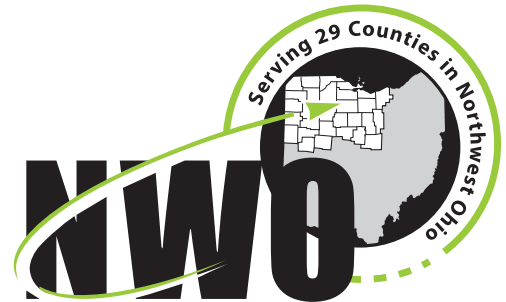




Fiscal Year 2015
(July 1, 2014 – June 30, 2015)

Connections • Communication • Collaboration



**Northwest Ohio Center for
Excellence in STEM Education**

FY 2015 NWO Staff

W. Robert Midden	Director
Emilio Duran	Faculty Associate Director
Jonathan Bostic	Faculty Associate
Gabriel Matney	Faculty Associate
Jessica Belcher	Assistant Director of Finance and Operations
Susan Stearns	Assistant Director of Programming and Development
Lisa Addis	Graphic Designer/Marketing Director
Jacob Burgoon	Project Evaluator
Joetta Kynard	Senior Administrative Assistant
Jenna Pollock	NWO Project Coordinator
Judith Steiner	iEvolve with STEM Project Manager

NWO Mission

The Center's mission is to advance science, technology, engineering, and mathematics (STEM) education for people of all ages.

NWO Vision

The Northwest Ohio Center of Excellence aims to advance science, technology, engineering, and mathematics (STEM) education for people of all ages. Our purpose is to work with community partners to (a) generate new knowledge about the science of teaching and learning, (b) apply this knowledge by developing the expertise of K-12 educators and higher education faculty, (c) increase public support for, and understanding of, the STEM subject areas, and (d) stimulate the interest of young people, especially those in underrepresented groups, in these rewarding fields of study and career opportunities.

Table of Contents

2 ... NWO Goals

4 ... NWO Advisory Board

5 ... Educator Professional Development and Outreach

- Community Resources Workshop (CRW)
- “NWO STEM Connection” E-Newsletters
- NWO STEM Education Inquiry Series
- NWO STEM Resource Center Website
- NWO Symposium on Science, Technology, Engineering, and Mathematics Teaching (NWO Symposium)

9 ... Faculty Professional Development and Collaborative Education Research

- COSMOS STEM Education Learning Community
- COSMOS Team
- NWO Faculty Participants

12 ... Grant Projects

- Black Swamp Math Teachers’ Circle (BS – MTC)
- Common Core for Achievement & Middle Grades Mathematical Proficiency (C²AM²P Middle Grades)
- Common Core for Mathematical Proficiency in Elementary Schools ((CO)²MP Elementary)
- Common Core for Reasoning and Sensemaking – Elementary ((CO)²RES)
- Common Core for Reasoning and Sensemaking – Secondary ((CO)²RES)
- Inquiry and Engagement to Invigorate and Optimize Learning for Everyone (iEvolve) with STEM
- iTraining
- Ohio Junior Science and Humanities Symposium (Ohio JSHS)

20 ... School and Community Activities and Outreach

- Falcon BEST Robotics
- Math Camp
- STEM in the Park
- Women in STEM
- You Be The Chemist Challenge

26 ... Student Scholarship Programs and Grants

- Academic Investment in Mathematics and Science (AIMS)
- Building Ohio’s Sustainable Energy Future (BOSEF)
- Granting Access to Math and Science (GRAMS)
- Science and Math Education in ACTION

30 ... FY 2015 NWO Budget

34 ... Appendices

- | | |
|--|---|
| A. (CO) ² MP & C ² AM ² P Recognition | H. NWO STEM Inquiry Series Advertising |
| B. Community Resources Workshop Recruitment Email | I. NWO Symposium Advertising & Recognition |
| C. Faculty and Student Recognition | J. Ohio JSHS Advertising & Recognition |
| D. Falcon Best Recruitment Email & Recognition | K. STEM in the Park Advertising & Recognition |
| E. iEvolve with STEM Recognition | L. Women in STEM Advertising & Recognition |
| F. iTraining Advertising | M. You Be The Chemist Challenge Recruitment Email & Recognition |
| G. NWO STEM E-Newsletters | |



NWO Goals and Corresponding Activities

Goal 1: Develop the expertise of pre-service and in-service teachers in STEM and STEM education disciplines.

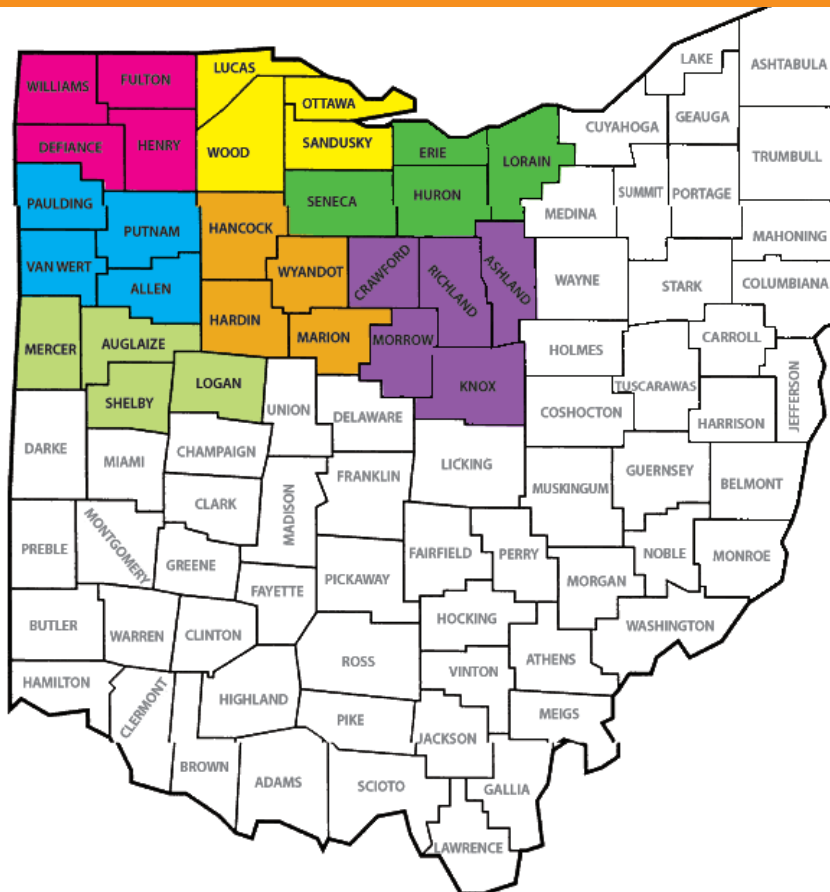
Goal 2: Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty.

