Abstracts (Tables)

**Boise State University (BSU) Climate Literacy project: Classroom Weather Station with Raspberry Pi**

**Contact: Lindsey Lockwood,** **Lindsey.lockwood@sageinternationalschool.org**

Many high school students engage in do-it-yourself electronics and computing projects as after-school hobbies. These projects, however, have the capacity to build a wide range of critical content knowledge and skills inside the secondary science classroom. The Idaho Climate Literacy Project (ICLP) is a pilot program designed to train and equip educators who engage K-12 students in climate literacy by building miniature weather stations. Equipped with Raspberry Pis or Arduinos (affordable, credit card-sized computers), these stations allow students to collect and analyze weather data collected on their own campuses, as well as experiment with coding and computer applications that foster college and career readiness in the STEM fields. Visit this display to try your hand at tinkering with these devices, as well as to hear from students and teachers who participated in the ICLP as part of their high school biology class.

**BSU Engineering Educational Support and K-12 Outreach Programs**

**Contact: Lynn Olson,** **lynnolson1@boisestate.edu**

For over a decade with the support of grants, foundations, community partners, students, faculty and alumni, the College of Engineering (COEN) has been working to bring computer science and engineering to the community through a variety of outreach programs for both teachers and students. These programs are targeted to different disciplines, ages and applications. We believe whether from the teacher or student perspective, promoting a passion for teaching and learning comes from interacting directly with computer scientists and engineers and learning about what they do.

COEN programs for students include hands-on activities and projects involving problem solving and teamwork to exploring careers in engineering and computer science. Opportunities range from summer experiences like *e-camp* and *e-girls*, two-day *Coding is Cool workshops* (Level 1/2) to single day events like *e-day* and the *Engineering & Science Festival.* The Materials for Energy and Sustainability Research Experience for Teachers (RET) and the Computer Science for high School (CS4HS) programs are aimed at energizing classroom teaching to recruit and retain more engineering and computer science majors before they leave high school for working with and developing the materials of the future while the latter provides teachers with both evidence-based instructional practices and professional development opportunities to learn how to bring computer science into their high school curriculum.

The college also houses the *IDoCode* project funded by a CS10K grant from NSF that trains teachers to teach Computer Science in high schools. The projects fund tuition for teachers in a Masters of STEM Education and in a Graduate Certificate in Computer Science teaching.

Additional programs supported include the *Discover E Future City* program that pairs teachers and students with engineer mentors to work over 3-5 months on engineering design and project management.

**BSU Future City Competition**

**SEE SESSION III-Aspen IN THE PROGRAM FOR ABSTRACT**

**Contact: Lynn Olson,** **lynnolson1@boisestate.edu**

**BSU IDoCode: A Sustainable Model for Computer Science in Idaho High Schools**

**Contact: Amit Jain,** **ajain@boisestate.edu****; Ernie Covelli,** **erniecovelli@boisestate.edu**

Boise State University, in cooperation with local high schools and the Idaho Technology Council (ITC), has begun a comprehensive program – *IDoCode* – to provide quality Computer Science (CS) preparation for high school teachers. Funding to establish this program is provided by the National Science Foundation grant #1339403 awarded March 2014.

Our goals are to prepare teachers to teach Computer Science in Idaho High Schools, to work with School Districts to integrate nationally recognized courses and promote Computer Science in Idaho schools through workshops and events.

Grant scholarships are available to *fully fund a teacher’s tuition* through the duration of the grant in one of the two new graduate programs.

* Graduate Certificate – Computer Science Teacher Endorsement (newly approved in 2015)
* M.S. in STEM Education with Computer Science emphasis

The curriculum includes:

* *Exploring Computer Science* – The goal is to make computer science ***accessible to everyone.***
* *AP Computer Science Principles* - Designed to give students foundational computing skills, and understanding of the real-world impact of computing applications, and programming literacy – launching Fall 2016.

Computer science skills are in high demand as it has become a driving force behind many of the advances in business, science and math, and now even social sciences and art. By providing opportunities for students to explore computer science, we are preparing our children for the jobs of the future.

