BSCS
A SCIENCE EDUCATION CURRICULUM STUDY

Dear Colleague,

Thank you for your interest in the **Colorado Champions for STEM Education Leadership Academy**! The Academy is a two-year professional development experience designed to strengthen STEM education in Colorado. This program will help district-based teams build a foundation in effective STEM teaching and learning. Based on this foundation, teams will also design and implement a strategic plan to advocate for and strengthen STEM education in their area.

The STEM Leadership Academy is designed specifically for Colorado teams by BSCS, a Colorado non-profit organization focused on STEM education. BSCS has a long history of curriculum development, professional development, and educational research. To learn more about BSCS, please visit www.bscs.org. Through the Colorado Champions for STEM Education project, we want to work with teams here in Colorado to increase the capacity of area schools to provide excellent STEM education. Our work is targeted toward the goal that Colorado students will increase their STEM literacy whether they plan to pursue careers in STEM fields or not.

We seek teams of teachers, administrators, and community members who want to learn how to translate the practices of science and engineering into effective classroom instruction and who want to maintain coherence, rigor, and focus in STEM classes. We are interested in teams who want to ensure that students learn 21st century skills in conjunction with meaningful content in science, technology, engineering, and mathematics. We hope to work with teams who are interested in increasing their capacity for leadership and advocating for high quality STEM education. If these qualities sound like you and your colleagues, consider applying to the Colorado Champions for STEM Education Leadership Academy.

The information on the following pages describes the details of the Academy and includes the team application packet. BSCS must receive a Notification of Intent by **March 15, 2013** and a completed Application Packet by **April 5, 2013.**

We invite you to join the Academy. Together, we can improve STEM education through leadership development. Please contact me with any questions you may have about the Colorado Champions for STEM Education Leadership Academy.

Sincerely,

Brooke N. Bourdélat-Parks

Brooke N. Bourdélat-Parks, Ph.D.
Academy Director and Science Educator, BSCS
Email: bbparks@bscs.org
Phone: 719-219-4186
http://costem.bscs.org

Colorado Champions for STEM Education

The Academy is a specialized professional development experience designed to develop district-based teams as STEM Champions in the state of Colorado. By the end of the Academy, the teams will have increased their understanding of research-based teaching and learning and will be prepared to lead and advocate for high-quality STEM education. The Academy builds on a model developed by BSCS that research has been shown to have a transformative effect on participants. Teams will finish the program with a personalized vision of STEM education for their schools and districts and will have the skills and tools to enact that vision.

Goals of the Academy

The Academy is designed to improve STEM education in Colorado by providing opportunities for the leadership teams to

- experience the practices of science, mathematics, and engineering and translate these into effective classroom instruction;
- understand coherence, rigor, and focus as they relate to STEM curricula;
- improve teaching in STEM courses so students develop critical-thinking skills while learning meaningful content;
- learn to use formative and summative assessment information to analyze teaching and learning; and
- develop and increase leadership capacity to promote and sustain improvements in STEM education in your district, based on a strategic plan that your team develops.

The Academy Program

This two-year program is designed to support leadership teams in increasing their capacity to improve local STEM education. Teams will develop a strategic plan specific to their setting to implement high-quality STEM education in their areas.

The schedule for the Academy program includes week-long Summer Institutes in 2013 and 2014 as well as four Saturday Team Conferences during the 2013/2014 and 2014/2015 school years. The program also includes coaching for individuals on the teams during the week preceding the Team Conferences.

The five program strands in the Academy are

- Practices of STEM
- Nature of Curriculum
- Teaching Practice
- Assessment
- Leadership and Advocacy

Year 1 of the program focuses on developing a foundation of knowledge related to teaching STEM courses, such as big ideas in STEM, attending to standards, how people learn, and assessment; developing leadership skills and teams; understanding change; and identifying local needs.

Year 2 focuses on deepening content understanding, creating coherence in courses, understanding reflective practice, analyzing data, promoting better STEM education, and creating a local advocacy plan.

Throughout each year, teams will participate in the foundational experience designed by BSCS while also working toward their own goals set out in their strategic plans. Throughout the process, Academy staff will provide support and guidance to help teams implement their plans.

Academy Cohorts
In our inaugural year there will be two cohorts of leadership teams. The Front Range cohort will include teams from the Colorado Springs/Pueblo area. The Front Range cohort will work to improve STEM education in grades 6 through 12.

The rural cohort will include teams from ONE of the following areas:

- Alamosa,
- La Junta,
- Ft. Morgan, or
- Delta.

