box Organic Structures	NSF	\$7,000
Jaime Ruiz		NSF CAREER	\$5,000
Christina Boucher		NSF CAREER	\$5,000
Husam Mahmoud		NSF CAREER	\$5,000
Chrisite Peebles		NSF CAREER	\$10,000
Nick Fisk		NSF CAREER	\$5,000

Past			
Extension, Fort Collins Utilities, PSD, Discovery Science Center	Clean Energy Science Kit Development	CSU Clean Energy Supercluster (\$7,500)	\$7,500
Poudre School District	Phunky Phenology	PSD SPIE Grant Program (\$3,000)	\$3,000
CSU Ventures	Hybrid Electric Vehicle Science Kit	Department of Energy (\$750,000)	\$33,518
El Centro	Triunfo/Triumph Tutoring Program	Google Rise (\$9,592)	\$9,592
Sampath and Sites	Technology Solar PV	NSF	\$2-5K/year
SUNY-Oneonta	Climate Change Education	NASA	\$25k/year for 3 years
Francesca Cotrufo	The Role of Black Carbon in the Carbon Cycle of Fire-Prone Systems	NSF-GEO (\$448k)	\$19,000.
LSOP & UV Program	Hands-on STEM Workshops (2011-2014)	Xcel Foundation	\$17,000
El Centro	Triunfo Tutoring (2010-2014)	Bohemian Foundation (4 years)	\$60,000



EOC Donors

(Cumulative since 2010)

\$20,000

Bohemian Foundation Discretionary Grant

\$10,000

Dean Tsao – CSEF

\$5,000

Anonymous CSU Faculty

\$3,000

Linda Hamilton – SciTrek

\$1,000

Mortar Board Society – Books for Triunfo

Under \$1,000

Jean Carpenter

Janice Utsler

Other EOC Support

Chuck Andre – Videography and SciTrek Assistance

Meena Balgopal – STEM library book donations

Dan Bihn – Videographic consulting and misc. electronic equipment

Peter Brown – Dendrochronology Supplies

Dave Dahms – Electronics Assistance

Ann Randall – 4-H Materials

Mary Richmond and Paul Meyers – Loan of GPS units

Nature Active Publishing – Science booklets

Ann Seitzinger – Lego MindStorm Robotics Invention System and Remote Control Helium Blimp. ~\$400.

Cynthia Smeraski – Science books for STEM Library

Ralph Towers – Makerbot assistance and STEM library book donations

Dee and Mark Wanger – Lego Dacta, Lego Mindstorms, and K'nex donations, ~\$1950.



Thank You!



The EOC hosted an Evolution Workshop for science teachers.



Hawaiian 4th graders opted to skip recess to do more hands-on water science.



We ran an air pollution lab in a high school without walls in Hawai'i.



Science Notebooks help students construct knowledge more effectively than worksheets.

Accomplishments and Contributions

June 2015

- SciTrek / Summer Vet Programs for Future Scientists and Veterinarians, Jun 22 - 26
- Every Drop Counts Workshops, Kaloko-Honokohau National Historical Park, Hawai'i, Jun 5 - 12
- EOC Staff Meeting, Jun 4

May 2015

- EOC Staff Meeting, May 21
- GetWET: Rocky Mountain High School, May 11
- Intel International Science and Engineering Fair, Pittsburgh, PA, May 10 - 15
- GetWET: Rocky Mountain High School, May 7
- STEM Educators Club Meeting, May 5
- STEM Friday: Lucile Erwin Middle School, May 1

April 2015

- Triunfo Spring 2015 Celebration, Apr 30
- EOC Staff Meeting, Apr 30
- STEM Friday, Cache La Poudre Elementary School, Apr 24
- STEM Educators Club Meeting, Apr 21
- STEM Friday: Lab School, Apr 17
- EOC Staff Meeting, Apr 16
- STEM Friday: CSEF Participants, Apr 10
- 60th Colorado Science and Engineering Fair, Apr 9 - 11
- STEM Educators Club Meeting, Apr 7
- STEM Friday: Mead Middle School, Apr 3
- EOC Staff Meeting, Apr 2

March 2015

- STEM Friday: Ponderosa Elementary School, Mar 27
- STEM Educators Club Meeting, Mar 24
- STEM Friday: Wellington Middle School, Mar 13
- EOC Staff Meeting, Mar 12
- STEM Educators Club Meeting, Mar 10
- STEM Friday: Poudre High School, Mar 6

February 2015

- STEM Friday: Brentwood Middle School, Feb 27
- STEM Educators Club Meeting, Feb 24
- STEM Friday: Walt Clark Middle School, Feb 20
- EOC Staff Meeting, Feb 19
- EOC/Sigma Xi Spring Event: "Einstein's Light: Illuminating how Imagination and Innovation Advance the World," Feb 16
- STEM Friday: Riffenburg Elementary School, Feb 13
- STEM Educators Club Meeting, Feb 10
- EOC Staff Meeting, Feb 5