**BSU IDoTeach – The Boise Watershed: A Community Collaboration Project**

**SEE SESSION VI-Liberty IN THE PROGRAM FOR ABSTRACT**

**Contact: Jan Smith, janettesmith@boisestate.edu**

**College of Southern Idaho STEM Initiatives**

**Contact: Amy Christopherson,** **achristopherson@csi.edu**

The College of Southern Idaho is committed and strongly connected to the STEM Programs state-wide. We have been involved with the iSTEM Summer Institute since its inception, and we assist hundreds of Idaho educators receive content-specific instruction every summer. We partner with ISGD, EPSCoR, INBRE, and other state and regional funding groups to provide exceptional opportunities to teachers, administrators, and informal educators throughout our region. We partner with local school districts with the 21st Century Grant program, which provides summer and afterschool programs for qualified youth. We have a vibrant Community Education program that supports our Science and Robotics camps for youth. We have received a 5-year NASA ISGC grant to provide Science Discovery Workshops and programs for high school and community college students and faculty. We have a STEM A.S. degree that provides a great foundation for our students who are still deciding on an academic or career path.

**College of Western Idaho**

**Contact: Susan Aydelotte,** **susanaydelotte@ceidaho.cc**

The College of Western Idaho is a public, open-access, and comprehensive community college committed to providing affordable access to quality teaching and learning opportunities to the residents of its service area in western Idaho. CWI offers dual credit courses to high school students. CWI offers associate degrees in Biology, Geology, and Secondary Education with emphasis in Biology, Chemistry, Earth Science, Mathematics, and Physical Science. CWI is one of six hosts state-wide for the annual Idaho-STEM workshops. I-STEM focuses on Kindergarten through 12th grade instruction and is a partnership of educators, government agencies, organizations, and private companies working to improve STEM education in the state.

Registration materials and catalogs will be provided at the table. A dual credit representative will answer questions at the table.

**Idaho Career Information System and Idaho Department of Labor**

**Contact: Sara Scudder,** **Sara.Scudder@labor.idaho.gov****; Finia Dinh,** **finia.dinh@labor.idaho.gov**

What do you picture yourself doing in the future? You may want to help sick people get better or save the planet. Maybe you want to make new discoveries, solve mysteries, help build the future or create tools to make many, or all, of these things happen. Whether you know it or not, you’re interested in a STEM (science, technology, engineering and math) career.

You may be familiar with “core” STEM careers like those in life and physical science, engineering, mathematics, information technology and social science. But did you know STEM careers can also be found in architecture, health, sales, education and managerial occupations?

Use the Idaho Career Information System (CIS) to find out more about STEM careers. CIS is Idaho’s Internet-based, comprehensive guidance system. It is a proactive and participatory resource for engaging in life and career planning. CIS is appropriate for middle schools, high schools, postsecondary institutions and agencies serving adult populations such as employment offices, vocational rehabilitations programs and correctional facilities. CIS provides Idaho and national career workforce and educational information in a user-friendly format. The information and exploration tools contained in the CIS system are designed to help Idahoans make informed career choices and seek the qualifications necessary to be successful in the workplace.

IDOL has great Labor market Statistics for STEM occupations, what its industries are growing and wages. IDOL helps with job readiness and job search.

**IDLA: Idaho Digital Learning**

**Contact: Valerie Doherty,** **valerie.doherty@idla.k12.id.us****; Diane Follett,** **diane.follett@idla.k12.id.us**

Idaho Digital Learning was envisioned by Idaho School Administrators I 2001 and established as Idaho’s Virtual School by the Idaho Legislature in 2002. As Idaho’s Sate Virtual School, Idaho Digital Learning provides eLearning expertise, virtual services and leadership in collaboration with Idaho school teachers and administrators to ensure all Idaho students’ needs are being met.