The rural teams may come from a 100-mile radius around these central locations (within the state of Colorado). The rural cohort will work to improve STEM education in grades K through 12.

STEM Leadership Teams
Leadership teams are important for making systemic changes within a school or district. Teams are able to work together to support and advocate for change. For that reason, teams, rather than individuals, apply to the Academy program.

Each member of the team must commit to attending and participating in the week-long Summer Institutes during both years of the program. All members must also attend the Team Conferences that occur on four Saturdays during the academic years and coaching sessions that occur the same weeks. Coaching cycles may focus on classroom or leadership practices.

Teams need a minimum of 5 members. BSCS staff will talk to interested teams before they submit their applications to help refine the team size and composition.

Leadership Teams should include the following:

Science Teacher(s): The team should have at least one science teacher who has a strong interest in strengthening STEM education in his or her school and who has strong leadership potential.

Math Teacher(s): The team should have at least one math teacher who has a strong interest in strengthening STEM education in his or her school and who has strong leadership potential.

Engineering/Technology Teacher: Not all schools or districts have an engineering program or course; however, we strongly encourage teams to include an engineering or technology teacher when it is possible.

Key Administrator: The key administrator is committed to improving STEM education in the area. He or she is expected to make a commitment to attend all sessions and provide the team with administrative support and resources. A key administrator might be a district curriculum supervisor, STEM/science/math coordinator, school principal, or assistant principal.

Community Partner(s): The right community partner(s) for the team will be excited about developing a vision for improving STEM education and will help to advocate for the importance of STEM education in the community. He or she will attend all sessions. The community partner might be a school board member, a pre-service teacher educator, a science/math/ engineering college faculty member, or a member of the business community. A team may have more than one community leader as long as they represent different aspects of the community.

Please note:
In the Front Range cohort, the leadership team teachers must include representatives from middle school and high school. The middle school should feed into the high school.

In the rural cohort, the leadership team teachers must include representatives from elementary, middle, and high school.

Teams are expected to

- commit to attending the week-long Summer Institutes in 2013 and 2014
- commit to attending the four Saturday Team Conferences and coaching cycles in the week prior for the 2013/2014 and 2014/2015 academic years,
- include science and mathematics teachers and, when possible, engineering/technology teachers who are committed to improving STEM education,
- demonstrate the commitment and involvement of a key administrator and community partner to work toward improving STEM education,
- include middle school and high school representation among the team's teachers with the middle school feeding into the high school *(Front Range cohort only)*,
- include elementary, middle, and high school representation among the team's teachers *(rural cohort only)*,
- consult with BSCS staff about team composition,
- represent districts with diversity,
- demonstrate an inclusive process for forming the team,
- support BSCS in obtaining evaluation data through surveys, interviews, classroom observations, and providing test data,
- participate in the Academy online community,
- articulate both a need for change in their current STEM program and their commitment to advocating for improved STEM education in the area, and
- commit to enacting the strategic plan that the team develops during the Academy.

Notification of Intent to apply forms are due March 15, 2013. Team Application Packets are due April 5, 2013 and should include the following:

- ❑ Leadership Team Application with district demographics and attached typed responses to the essay questions (p. 7–8),
- ❑ Statement of Commitment form with the requisite signatures (p. 9),
- ❑ Individual Team Member Information with attached typed responses to the essay questions (1 form for each team member, p. 10), and
- ❑ School Information Form (1 form for each school represented on the team, p. 11).

Important Program Dates and Deadlines

March 15, 2013	Notification of Intent due
April 5, 2013	Application Deadline
April 30, 2013	Notification of Admission
Year 1 Program	
July 14–July 19, 2013	**Front Range cohort Summer Institute**
July 14–July 19, 2013 OR Aug. 11–Aug. 16, 2013	**Rural cohort Summer Institute** (decided after acceptance)
Sept. 2013–April 2014	Team conferences and coaching
Year 2 Program	
June 2014–Aug. 2014	Summer Institute

Monetary Considerations

Costs

Teams are responsible for paying a **$1000 Academy registration fee** once they have been accepted to the program.

Benefits

- Participants will receive a $250 stipend for each Saturday Team Conference (four per year).
- Substitute teacher pay will be provided for any days that teachers miss class.
- If participants must travel more than 50 miles to the Summer Institute or Saturday Team Conferences, they will receive a travel stipend to partially offset the cost of lodging, meals, and travel.
- Lunch and snacks will be provided during each day of the Summer Institute and for all Saturday Team Conferences.

Funding and Partners

The Gay & Lesbian Fund for Colorado, a program of the Gill Foundation, is providing generous support for the Colorado Champions for STEM Education Leadership Academy. The National Association for Biology Teachers (NABT) is a supporting partner for the program.