January 2015

- EOC Staff Meeting, Jan 29
- Spring 2015 Triunfo program begins, Jan 26
- STEM Educators Club Meeting, Jan 25

- Intel International Science and Engineering Fair Meeting, Las Vegas, NV, Jan 23 - 25
- Triunfo Mentoring Program Orientation, Jan 22
- EOC Staff Meeting, Jan 22
- Meeting at Fort Collins Museum of Discovery, Jan 21
- Roosevelt High School STEM Advisory Board Meeting, Jan 21

December 2014

- STEM Educators Club Meeting, Dec 10
- STEM Friday: Preston Middle School, Dec 5
- Triunfo Fall 2014 Celebration, Dec 4

November 2014

- Colorado Science Educators Conference, Denver, Nov 21
- National Sigma Xi Meeting, Glendale Arizona, Nov 6 - 9
- STEM Friday: Bauder Elementary School, Nov 7
- STEM Educators Club Meeting, Nov 5

October 2014

- STEM Friday: Blevins Middle School, Oct 31
- CSEF 60th Anniversary Reception, Oct 28
- CSEF Board of Directors meeting, Oct 28
- STEM Friday: Linton Elementary School, Oct 24
- EOC Presentation in Science Methods Course, Oct 22
- STEM Educators Club Meeting, Oct 21
- STEM Friday: Polaris Lab School, Oct 17
- Blevins Middle School Field Trip, Lory State Park, Oct 16
- EOC/Sigma Xi Fall Keynote: Dana Murphy - Denver Zoo, Oct 14
- 24th Annual Math-Science-Tech Day, Oct 8
- STEM Educators Club Meeting, Oct 8
- STEM Friday: Roosevelt High School, Oct 3
- GetWET: Front Range Community College, Oct 1

September 2014

- GetWET: Rocky Mountain High School, Sep 30
- STEM Friday: McGraw Elementary School, Sep 26
- GetWET: Roosevelt High School, Sep 25
- GetWET; Rocky Mountain High School, Sep 23
- Fall 2014 Triunfo Mentoring Program Begins, Sep 18
- CSEF Board of Directors & Advisory Council meetings, Golden, Sep 13
- Triunfo Tutor Orientation, Sep 11
- STEM Educators Club meeting, Sep 9
- Triunfo Tutor Orientation, Sep 4
- SLiCE Involvement Fair, Sep 3

August 2014

- STEM Friday: Kagawa University, Aug 29
- Triunfo Principal meeting, Aug 28
- Ram Welcome, Aug 22
- CAM Jam!, Highlands Ranch, Aug 16
- GetWET: Rocky Mountain High School, Aug 5

July 2014

- Frontiers of Science, Greeley, Jul 24
- CSEF Board Retreat, Alamosa, Jul 12

Future Plans

Our mission statement has held up over the last five years and we plan to stick with it into the future. Since mission statements are inherently vague, we thought we'd share some guiding principles that underlie much of what we do.

- Although we would like to think that teachers inspire students to become scientists, it is more often an engaging hands-on experience guided by an enthusiastic mentor.
- Many students we work with will not become scientists, but the challenges that we face as a society need everyone to at least understand the basic premises underlying scientific reasoning.
- If you capture the interest of students in 4th or 5th grades and support that interest through middle and high school, math classes become more relevant and the students are better prepared for a STEM major in college.
- Diversity must be embraced to meet the scientific challenges that lie ahead.
- CNS faculty research is a fantastic source of ideas that we can use to inspire students.
- Real-time teacher professional development allows us to demonstrate to them that students are capable of doing real science.
- Anyone can make sound on an instrument, but it takes slow and steady practice to play music. Similarly, anyone can observe scientific phenomena, but to learn how to conduct scientific research takes regular practice.

In the next five years, we plan to:

- Continue our current programs and services;
- Increase the number of CNS faculty involved in STEM education and outreach;
- Develop and lend more inquiry-based STEM instructional kits;
- Promote our STEM Friday Expedition program; and
- Foster the STEM Teacher Club.



Staff



Andrew Warnock
Director

Dr. Warnock strives to design outstanding scientific educational experiences.

andrew.warnock@colostate.edu
(970) 491-2845 | NESB B301a/B305



Lynne Judish
Laboratory Coordinator

Ms. Judish manages all of the educational materials and resources that the center houses. She also coordinates the after-school Triunfo/Triumph Tutoring Program.

lynne.judish@colostate.edu
(970) 491-1539 | NESB B319

Bi-Monthly Staff Meetings
Minutes available on request



Courtney Butler
Assistant Director

Ms. Butler is interested in encouraging more students to enter into local, regional, state, and international science fairs. She advises prospective science teachers who are enrolled in the BSNS program. She also serves at the Director for the Colorado Science and Engineering Fair.

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(970) 491-7716 | NESB B311



Barry Carroll
Program Coordinator

Ms. Carroll coordinates distance learning courses produced by Annenberg Learner. She also serves as the RamCT coordinator for the College of Natural Sciences.