Idaho Digital Learning builds capacity in the state by providing eLearning solutions for districts. Idaho Digital Learning eSolutions help to enable teachers and administrators to meet individual student needs and improve academic achievement by incorporating technology into instructional practices. Blended learning is an established, rapidly growing instructional model that is highly effective in helping schools and districts address the challenges of student achievement, limited resources, and the expectations of 21st century learners. Blended learning pedagogy combines teaching methods from both face-to-face and online learning. Teachers use blended learning techniques in facilitation, student mentoring, and differentiating instruction for individual learners.

**Invent Idaho: Inspire! Ignite! Invent!**

**SEE SESSION VII-Aspen IN THE PROGRAM FOR ABSTRACT**

**Contact: Beth Brubaker, bethbr@inventidaho.com; Scarlett Randall,** s**carlett.randall@boiseschools.org**

**Keeping the Best and Brightest: Why are American Students Shunning Math and Science Majors?**

**Contact: Dr. Kandi L. Duff,** **kandiduff@gmail.com**

The choice of academic major is one of the most important decisions an undergraduate student makes at a university. Many of the “best and brightest” math and science students in America are shunning Science, Technology, Engineering, and Math (STEM) majors. The point in the STEM pipeline where the highest losses occur is between high school graduation and college entry. The purpose of this study was to explore the factors that influence graduates from three high schools in southern Idaho who complete a rigorous high school academic program to choose or not choose STEM majors in college

This quantitative study surveyed Idaho 2010, 2011, and 2012 high school graduates from three public high schools. The survey sample consisted of academic honors students (3.5 g.p.a or higher) who had completed at least one capstone course in math or science. This study examined demographics, math and science self-efficacy, decision factors influencing choice of a college STEM major, and capstone course completion to explain the choice of a college STEM major, and capstone course completion to explain the choice of a college STEM major.

Findings reveal that math and science self-efficacy and math and science capstone course completion in anatomy and physiology, honors physics, AP calculus, trigonometry, or honors trigonometry had a statistically significant relationship with college STEM major choice. Additionally, the study revealed that respondents tended to finish in the college major (STEM or non-STEM) where they began. Respondents who were STEM majors changed their major but still remained STEM majors, while respondents who were non-STEM majors changed majors but remained non-STEM majors. Recommendations include more emphasis on capstone course completion as a way to inspire students to pursue STEM majors in college and motivate students to become involved in STEM disciplines. High school level activities designed to increase student self-efficacy in math and science should include more student involvement with science fairs, competitions, research, clubs, classes, and/or guest speakers. Outreach regarding STEM is necessary if an increase in interest in STEM at the high school, and subsequently the college level, is to occur.

**McCall Outdoor Science School (MOSS)**

**SEE SESSION VI-Aspen IN THE PROGRAM FOR ABSTRACT**

**Contact: Gary Thompson,** **garyt@uidaho.edu****; Karla Bradley Eitel, keitel@uidaho.edu**

**Micron Foundation K-12 Educator Resources**

**Contact: Janine Rush-Byers,** **jrushbyers@micron.com**

You believe in your students, we believe in you. Micron supports math and science education because it is critical to cultivating tomorrow's technology leaders. That's why we partner with educators and administrators to provide opportunities and tools designed to excite students about science, math, and engineering using hands-on, real-world applications. In addition to grant money and content rich Web resources, Micron provides classroom presenters, workshops, and site visits at many of our manufacturing facilities, offices, and laboratories.

As an educator, you may also want to encourage your students to check out the resources available to them through Micron’s [Engineering the Future student programs](http://www.micron.com/foundation/students).

**Near Space Opportunities**

**Contact: L. Paul Verhage,** **nearsys@gmail.com**

Near space begins 60,000 feet above sea level and has the look and feel of outer space. Since access to near space is through weather balloons, near space exploration is a very inexpensive way to let students design, build, and fly model satellites to collect data in a space-like environment. Students find near space motivating because of their ability to fly experiments into a region that looks and feels so close to outer space. Teachers find that near space exploration is a STEM experience that strongly couples all four aspects of STEM within a single project. Students build BalloonSats, experiments inside of airframes, which collect data and pictures during a 2.5 hour flight. Students can attend the launches and track the progress of the mission using the Internet.