Goal 3: Conduct and communicate collaborative research in STEM and STEM education disciplines.

Goal 4: Develop and sustain a regional collaborative alliance including university, school, informal education, and business partners through a shared vision and collaborative spirit for tackling current STEM education issues.

Goal 5: Support higher education faculty and future faculty in pursuit of the best practices in STEM and STEM education disciplines to enhance undergraduate and graduate education.

29 Counties Served by NWO



- | | |
|--|--|
| Zone 1
Defiance
Fulton
Henry
Williams | Zone 5
Hancock
Hardin
Marion
Wyandot |
| Zone 2
Allen
Paulding
Putnam
Van Wert | Zone 6
Erie
Huron
Lorain
Seneca |
| Zone 3
Auglaize
Logan
Mercer
Shelby | Zone 7
Ashland
Crawford
Knox
Morrow
Richland |
| Zone 4
Lucas
Ottawa
Sandusky
Wood | |

OHIO

FY 2015 NWO Advisory Board

Eric Baumgartner	Ohio Northern University
Lynette Baxley	Sandusky City Schools
Anne Bullerjahn	Owens Community College
Mary Caprella	BP Refinery, LLC
Julie Gerke	St. Henry Local Schools
Anjali Gray	Lourdes University
Jim Gunner	Perkins Local Schools
Sonny Hamizadeh	SSOE
Stephanie Johnson	Ohio STEM Learning Network
Andy Jorgensen	The University of Toledo
Mitchell Magdich	Toledo Zoo
Sloan Mann	Imagination Station
Bob Mendenhall	Toledo Public Schools
Rod Moorman	Mercer-Auglaize Business Education Alliance
Jan Osborn	Putnam County ESC
Jed Osborn	Ball Corporation
Kevin Parkins	Cardinal Stritch Catholic High School and St. Kateri Catholic Academy
Charlene Patten	WGTE
Julie Payeff	The Andersons
Gwynne Rife	The University of Findlay
Eugene Sanders	Sandusky City Schools
Eric Schild	Cardinal Stritch Catholic High School
Michelle Shafer	Maumee City Schools
Joel Steinmetz	Lima City Schools
Tom Stuckey	Northwest State Community College
Sybil Truster	Shelby County ESC
Tim Zale	Cardinal Stritch Catholic High School

Educator Professional Development and Outreach



Community Resources Workshop (CRW)

Brief Description

This weeklong K-12 teacher professional development workshop began in 1998 through a partnership with The Toledo Museum of Art, The Blade, WGTE Public Media, The University of Toledo, and Bowling Green State University. The 40-hour Monday-Friday summer workshop, currently sponsored in part by NWO, features visits to area organizations that focus on inquiry-based, hands-on learning in both formal and informal settings. Teachers may earn 2 graduate credits from Lourdes University and enjoy meeting education specialists from exciting places such as The Toledo Zoo, Toledo Area Metroparks, Challenger Learning Center, and Toledo Lucas County Library on whom they can call for lesson plans, activities, hands-on resources, and school programming. **Meets NWO Goals: 1 & 4**

Continued on page 6

FY 2015 Activity Information

In 2015, 18 teachers took part in the Community Resources Workshop (CRW) with activities delivered by Lourdes University, Toledo Area Metroparks, The Toledo Blade, The Mudhens, Challenger Learning Center of Lake Erie West, Imagination Station, Toledo – Lucas County Public Library, Toledo Zoo, WGTE Public Media, and several guest speakers. Highlights included a visit to the Toledo Zoo, and a walking tour of downtown Toledo including the Valentine Theater and The Blade. The 2015 Community Resources Evaluation Report offers a more thorough account of the implementation and impact of the workshop, and can be found at www.nwocenter.org/reports. See Appendix B for recruitment email.

“NWO STEM Connection” E-Newsletters

Brief Description

The NWO e-newsletter is focused on bringing attention to new opportunities, programs and events happening in STEM K-16 education. Monthly e-newsletters feature stories about area K-12 schools with a focus on STEM learning. Each month also includes feature stories from community partner organizations detailing how business and non profit organizations are working with K-12 schools to enhance STEM teaching and learning. A hands-on, inquiry based STEM activity is also included for teachers to use in K-12 classrooms, upcoming teacher professional development and student opportunities and STEM resource announcements. The e-newsletter is distributed electronically to 8,000+ contacts within the NWO database covering regional school districts and their teachers and administrators. See Appendix G for an example of an e-newsletter for FY 15. **Meets NWO Goals: 1, 2, & 4**

NWO STEM Education Inquiry Series

Brief Description

Sustained professional development is offered by NWO throughout the academic year through the NWO Inquiry Series. The Inquiry Series is a series of STEM professional development workshops that continues to be highly popular with educators in the region. It also functions as a monthly platform for affiliated NWO grant projects and regional educators to come together for project-specific professional development. The Inquiry Series is open to in-service and pre-service teachers, higher education faculty, and business/community partners in the region. Participants can opt to attend only one event or all the Inquiry Series events. **Meets NWO Goal: 1**

FY 2015 Activity Information

The 2014-15 NWO STEM Education Inquiry Series was split into two “mini-series” programs. The fall 2014 mini-series focused on K-12 mathematics instruction and the Standards for Mathematical Practice that are a part of the Common Core State Standards. The spring 2015 mini-series was focused on supercharging science inquiry lessons for grades 3-8 teachers. The teachers utilized the “Picture Perfect Science Lessons” book as a tool to start supercharging their science inquiry lessons which correlated to Ohio's New Learning Standards in Science

Continued on page 7

for grades 3-8 teachers. For both mini-series offerings, teachers joined the series and participated in each of the four sessions. Each session built on what was presented during the previous session. Participants in both series paid a registration fee of \$160 which covered all the professional development expenses for all four sessions during their selected series. See Appendix H for examples of the advertisement materials for this program.