One Team's Experience with Leadership Development

Before our involvement in the Leadership Academy, STEM education in our district could be described in the following ways: individual teachers doing their own thing; lack of consistency and coordination among teachers and across grades; disagreement with budget decisions; competition for high-achieving students; and a wide variety of beliefs about what constitutes effective teaching. We did not work as a community of learners.

Through the vision of our secondary science coordinator, the "improvement" wheels were set in motion, leading us to participate in BSCS' Leadership Academy. Our primary motivation for joining the Academy was the awareness that we needed in-district leadership for us to 1) improve the content and structure of our STEM program, 2) establish a shared vision of effective curriculum, 3) improve teaching and learning in STEM classrooms, and 4) assess the impact of our program on students and their learning. The goals of the Academy were clearly aligned with what our district leaders saw as essential to improving our STEM program.

Early in the Academy program, each team learned about the change process, effective communication, and shared leadership. We learned to use norms of collaboration and protocols for making decisions. Learning about these tools and processes was relatively easy on the surface. Using the tools and processes for effective teamwork was a new and different experience for us. Over the course of the Academy, we found ourselves revisiting the tools and processes to make sure our team stayed on track.

The development of a STEM-focused learning community began as our leadership team developed a mutual understanding about what effective teaching is and is not. We were able to quickly appreciate that our previous understanding of effective teaching was short of the mark and that changes in our teaching would call for some significant shifts in how we went about business in the classroom. Talking about it was fairly easy; doing it was not as simple. As would be expected, some members were more willing to jump in and try things, while others were more hesitant. Although everyone committed to the program, some people were not willing to make a complete commitment until they experienced the new instructional approaches and practices firsthand and saw how they affected students' learning.

During the first year of the Academy, we developed a plan for the work of our leadership team that included advocacy efforts and how to share what we learned with our colleagues back home. This was a plan that was specialized for our district; other teams had other goals. To reach our goals, our team met on a bi-weekly basis to coordinate what we expect students to learn, share the units we taught, and reflect on lessons learned. Our ongoing planning for continued improvement took into account not only where we needed to go, but also that some teachers we work with are reluctant to try, or struggling with, new teaching practices; the resources available; and the way teachers are evaluated. The one thing that became clear through our Academy experience, especially the on-site coaching, was that we needed a more-sustained, job-embedded professional development model that included distributed leadership. The coaching gave each of us our own opportunities to set goals and learn more on a personal level.

The progress we made in the two years of participation in the Academy was not easy or without pain, but the benefits to teachers and students have been immense. One key result of our Academy experience has been the commitment to a vision of effective instruction informed by the modeling of Academy PD Leaders, the readings presented as part of the Academy program, and our own discussions as a team and with our colleagues back home. We have taken great strides to move from traditional "talking head" instruction toward student-centered instruction. Our close work with our community partner has resulted in more coordinated and authentic STEM experiences for students. We believe that the combination of more effective instruction and real-world experiences will better prepare our students to succeed in STEM-related fields. We have also moved from a group of individuals to a coordinated team who advocates for STEM education and leads improvement efforts. We know we would not have made this progress without the BSCS Leadership Academy.

Colorado Champions for STEM Education Leadership Academy

NOTIFICATION OF INTENT TO APPLY

PLEASE COMPLETE THIS FORM IN FULL. In an effort to assist you in the application process, we would like you to fax or email this *Notification of Intent* form so we are aware of your interest in applying to the Academy program. If you have questions about the program or to submit your *Notification of Intent*, please contact

Brooke Bourdélat-Parks
BSCS Science Educator and Academy Director
Phone: 719-219-4186
Fax: 719-531-9104
bbparks@bscs.org

Notification of Intent due March 15th, 2013.

Required Information

_____ (district) is interested in organizing a Leadership Team and applying to the Colorado Champions for STEM Education Leadership Academy.

CONTACT PERSON INFORMATION

Name: _____

Title: _____

E-mail Address: _____

Phone Number: _____

Mailing Address: _____

_____

BSCS
5415 Mark Dabling Blvd.
Colorado Springs, Colorado 80918

Leadership Team Application

Complete one form per team (pp. 6–7).

Our team would be part of the

- ❑ Front Range Cohort
- ❑ Rural Cohort

If rural, our team is within 100 miles of

- ❑ Alamosa
- ❑ La Junta
- ❑ Ft. Morgan
- ❑ Delta

SCHOOL/DISTRICT

ADDRESS

CITY STATE ZIP

PHONE FAX

SUPERINTENDENT'S NAME E-MAIL ADDRESS

STEM LEADERSHIP TEAM MEMBERS

Please see page 3 for a description of the roles and expected team members.