I’m a science teacher at the Treasure Valley Math and Science Center in Boise. I have launched over 145 high altitude balloons since 1996, many of them carrying student-designed experiments and want to make more Idaho teachers aware of this opportunity. You can see data from my past flights on my website, nearsys.com.

**Palouse Discovery Science Center and Project SOS**

**SEE SESSION II-Liberty IN THE PROGRAM FOR ABSTRACT**

**Contact: Berven, Christine berven@uidaho.edu; Ryan, Kathleen Anne** **karyan@wsu.edu**

**Project Lead the Way**

**Contact: Ed Dennis,** **edennis@pltw.org**

Project Lead the Way (PLTW) is the nation’s leading provider of science, technology, engineering and math (STEM) programs. As a nonprofit organization, PLTW’s mission is simple: prepare students for the global economy. To compete globally, the future U.S. workforce will require stronger skills in the STEM disciplines. It’s not about turning more students into engineers – it’s about building tomorrow’s problem solvers, critical thinkers, and innovators. This is where PLTW school partnerships excel.

PLTW’s world-class, activity-, project-, and problem-based curriculum and high-quality teacher professional development model, combined with an engaged network of educators and corporate partners, help students develop the skills needed to succeed in our global economy. PLTW’s five programs are collaboratively developed and consistently reviewed and improved by PLTW staff, teachers, university educators, industry experts, and school administrators. The programs include **PLTW** **Launch** (grades K-5), **PLTW Gateway** (middle school), **PLTW Engineering** (high school), **PLTW Biomedical Science** (high school), and **PLTW Computer Science** (high school). PLTW courses are aligned with challenging Standards in Math and English Language Arts, Next Generation Science Standards, and other national and state standards. Courses are designed to complement math and science courses offered by a school and in some instances are used as the core curriculum.

In addition to PLTW’s world-class curriculum, one of the most important and unique aspects of our programs is the engaging, rigorous ongoing professional development model, which equips each teacher with the program content, skills, and pedagogy required to teach a PLTW course.

For more information on Project Lead the Way, visit pltw.org.

**Project Learning Tree and Idaho Forest Products Commission**

**SEE SESSION III-Cinnabar IN THE PROGRAM FOR ABSTRACT**

**Contact: Betty Munis,** **ifpc@idahoforests.org**

**SLICEIT**

**Contact: Pam Aishlin,** **pamaishlin@boisestate.edu**

The Students Local and International Collaboration for Environment through Innovative Technology, SLICEIT, is a pilot informal-formal STEM workforce skill development program being developed by junior and senior high students in collaboration with teachers, administration, professional mentors and an international climate monitoring organization. The pilot began in 2013 with four students at East Junior High in Boise, who established the student school-based club, The International Climate Team, ICT. These students met after school to design, construct, program and install a weather station for their school. ICT students maintain the station, datastream, data publication, data access, data analytics, problem solving, station repairs and upgrades, while serving as a resource to teachers and their community for environmental data integration, awareness and education. Additionally, ICT students collaborate with the Trans African Hydrometeorological Observatory (TAMO.org) to engage a partner school in sub-saharan Africa that also has a weather station. The technology the students are developing (low cost micro-controller based environmental sensing systems) is applicable to any environmental measurement need, including agriculture, aquatic, energy and air quality. The formal component of this program occurs with curriculum development and teacher training. Summer 2014, the students developed and taught environmental engineering curriculum to teachers. This summer, 2015, students (with professional mentor/educator) are providing expanded curriculum at iSTEM. Additional planned curriculum includes ballonsat, mini-UAVs and more. Curriculum development is collaborative with the TAHMO School2School program to directly engage U.S., European and African schools in collaborative climate-environment investigations, technology development and entrepreneurship. Now at four schools, ICT leaders meet monthly to coordinate resources, technology development, formal curriculum and outreach efforts. As a multi-school team they have presented at Idaho Water Resources Association, Idaho Academy of Sciences, Greenfest and several school events.