Below is a list of the STEM opportunities offered during both mini-series programs and the attendance data for each series. All of the events were funded in part by The Andersons.

Math Mini-Series: "Connecting the Standards to Best Mathematics Teaching Practice (K-12)"			
Date	Session	Presenters	Attendance
October, 29, 2014 November 12, 2014 November 19, 2014 December 3, 2014	Elementary: Grades K – 5 Teachers	Dr. Gabriel Matney, Bowling Green State University and Tami Matney, Imagine Clay Avenue Community School	16
October, 29, 2014 November 12, 2014 November 19, 2014 December 3, 2014	Secondary: Grades 6 – 12 Teachers	Dr. Jonathan Bostic, Bowling Green State University and Diane Mott, Liberty Center Schools	18

Science Mini-Series: "From Science Activity to Supercharged Inquiry"			
Date	Session	Presenters	Attendance
January 8, 2015 January 15, 2015 February 3, 2015 February 12, 2015	Grades 3 – 8 Teachers	Dr. Jodi Haney, Xcite Learning, Jenna Pollock, NWO, and Page Keeley, NSTA Author	29

NWO STEM Resource Center Website

Brief Description

The STEM Resource Center website was created as part of a STEM Consortium grant received by NWO in January 2011 from the Ohio STEM Committee, the Ohio Board of Regents, and the Ohio Department of Education, in collaboration with the Ohio STEM Learning Network. The website is designed to be the premier website to visit when searching for STEM teaching resources in northwest Ohio. It is designed to assist preK-12 educators in locating and using STEM resources in the area. Many of the resources are available elsewhere on the internet, but this website is designed as a comprehensive resource where visitors may narrow searches utilizing many filters, including geographical area, grade level(s), subject area(s), types of resources, and others. The STEM Resource Center may be viewed at <http://nwostemresources.org>. **Meets NWO Goal: 4**

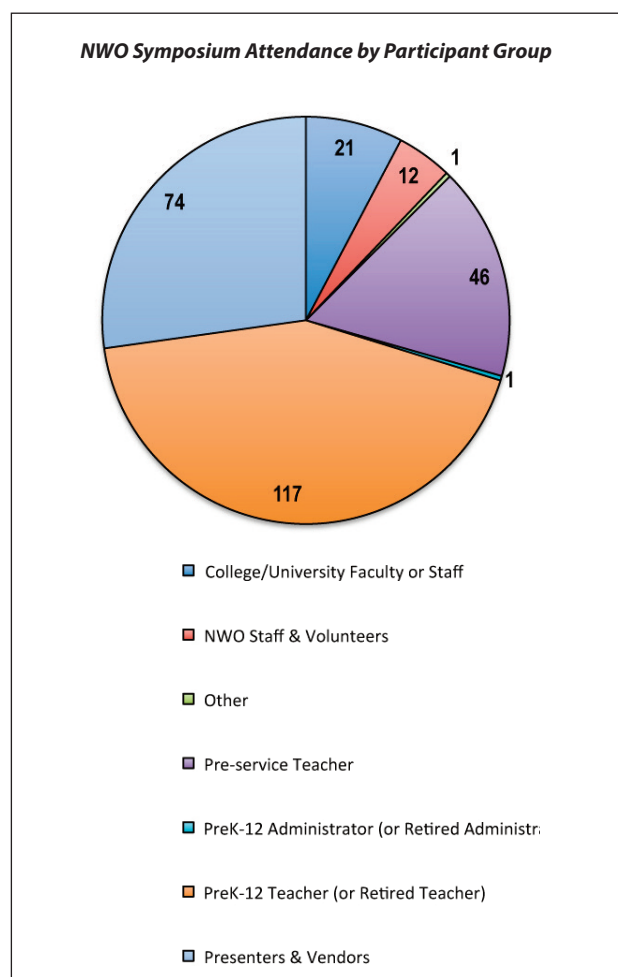
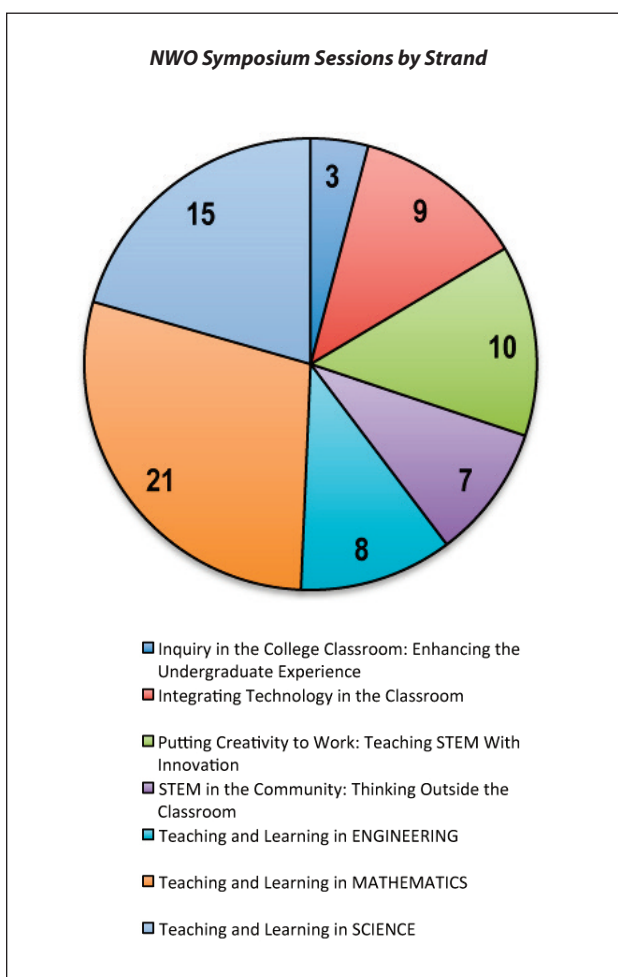
NWO Symposium on Science, Technology, Engineering, and Mathematics Teaching (NWO Symposium)