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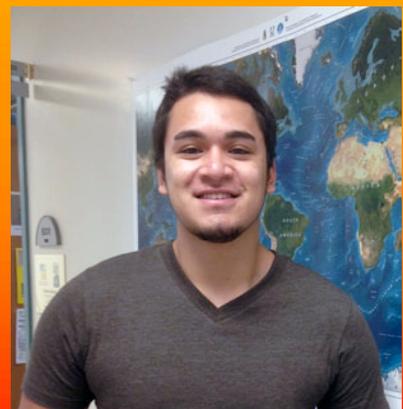
Jessie Mader, EOC Assistant



Nick Cashman, Triunfo Assistant



Monica Brown, CSEF Assistant



Santos Gonzales, Triunfo Asst.

Advisory Board

Ms. Lori Ball, Director of Longs Peak Regional Science and Engineering Fair and the Frontiers of Science summer camp at University of Northern Colorado.

Ms. Marcee Camenson, Adjunct Instructor at Front Range Community College.

Dr. Marty Gelfand, Associate Professor of Physics at Colorado State University.

Ms. Linda Hamilton, Retired Informal Science Educator.

Ms. Vicky Jordan, Science Teacher at Wellington Middle School.

Mr. Scott Kemp, Science Teacher at Rocky Mountain High School, Fort Collins.

Ms. Sylvia Parker, Coordinator of the Science and Mathematics Teacher Center at University of Wyoming.

Dr. Jaime Ruiz, Assistant Professor of Computer Science at Colorado State University.

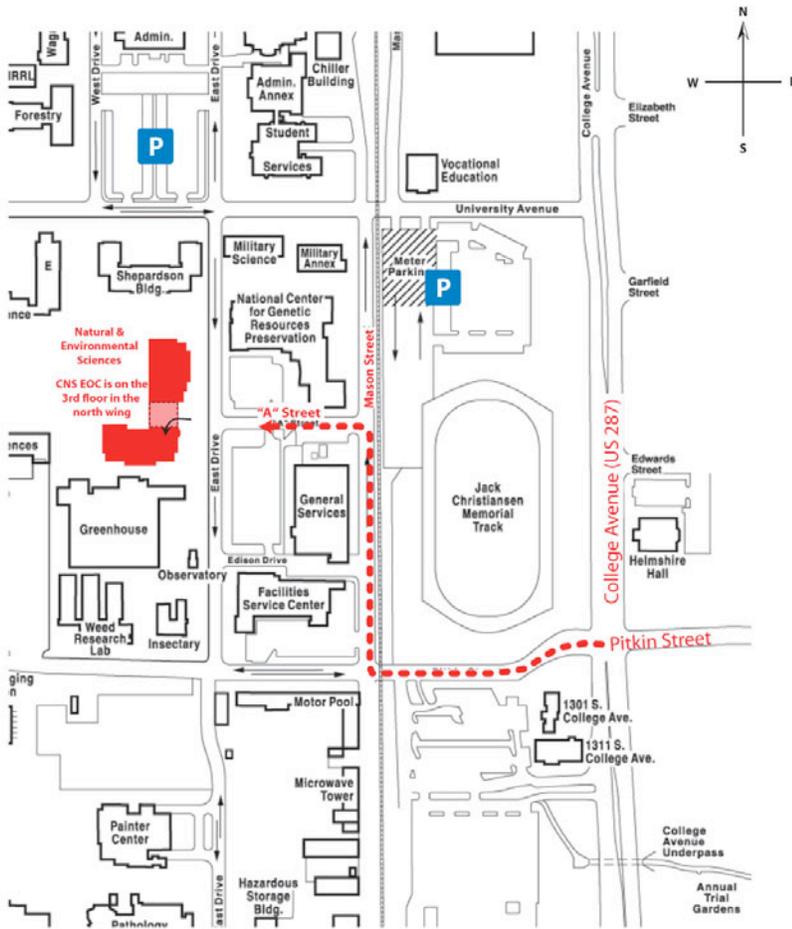
Websites

The Center maintains web and database servers that support our programs and help us stay connected with teachers nationwide. The Center hosts five information-packed websites. The database server allows us to quickly create detailed online forms. Data can be browsed and edited by our colleagues via the web.

Teacher professional development videos are available on the EOC YouTube channel.



Directions to EOC



College of Natural Sciences
Education & Outreach Center

Directions to CNS EOC

- From South College Avenue, take Pitkin Street West
- Immediately after the RR tracks, take Mason Street North (right)
- Take the second left onto 'A' Street, which dead ends at East Drive and at the NESB Building.
- Park at a meter before 4 pm.
- Parking is free after 4:00 p.m. weekdays and free all day on weekends.
- Enter the building through the main doors of the south wing.
- Go up to the 3rd floor and make a left.

- De la Avenida College, tome Pitkin str. al rumbo oeste.
- Emmediatamente despues de cruzar los riales de tren, tome la calle Mason al rumbo norte o doble derecha a la calle "A"
- La calle "A" se termina en la calle "East Drive"
- Alli en frente esta situado el edeficio donde tendremos el programa Triunfo.

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