**STEM Idaho: National Girls Collaboration Project**

**Contact: Cindy Thorngren,** **cthorngren@stemidaho.org**

The vision of the National Girls Collaborative Project (NGCP) is to bring together organizations throughout the United States that are committed to informing and encouraging girls to pursue careers in science, technology, engineering, and mathematics (STEM). It is highly committed to providing resources to organizations to help them connect and work with other similar organization in their area.

The NGCP is a founding member of the Million Women Mentors movement, a driving force behind a new national STEM resource listing called The Connectory, engaged with the FabFems mentor network, and leads the development of regional and state-wide Girls Collaborative Project teams.

STEM Idaho serves on the Leadership Team for the Pacific Northwest regional collaborative and will be the table host. Handouts will be available on the National Girls Collaborative, FabFems, STEM Idaho, and the other above mentioned programs.

The goals of NGCP are to:

* Maximize access to shared resources within projects, and with public and private sector organizations and institutions interested in expanding girls’ participation in STEM.
* Strengthen capacity of existing and evolving projects by sharing exemplary practice research and program models, outcomes, and products.
* Use the leverage of a network and the collaboration of individual girl-serving STEM programs to create the tipping point for gender equity in STEM.

The project focus for 2011-2016 is:

* Strengthen the capacity of girl-serving STEM programs to effectively reach and serve underrepresented girls in STEM.
* Increase the effectiveness of Collaboratives by providing professional development focused on sustainability, organizational effectiveness, and shared leadership.
* Maximize K-12 school counselors’ access to and use of relevant, high-quality resources that increase awareness of barriers to girls’ interest and engagement in STEM.

**STEM Outreach and Teacher Professional Development Opportunities at Idaho National Laboratory**

**Contact: Brenda Greenhalgh,** **Brenda.Greenhalgh@inl.gov**

INL is collaborating and investing on a statewide and regional basis to maximize the impact on enhancing Science, Technology, Engineering and Mathematics (STEM) education in key areas:

* increasing the cadre of STEM competent teachers,
* enhancing STEM career awareness, bolstering student’s interest in STEM, and
* increasing student enrollment in STEM programs at technical schools, colleges, and universities

State and regional partnerships are key to achieving the INL vision and next generation of STEM workers in Idaho. Partnering as collaborative teams with state and regional STEM education stakeholders, agencies, community-based organizations, business and industry, and universities creates growing outreach programs particularly effective in reaching rural, remote, underserved, minority, and underrepresented students. INL is a respected thought leader in the area of STEM education in Idaho and leads student STEM outreach programs, STEM professional development for teachers, and in partnership with Battelle Energy Alliance provides STEM mini grant and classroom makeovers to enhance STEM education in Idaho.