Brief Description

Over the past several years, the NWO Symposium has brought together hundreds of participants to exchange effective strategies for teaching STEM. This popular event has provided the Center with huge visibility in the community, attracting educators to our long-term professional development opportunities and giving all participants resources and ideas they can use immediately in their classroom or setting. **Meets NWO Goals: 1 & 5**

FY 2015 Activity Information

The 2014 NWO Symposium was held on the BGSU campus on Saturday, November 1. The Symposium began with a keynote address from NASA Engineer Kobie Boykins titled: “Exploring the Red Planet: Engineering, Innovation and Perseverance,” and continued with five one-hour blocks of seven different content strands. A registration fee of \$35 was charged to educators and administrators and free registration was offered to undergraduate and graduate students. Presenters remained free, but for-profit vendors were charged \$100. Session strands continued to help participants determine what sessions were ideal for their personal professional development. Below is a breakdown of the sessions offered by strand (73 total) and the overall attendance of 272. See Appendix I for examples of the Symposium advertising & recognition. The evaluation report can be found at: www.nwocenter.org/reports





Faculty Professional Development and Collaborative Education Research

COSMOS Research Learning Community

Brief Description

Faculty, graduate students, and others with a common interest in STEM teaching and learning come together throughout the academic year to collaboratively examine and design high tech and highly engaging environments to enhance student attitudes, motivation, engagement, and ultimately success. The learning community supports the overriding goal of enhancing STEM education for people of all ages. **Meets NWO**

Goals: 3 & 5

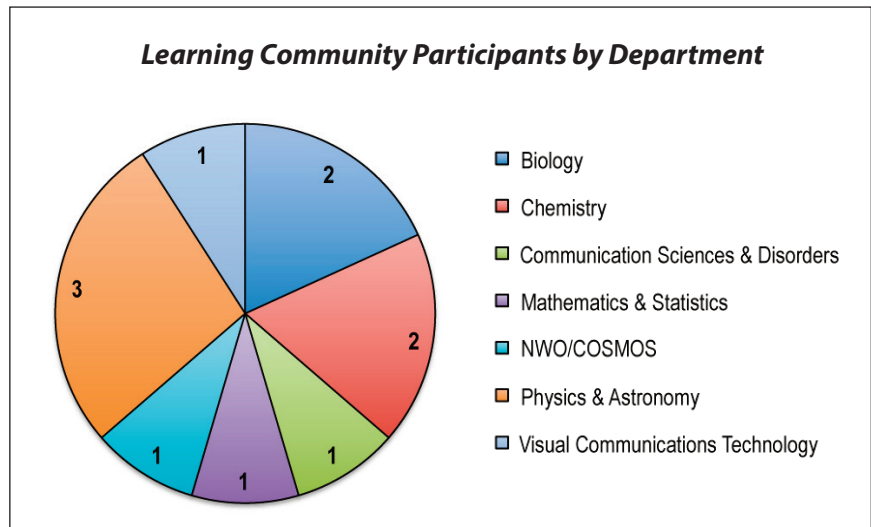
FY 2015 Activity Information

The 2014-15 faculty learning community was led by Dr. Kate Dellenbusch of the Department of Physics and Astronomy. Participants explored the misconceptions held by BGSU students within classes of the STEM disciplines and how those misconceptions may be overcome. During the Fall semester the meetings focused on discussing the literature on misconceptions. Participants also identified the specific misconceptions held by BGSU students in their courses using formative assessments. This was used to form a repository of the common

Continued on page 10

misconceptions held by college students in the STEM disciplines represented by the learning community members (e.g. astronomy, physics, biology, chemistry, etc.).

Participation in the COSMOS Research Learning Community shows a diverse group of faculty participants from 7 university departments and 3 corresponding colleges (Arts & Sciences, Health and Human Services and Technology, Architecture and Applied Engineering). The community consisted of 11 regular attendees and met consistently throughout the academic year.



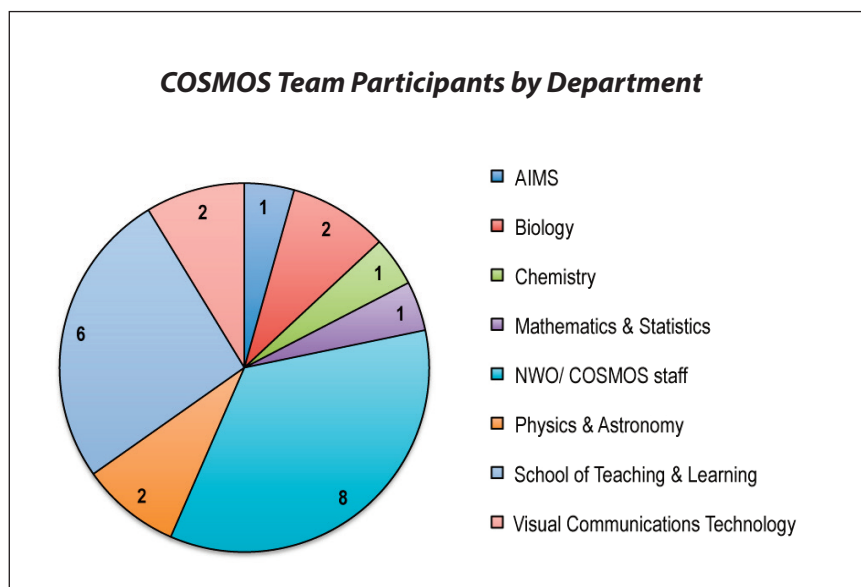
COSMOS Team

Brief Description

The Center Of Excellence in Science and Mathematics Education: Opportunities for Success (COSMOS), the BGSU branch of NWO, hosts the COSMOS Team meeting for BGSU faculty and administrators to work with NWO staff to communicate, collaborate, and champion STEM initiatives at BGSU and throughout the northwest Ohio region. This enthusiastic and supportive group has been meeting as a formal group for over 10 years and is committed to advancing STEM education for people of all ages. **Meets NWO Goal: 3**

FY 2015 Activity Information

Participation in the COSMOS Team demonstrates a diverse group of faculty participants from 8 university departments and 3 corresponding colleges (Arts and Sciences, Education, and Technology, Architecture and Applied Engineering). A representative from the AIMS (Academic Investment in Mathematics and Science) program also offered a perspective on the undergraduate experience at BGSU. The team consisted of 23 total attendees and met once in Fall 2014 and once in Spring 2015.