Name	Email	Role on Team

DISTRICT DEMOGRAPHICS

Describe your district:

❑ Urban ❑ Rural ❑ Suburban

Number of students in your district: _____

Number of high schools in your district: _____

Number of middle schools in your district: _____

Percent of students who are eligible for a free or reduced lunch: _____

Percent of students who are:

White _____

Black or African American _____

Hispanic/Latino _____

Asian _____

American Indian or Alaska Native _____

Native Hawaiian or Other Pacific Islander _____

Mixed Race _____

Not reported _____

Please type your response to each of the questions below and attach the pages to the Leadership Team Application form.

These questions are to be answered by the application preparers and reflect the team's collective ideas.

1. Explain the rationale for the makeup of your Leadership Team and describe how the team was formed.
2. Why do you want to change your STEM education program? What data convinces you that you should?
3. How does your team envision your participation in the academy influencing STEM education in your area?
4. How will your school/district provide release time and funds for academy functions, regular meetings, and professional development opportunities for the Leadership Team?
5. Describe the relationship between your team's community partner(s) and your school/district.

STATEMENT OF COMMITMENT

Leadership Team Members:
As a member of this STEM Leadership team, I commit to the following program requirements:

- Fully participate each day of the Summer Institutes. These week-long institutes will occur in the summer of 2013 and 2014. (*See Calendar on p. 4) Note that each Summer Institute begins with a Sunday evening program and concludes mid-afternoon on Friday.*
- Participate in Saturday Team Conferences and coaching cycles (during same week) four times in the 2013/2014 academic year and four times in the 2014/2015 academic year. Teams will have input into the dates for these sessions.
- Support the work of my leadership team during the school year.
- Develop and implement a strategic plan for professional development to support improvement in the district or school STEM education program.
- Support BSCS in obtaining evaluation data through participating in surveys, interviews, classroom observations, and providing test data.
- Advocate for high-quality STEM education within and beyond my school/community.
- Participate in the STEM Leadership Academy online community.

I have read and understand the above commitments and intend to fully comply.

Name	Signature

Superintendent:
I support this leadership team from _____ school district to participate in all activities of the Colorado Champions for STEM Education Leadership Academy.

_____ _____
SUPERINTENDENT'S SIGNATURE DATE

Individual Team Member Information

Each team member must complete this form. Please make additional copies as needed.
Please print or type

NAME

HOME ADDRESS

CITY STATE ZIP

HOME PHONE CELL PHONE

SCHOOL/DISTRICT NAME YOUR PREFERRED E-MAIL ADDRESS

Complete this section if you are school personnel

(Each teacher/administrator on the team must complete this section. Make additional copies of this form as needed)

Position: _____

How many years of teaching/administrative experience do you have? _____

How long have you been at this school? ____

Please attach separate page that includes your name and a typed paragraph (~350 words) that describes

- why you want to participate in this academy,
- your philosophy of teaching and learning, and
- your responsibilities for the 2013-2014 school year (e.g., courses you anticipate teaching, size of classes, grade level you will be teaching or supervising, faculty you will supervise, etc.).

Complete this section if you are the team's Community Partner

(refer to description of STEM Leadership Teams p. 3)

Position in the community or business: _____

How many years have you lived in this community? _____

Please attach a separate page that includes your name and a typed paragraph (~350 words) that describes

- ways you are involved with the community. Include any involvement with the school,
- why you want to participate in this academy, and
- how the community and the school will benefit from this collaboration.

School Information Form

Complete this form for each school represented on the Leadership Team. Make additional copies as needed.
Please print or type

SCHOOL

ADDRESS

CITY STATE ZIP

SCHOOL PHONE SCHOOL FAX

PRINCIPAL'S NAME E-MAIL ADDRESS

SCHOOL DEMOGRAPHICS

School Information: Grade levels:_____ Number of teachers on staff: _____

Number of students enrolled: _____

Current STEM PROGRAM (e.g., Science, Mathematics, Computer Science, Robotics, etc.)

In order to graduate, how many years of science are the students in your school required to pass? _____

In order to graduate, how many years of mathematics are the students in your school required to pass? _____

In your school, what is the typical sequence of science courses taken by students?

In your school, what is the typical sequence of mathematics courses taken by students?

What engineering or technology courses does your school currently offer? (please include grade level)

Please list other sequences/courses that contribute to your STEM program.

What extracurricular activities are offered at your school that related to STEM?