**Tech Savvy: The Children (and their Technology) Are Our Future**

**SEE SESSION VI-Cinnabar IN THE PROGRAM FOR ABSTRACT**

**Contact: Brooke Lacey,** **brooke@techsavvyboise.com**

**Think Through Math**

**SEE SESSION VII-Liberty IN THE PROGRAM FOR ABSTRACT**

**Contact: Marisa Alan, malan@thinkthroughmath.com**

**“Throw and Catch Pebbles” Mathematical Game**

**SEE SESSION V-Cinnabar IN THE PROGRAM FOR ABSTRACT**

**Contact: Jackie Maximillian, jackiem@uidaho.edu**

**University of Idaho (UI)**

**Contact: MiChele Stefanic,** **mstefanic@uidaho.edu**

The University of Idaho helps students to succeed and become leaders. Its land-grant mission furthers innovative scholarly and creative research to grow Idaho’s economy and serve a statewide community. From its main campus in Moscow, Idaho, to 70 research and academic locations statewide, U-Idaho emphasizes real-world application as part of its student experience. The student population of 12,000 includes first-generation college students and ethnically diverse scholars, who select from more than 130 degree options in the colleges of Agricultural and Life Sciences; Art and Architecture Business and Economics; Education; Engineering; Law; Letters, Arts and Social Sciences; Natural Resources; and Science. U-Idaho combines the strength of a large university with the intimacy of small learning communities. The University of Idaho is heavily involved in outreach to K-12 students to help spark their interest in STEM and encourage them to major in STEM fields. Each year university faculty, staff, and students help thousands of students explore STEM through events such as **First Robotics**, **Women in Science**, and **Engineering Design Expo**, just to name a few. We invite conference attendees to learn more about signature UI programs and pass along that information to your students and their families.

**UI College of Engineering**

**Contact: Maria Pregitzer,** **mpregitzer@uidaho.edu**

The University of Idaho’s College of Engineering prepares students for exciting careers in many fields of engineering and computer science. We have been educating students for 125 years and have an extensive network of alumni in many areas of Idaho’s economy, demonstrating the success of our programs. We offer undergraduate degrees in Biological Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Computer Science, Electrical Engineering, Industrial Technology, Materials Science and Engineering, and Mechanical Engineering. We offer masters and doctorate degrees in these and other engineering disciplines. We are nationally recognized for strengths in hands-on learning, strong fundamental principles, extensive design experiences, and opportunities for undergraduates to engage in research. Our graduates are heavily recruited because of these strengths.

To encourage K-12 students to major in engineering and computer science we support a number of activities, such as:

**Engineering Design Expo** annually showcases our senior engineering capstone projects, and is the longest running engineering capstone event in the northwest. Over 900 K-12 students and chaperones visited EXPO this year. Students engaged in engineering lab tours and took part in hands-on activities. The next EXPO will be held Friday, April 29, 2016.

**Women in Engineering** is a free one-day workshop for female students, grades 11-12, designed to introduce students to career options in engineering and computer science. This year Women in Engineering Day will be held on the Moscow campus November 6, 2015. **Engineering Scholars** in an opportunity to be a part of a select group of high-achieving students who will have an enhanced educational experience through unique opportunities, more personal interactions, and a richer learning experience. Invitation to be an Engineering Scholar is based on information supplied during the application process.

We also co-sponsor many events around the State each year such as **MathCounts**, **First Robotics**, **Future City Competition**, and **Dig’n IT**.

**UI College of Natural Resources**

**Contact: Robert Goodrich,** **rgoodrich@uidaho.edu**

The University of Idaho’s College of Natural Resources offers outstanding STEM-based undergraduate programs in natural resource management. Learn from internationally renowned leaders in the natural and physical sciences and work to address the needs and issues of the natural world. Our graduates make a difference in solving environmental problems on a local, national and international scale. Since the college offers many degrees based in science and technology, we are always happy to facilitate the enhancement of science and technology in the secondary schools of Idaho. The college also offers outreach programs to the secondary schools in the state of Idaho, where we can provide an introduction to the college, its programs, activities and undertakings. Please feel free to contact us for any assistance that we might provide.

Attributes of the College of Natural Resources include:

* One of the top natural resource programs in the western U.S.
* Many opportunities for student research projects.
* Outstanding faculty engaged in cutting-edge research around the world.
* Facilities and field stations that enable hands-on education.
* Abundant national and international opportunities for internships and summer employment give students a tremendous advantage in seeking high-profile jobs in beautiful and interesting places.
* Placement rates are very high and graduates are highly sought by employers.

**UI College of Science**

**Contact: Paul Joyce,** **joyce@uidaho.edu****; Eric Bennett,** **ebennett@uidaho.edu****; Mark Nielsen,** **markn@uidaho.edu**

The College of Science at the University of Idaho offers degree program in the Biological Sciences, Chemistry, Geography, Geology, Mathematics, Physics, and Statistics. We will have information on all of our programs, and will be especially anxious to discuss our Master of Arts in Teaching Mathematics degree. The MAT in Mathematics is available entirely through distance education and is designed to fit the needs of secondary Mathematics teachers who want to enrich their teaching through broadening their mathematical knowledge as they earn an advanced degree.