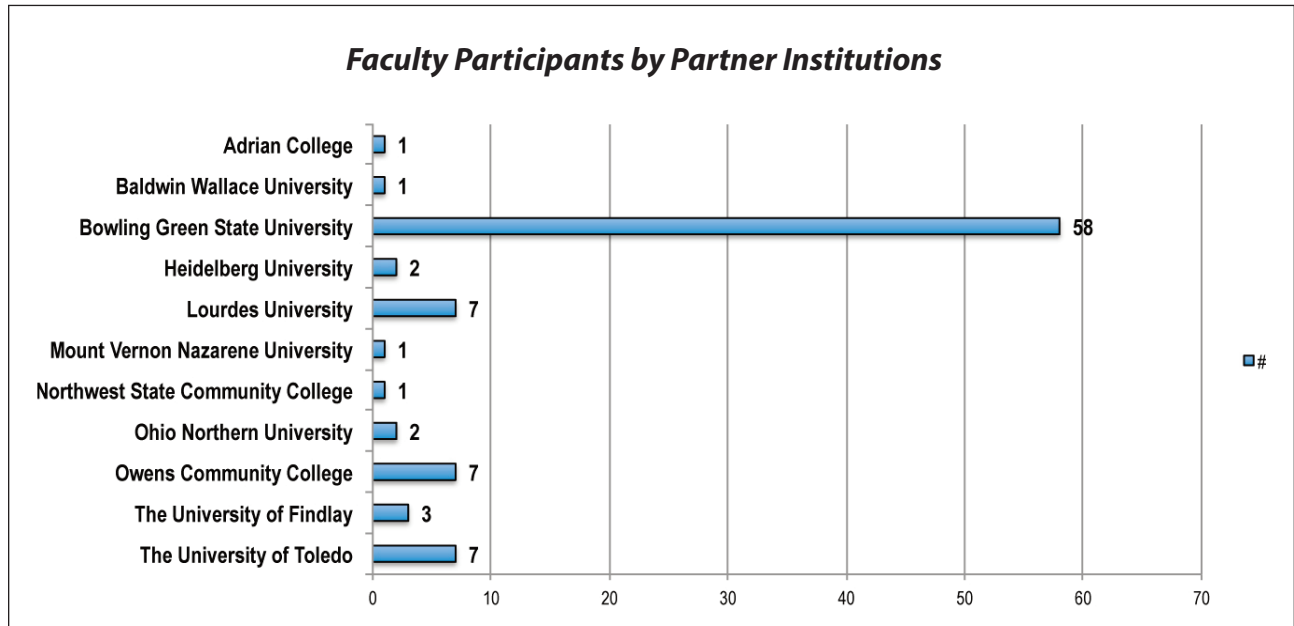


NWO Faculty Participants

Brief Description

NWO has partners in colleges and universities all over northwest Ohio and southeast Michigan. These faculty assist NWO in many ways, including participating in and/or presenting at the following NWO events: (a) NWO STEM Education Inquiry Series, (b) NWO Symposium, (c) STEM in the Park, (d) OJSHS, (e) NWO Advisory Board, (f) COSMOS STEM Education Learning Community, (g) COSMOS Team, (h) iEvolve with STEM Facilitation Team, and (i) iEvolve with STEM Leadership Team. **Meets NWO Goals: 3 & 5**

FY 2015 Activity Information





Grant Projects

Black Swamp Math Teachers' Circle (BS – MTC)

Brief Description

Black Swamp Math Teachers' Circle (BS – MTC) is a one-year Improving Teacher Quality grant from the Ohio Board of Regents. BS – MTC focuses on preparing K – 12 in-service teachers for the Common Core State Standards for Mathematics (CCSSM). This preparation includes about 100 hours of professional development throughout the grant period of January 2015 – May 2016. Through the program teachers learn about best practices in teaching mathematics including ways to promote the 8 Standards for Mathematical Practice expected by the CCSSM. A major focus of this grant project is deepening teachers mathematical problem solving power. Teachers work to solve rich mathematical tasks that start with mathematical ideas around grade 4 and grow to levels of complexity that professional mathematicians would work on. By reflecting on and explicating the problem solving techniques used in these mathematical tasks teachers deepen their own abilities and gain insight into pedagogical spaces for their students to do the same. Teachers then go on to explore and practice these BS – MTC techniques with their own students, and share their findings with others at state level conferences. **Meets NWO Goals: 1, 3, 4, & 5**

Common Core for Achievement & Middle Grades Mathematical Proficiency (C²AM²P Middle Grades)

Brief Description

C²AM²P Middle Grades is a Math Science Partnership project funded by the Ohio Department of Education. C²AM²P serves 30 grades 6-8 mathematics teachers from Bellefontaine, Fairlawn, Findlay, Hardin-Houston, Jackson Center and Lima Schools. This grant is a partnership between these K-12 school districts and Bowling Green State University's Colleges of Education and Human Development and Arts and Sciences as well as the Northwest Ohio Center for Excellence. Teachers will become familiar with the content and practices embedded in the new mathematics standards and develop instructional strategies that promote problem solving through rich tasks, technology, and research-based practices such as teaching through problem solving. The project will run from August 2014 through August 2016. See Appendix A for examples recognition. **Meets NWO Goals: 1, 3, 4, & 5**

FY 2015 Activity Information

C²AM²P served 30 grades 6-8 mathematics teachers during its first year of programming from August 2014 – June 2015. Teachers worked to become familiar with the content and practices embedded in the new mathematics standards and develop instructional strategies that promote problem solving through rich tasks, technology, and research-based practices such as teaching through problem solving. Teachers met with the instructional team eight times during the 2014 – 15 academic year and conducted two lesson studies (one in the fall of 2014 at Findlay City Schools and one in the spring of 2015 at Lima City Schools). The teachers concluded their year one work with an eight-day summer institute in June 2015 where they worked on writing a series of lessons for use by their entire grade level team. Year two of the grant has been officially funded and will begin in August 2015 with work concluding in June 2016.

NWO Role in C²AM²P Middle Grades

- Financial management of the grant budget
- Grant project management assistance

Common Core for Mathematical Proficiency in Elementary Schools ((CO)²MP Elementary)

Brief Description

(CO)²MP Elementary is a Math Science Partnership project funded by the Ohio Department of Education. (CO)²MP Elementary is a collaboration between Sandusky City Schools, Sandusky Central Catholic, and Bowling Green State University's Colleges of Education & Human Development and Arts & Sciences as well as the Northwest Ohio Center for Excellence. Through this partnership 30 K-5 teachers from 2 school districts in the Sandusky area (Sandusky Central Catholic & Sandusky City Schools) will take part in professional development focused on the greatest areas of their students' mathematical content and mathematical proficiency needs. The project will run from August 2014 through August 2016. See Appendix A for examples recognition. **Meets NWO Goals: 1, 3, 4, & 5**

FY 2015 Activity Information

Through this partnership 30 K-5 teachers from three schools in the Sandusky area (Ontario Elementary, Osborne Elementary, and Sandusky Central Catholic) took part in professional development focused on the greatest areas of their students' mathematical content and mathematical proficiency needs. Teachers met with the instructional team eight times during the 2014 – 15 academic year and conducted two lesson studies (one in the fall of 2014 and one in the spring of 2015). The teachers concluded their year one work with an eight-day summer institute in June 2015. Year two of the grant has been officially funded and will begin in August 2015 with work concluding in June 2016. Year two will also see the addition of a new group of 20 teachers in grades 6 – 8 from multiple districts. See Appendix A for examples of the recognition received for this project.

NWO Role in (CO)²MP Elementary

- Financial management of the grant budget
- Evaluation services
- Grant project management assistance

Common Core for Reasoning and Sensemaking – Elementary ((CO)²RES)

Brief Description

(CO)²RES Elementary is a one-year Improving Teacher Quality grant from the Ohio Board of Regents. (CO)²RES Elementary focuses on preparing K-5 in-service teachers for the new Common Core State Standards for Mathematics (CCSSM). Twenty-Four teachers from Bellevue City, Perkins Local, Sandusky City, and Sandusky Central Catholic Schools participated in this grant program. This preparation includes over 100 hours of professional development and work for three connected graduate courses. Through the program teachers learn about best practices in teaching mathematics including ways to promote the 8 Standards for Mathematical Practice expected by the CCSSM. Teachers also explore and practice (CO)²RES Elementary techniques with their own students, and share their findings with others at state level conferences. **Meets**

NWO Goals: 1, 2, 3, 4, & 5

NWO Role in (CO)²RES Elementary

- Financial management of the grant budget
- Evaluation services
- Grant project management assistance

Common Core for Reasoning and Sensemaking – Secondary ((CO)²RES)

Brief Description

(CO)²RES Secondary is a one-year Improving Teacher Quality grant from the Ohio Board of Regents. (CO)²RES Secondary focuses on preparing grades 5-10 in-service teachers for the new Common Core State Standards for Mathematics (CCSSM). Twenty-three teachers from Benton-Carroll-Salem Local, Botkins Local, Elida Local, Fairlawn Local, Findlay City, Fort Jennings Local, Hardin-Houston Local, Indian Lake, Jackson Center Local, Lima City, Riverside Local, and Wapakoneta City Schools participated in this program. This preparation includes over 100 hours of professional development and work for three connected graduate courses. Through the program teachers learn about best practices in teaching mathematics including ways to promote the eight Standards for Mathematical Practice described by the CCSSM. Teachers are expected to implement ideas from the coursework into daily instructional practice with their own students. Finally, (CO)²RES Secondary teachers and instructors share their lessons and experiences with pre-service and in-service teachers, administrators, and support personnel at state-level conferences such as the NWO Symposium on STEM Teaching and Ohio Council of Teachers of Mathematics annual meeting. **Meets NWO Goals: 1, 2, 3, 4, & 5**

NWO Role in (CO)²RES Secondary

- Financial management of the grant budget
- Evaluation services
- Grant project management assistance

Inquiry and Engagement to Invigorate and Optimize Learning for Everyone (iEvolve) with STEM

Brief Description

The iEvolve with STEM project is funded by the National Science Foundation: Math and Science Partnership Program. This project is designed to transform teaching and learning in grades 3-8 of two moderate sized school districts by fully integrating the practice of science research throughout the curriculum, with the goal of substantially improving student achievement of Ohio science standards. The project also aims to improve undergraduate science instruction by increasing science and mathematics research faculty engagement with K-12 education. Based on past experience in prior NSF-funded work, this will increase awareness and appreciation of best practices in teaching among higher education faculty and will foster a greater commitment to improving the STEM pipeline as well as the effectiveness of undergraduate learning.

Based on nearly a decade of highly successful collaboration in STEM education research and reform and the experience gained from more than \$20 million of externally funded STEM initiatives, the key innovations in this project are: 1) students mastering rigorous state and national science standards by practicing science in national citizen-science research projects led by professional scientists and fully integrated into classroom learning; 2) participation of teachers and administrators for an extended 3-year period in a rigorous program of professional development as members of Professional Learning Communities; 3) teachers and students learning to lead through dissemination of their findings to their peers, to their communities, and to their profession; 4) implementation of best practices for differentiating instruction to maximize learning for all students.

The primary research questions focus on some of the most salient issues that STEM educators currently face: how student engagement and motivation relate to achievement of rigorous learning outcomes. NWO will examine how participation in citizen-science research affects these variables across the grades 3-8 range. NWO is working with nationally renowned Horizon Research, Inc. for evaluation of project outcomes.