**UI Doceo Center for Innovation + Learning**

**SEE SESSION IV-Liberty IN THE PROGRAM FOR ABSTRACT**

**Contact: Cassidy Hall,** **cassidyh@uidaho.edu**

**UI Extension Ada County 4-H: Growing a Robotics Program from the Ground Up**

**Contact: Brian Luckey,** **bluckey@uidaho.edu****; Nikola Dalton,** **nmdalton@uidaho.edu**

The Ada County 4-H Robotics Program began in 2007 as a way to reach urban youth with little interest in or access to agricultural 4-H programming. As our program has grown, we have gathered more than $26,000 worth of equipment for use in program implementation. With support from the University of Idaho 4-H Youth Development Office, we have developed a three-pronged approach to reaching youth with robotics activities: school enrichment, day camps, and FIRST programs. Within each delivery mode, we offer programs that vary by the age and experience of the participants. The primary objective of the program is to expose more kids to engineering principles by providing activities that build on existing skills and encourages youth to progress through the program. Overall participation numbers continue to increase (to over 500 youth in 2014). Additionally, we have had success developing volunteer support for the program, and have recruited and trained six volunteers (to date), who further increase our capacity to reach more youth. Additionally, University of Idaho Extension, as the official FIRST partner in Idaho, hosted FIRST Lego League events in five Idaho counties in 2014. Ada County 4-H was the first local 4-H program to host a tournament in 2011. Hosting tournaments gives our local program visibility and credibility as a leader in robotics education, and continues to lead to more community partnership opportunities.

Participants will:

* See an example of how to grow an urban grassroots robotics program
* Understand the potential impact robotics programming can have on communities

**UI Plant, Soil and Entomological Sciences: Tiny Seed – Unlimited Possibilities**

**Contact: Inna Popova,** **ipopova@uidaho.edu**

We proudly present an educational module for demonstration of a series of important concepts in chemistry, biochemistry, and biology. This module is a result of more than 20 years of research on the biochemistry of glucosinolates and their presence in Brassicas, the huge and important plant family that includes mustard, canola, rapeseed, cabbage, and broccoli. The module is based on the concept that even a tiny seed of mustard has unlimited possibilities for scientific exploration. Mustard seeds have a unique chemical composition that facilitates demonstration of the following concepts: acid-base equilibrium, enzymatic reactions, colloidal systems, biodiesel production, herbicidal, and antioxidant activities. The use of everyday items makes the learning process more appealing and promotes the development of scientific curiosity in children. The module is suitable for use in K-12 and higher education curriculums as well as a stand-alone STEM workshop. The difficulty level of the module can be adjusted with the grade level by adding reaction details, mechanisms, and interdisciplinary concepts. The module is designed for ease of implementation with minimal use of chemicals and lab space. It can be simplified as to only use household chemicals making it applicable for educational groups with limited access to chemical labs and home-schooled students.

**UI-Micron STEM Education Research Initiative**

**Contact: Melinda Hamilton,** **mhamilton@uidaho.edu****; Susan Stauffer,** **sstauffer@uidaho.edu**

The University of Idaho-Micron STEM Education Research Initiative is concluding five years of research investigating the awareness of, attitudes toward, and challenges to STEM education in Idaho. This statewide program has explored student, teacher, parent, and community member perceptions that provide valuable insight for decisions impacting STEM Education in Idaho. The research findings help to understand Idaho students’ intentions to pursue STEM educational opportunities and careers and their perceptions of the necessary preparation to do so. Additionally parents and educators participated in surveys and focus groups that provided further insight into potential barriers to STEM education programs, and perceived needs of STEM-related industry in Idaho. Reports include information about student and community attitudes toward science, expectations regarding higher education, demographic differences in participation in and awareness of STEM educational opportunities, and barriers to STEM career readiness. Data and information from these studies will assist all stakeholders in the preparation of students in Idaho to pursue higher education and STEM careers.