Two cohorts of approximately 50 teachers will evolve through an intense 3-year professional development program involving more than 400 hours in direct contact, additional project activities, and research with their students, collaborating with more than 20 professional scientists in 5 different disciplines to accomplish sustained, transformational change in 3th-8th grade science instruction. The instructional innovations practiced by iEvolve teachers are expected to improve learning for more than 6,000 students in grades 3-8 during the 5 years of this project, and through the sustained transformation of these districts, tens of thousands of additional students will be affected. This impact is expected to increase as the influence of iEvolve teachers and students is spread throughout the region through their dissemination of their achievements.

This project is implementing strategies that have been previously found effective for increasing the engagement and success of all students, especially in high-needs schools like those involved in this project. A central theme of iEvolve will be differentiating instruction within all contexts so that every student participates, every student learns, and every student succeeds, as each one becomes a practicing scientist-learner. iEvolve teachers will use action research with the support of Professional Learning Communities to promote continuous improvement of their teaching. They will also learn how to disseminate their action research findings and their students'

Continued on page 17

findings in their science research projects to their peers, their local communities, and their professions. Through this dissemination they will influence the region, shifting the culture towards a greater level of engagement and interest in science discovery and innovation in education. Improving the quality and effectiveness of science education for all students will benefit our society due to higher economic productivity and better participation of citizens in democratic decision-making involving complex STEM issues. The project is led by NWO at BGSU with Dr. W. Robert Midden acting as the Principal Investigator. Project partners include Bowling Green State University, Erie Soil and Water Conservation District, Lourdes University, Toledo Area Metroparks, NWO, The Ohio State University: Stone Lab, Perkins Local Schools, Sandusky City Schools, The University of Toledo, and the Toledo Zoo. **Meets NWO Goals: 1, 2, 3, 4, & 5**

FY 2015 Activity Information

The first cohort of 54 grades 3 – 5 teachers continued implementation of inquiry science curriculum for their second year, but added Citizen Science Research to the FOSS kit-based curriculum. Third grade classrooms conducted research on their school's pollinator gardens, while 4th grade participated in research on rain or community gardens, or studied local frog populations through FrogWatch USA. Fifth grade classes monitored water quality and macroinvertebrates in local streams and the Sandusky Bay. Teachers attended monthly professional development sessions and worked in cross-district, grade level professional learning teams to continue to examine best practices in science instruction and to work with Citizen Science Research partners to incorporate real research into that instruction. Citizen Science Research partners included The Toledo Zoo, Erie Soil and Water Conservation District, BGSU's Herpetology and Marine Labs, as well as The Ohio State University Stone Lab.

Preparations were also made to begin the second cohort for grades 6 – 8 teachers. As for the first cohort, a curriculum design team was formed with representative teachers from all grade levels and content areas. This team, headed by the Co-Curriculum Coordinators for the project, worked to select the inquiry-based core science curriculum, aligned with state standards, to be implemented in the fall of 2015. Grades 6 – 8 teachers began their first year with the iEvolve project in June 2015 for the first summer institute which focused on training the teachers to implement their new inquiry-based science curriculum.

The first cohort's curriculum design team continued their work to create cross-disciplinary connections, particularly as related to topics presented in the Citizen Science Research projects. However, this cohort's third summer institute, also in June of 2015, focused on action research, with an emphasis on formative assessment, and dissemination. Page Keeley, noted author/educator, assisted in this training to offer formative assessment strategies and provide an instructional framework for action research. See Appendix E for examples of the recognition received throughout the year.

iTraining

Brief Description

NWO, in conjunction with Putnam County Schools, has implemented two sessions of iTraining workshops, a series of iPad professional development trainings for teachers in the school districts of Putnam County, Ohio, during the past two academic years. This program was funded by the Martha Holden Jennings Foundation and NWO. **Meets NWO Goals: 1 & 4**

FY 2015 Activity Information

The iTraining II program provided a second series of iPad/professional development training sessions for teachers in the school districts of Putnam County, Ohio, during the 2014 – 15 academic year. This program was funded by the Martha Holden Jennings Foundation and NWO.

A three-session track geared toward elementary school teachers took place in the fall of 2014. A three-session track geared toward high school teachers took place in the winter of 2015. The monthly sessions were designed to focus on these two groups within separate tracks. This project provided a total of 57 teachers with nine hours of thorough professional development designed to train the teachers in effective and engaging technology integration. Topics included:

- Using mobile apps for professional collaboration;
- Managing a digital classroom; and
- Implementation of mobile apps.

The components of these trainings included practical applications of effective digital classroom management and building and advancing teachers' level of knowledge on how to effectively engage their students with appropriate technology in the digital classroom. Monthly session surveys and a pre and post survey were conducted to assess program success. Teacher reflections provided data on student engagement. See Appendix F for examples of the teacher recruitment for this program.

Ohio Junior Science and Humanities Symposium (Ohio JSHS)

Brief Description

OJSHS brings the best and brightest students from Ohio middle and high schools together for a competition to highlight and judge the quality of their research projects in the sciences and humanities. This event is an excellent opportunity for the recruitment of the next generation of scientists, mathematicians, engineers, and teachers. OJSHS is co-sponsored by NWO and a grant from the Academy of Applied Science. Paper and poster presentations by these students demonstrate a level of achievement that would rival some of the very best junior and senior undergraduate students with some even approaching what is expected of beginning graduate students. Past Ohio winners have gone on to win the top award at the National competition, demonstrating the extraordinary talent and achievement of these students. **Meets NWO Goal: 2**

FY 2015 Activity Information

Bowling Green State University hosted the 3-day event for the seventh year in a row from March 18 – 20, 2015. This year marked the 52nd Anniversary of the OJSHS program. Dr. Matt Laurent, a Bowling Green State University faculty member in the School of Human Movement, Sport, & Leisure Studies, gave the keynote address. There were 24 paper presentations and 64 poster presentations. Pallavi Lanka from Sylvania Southview High School was the 1st place winner for paper presentations with her project titled “The Viability of Switchable Hydrophilicity Solvents for Lipid Extraction in Algal Biofuel Production”.

Pallavi along with 4 other OJSHS winners traveled to the National JSHS in Hunt Valley, Maryland in April 2015. A complete program and other information about the 2015 OJSHS can be found at www.ojshs.org. Below is a breakdown of attendance data for the 2015 Symposium. The 2015 OJSHS Evaluation Report offers a more thorough account of the implementation and impact of the event, and can be found at www.nwocenter.org/reports. See Appendix J for examples of the Ohio JSHS recruitment materials and recognition.

Participant Group	Total Attendance for 2015
High School and Middle School Students	92
K-12 Educators	12
Higher Ed Faculty (Poster & Paper Judges)	32
Staff and Volunteers	13
Parents and Guests	26
TOTAL	175



School and Community Activities and Outreach

Falcon BEST Robotics

Brief Description

The Falcon BEST Hub at Bowling Green State University is a proud participant in BEST (Boosting Engineering, Science and Technology) Inc. - a national organization that inspires middle and high school students to consider careers in science, technology, engineering, and mathematics (STEM) through participation in a sports-like, science- and engineering-based robotics competition.

However, BEST is more than just a robotics completion; it offers several opportunities for many students to be involved in different parts of the competition. The competition consists of an engineering notebook, robotics competition, spirit competition, marketing presentation, and display presentation with awards given for each of these aspects of the event. All of these pieces are combined to get the score for the overall "BEST" award. Because awards are given for these other aspects of the competition, students with a diverse array of skills are rewarded for their participation and thus a broader array of students benefit than from some other types of

Continued on page 21

robotics competitions. Students who participate in BEST: (1) understand the practical use of math concepts and applied physics, (2) solve real-world science and engineering problems, (3) gain training that is transferable to all academic disciplines and career pursuits, (4) increase their interest in science, technology, engineering, and mathematics (STEM), (5) learn what engineers “do”, and (6) experience “design-to-market” product development.

The Falcon BEST Hub is a partnership between BGSU’s College of Technology, Architecture and Applied Engineering and the Northwest Ohio Center for Excellence. The Hub was created in 2013 and the first completion was held that fall. The top teams from the Falcon BEST Hub join teams from several other states at the Northern Plains Regional Competition each year. This is the highest level of advancement for BEST as a national competition does not exist. Each year a new Hub around the nation designs the competition for that year and each new year brings a completely new robotics task for the participating students. **Meets NWO Goals: 2 & 4**

FY 2015 Activity Information

The second Falcon BEST Robotics Competition was held in the fall of 2014 and started with 16 teams. The six-week competition called “Bladerunner” started on September 27 with the Kick-Off for teams. At this event they received their robotics materials and got their first look at the robotics game. Teams had the next four weeks to work on their robot and other aspects of the BEST competition before participating in Practice Day on October 25. Practice Day allowed the teams to test out their robots on the game field and learn what others were doing and share ideas. The Falcon BEST Game Day took place in the Stroh Center on November 8. Some teams were not able to complete their robot before Game Day and as a result only 13 teams competed on Game Day. The first place “BEST Award” was earned by to the team from Anthony Wayne High School. The first place “Robotics Game Award” was won by the Maumee Valley Country Day School. The top teams performed well at the Northern Plains Regional BEST in Fargo, ND December 5th – 7th. A full list of winners and more information about Falcon BEST and BEST robotics is available at: <http://www.bgsu.edu/technology-architecture-andapplied-engineering/falcon-best-robotics-competition/events/2013-events.html>. See Appendix D for an example of recruitment materials and recognition.

Math Camp

Brief Description

Math Camp is an energetic and active day of teamwork, problem solving, and development of skills for K-12 students. Students engage in fun filled experiences about mathematics, the connections between mathematics and the real world, and mathematicians all in a camp atmosphere where there is song, dance, and silliness. Each math camp is specifically designed by the preservice teachers of the Bowling Green Council of Teachers of Mathematics (BGCTM) at BGSU with oversight from BGSU's mathematics education faculty. The camps are aligned with the Common Core and New Ohio Learning Standards for Mathematics. The BGCTM preservice teachers work with each schools liaison to identify specific areas of mathematical need for the students in order to design a worthwhile and focused camp experience. Camps are conducted for one grade level at a time to ensure that the mathematics tasks are targeted to the specific needs of the students attending the camp.

Research has shown that students who attend BGCTM Math Camp's demonstrate statistically significant improvement in their mathematical self-efficacy, are more comfortable with mathematics, and become more flexible in their problem solving strategies. Math Camps were conducted with grades 4-8 students in the spring at two different public schools; Napoleon Schools and McComb Schools. **Meets NWO Goals: 1, 2, 3, 4 & 5**

NWO Role in Math Camp

- Financial management of the camp funds
- Assistance purchasing materials for camps
- Advertising assistance

STEM in the Park™

Brief Description

STEM in the Park is a free NWO event for all northwest Ohio families and the entire community to stimulate public interest and encourage learning in science, technology, engineering, and mathematics (STEM). Held on the campus of Bowling Green State University, the event features four hours of engaging hands-on STEM activities from over 50 area businesses, schools, and organizations along with take-home STEM activity cards for parents and children to continue STEM exploration at home. By increasing awareness in STEM facilities, programs and activities in the area, STEM in the Park is an opportunity for businesses, universities, K-12 schools, and non-profit organizations to showcase innovation, educational opportunities, careers, and to promote positive attitudes toward STEM teaching and learning. **Meets NWO Goal: 2**

FY 2015 Activity Information

The Fifth Annual STEM in the Park event was held on September 27, 2014 and showcased over 110 hands-on activities as well as provided free lunch for all participants catered by Tony Packo's. Activity stations included many NWO community and business partners and university departments. Presenting Sponsors for the event

Continued on page 23

were BGSU, BP, Lubrizol, and Verizon. Community Sponsors included Bill Rowles Youth Foundation Fund of the Toledo Community Foundation; Bowling Green Community Foundation; NWO; John Deere; Spectra Group Limited, Inc.; Thayer Family Dealerships; Tony Packo's; and Walmart. General Sponsors who contributed to the event were Carolina Biological Supply Company; Cooper Tires; Dura Magnetics; Giant Industries; Kroger; Meijer; Spark! Learning Perrysburg; SSOE; and The Cookie Jar. The event was held at the Perry Field House for the fourth consecutive year. The attendance was the largest to date, with a total of 3,850 attendees/exhibitors/staff/volunteers (more than double the attendance at the first event in 2010). The event attracted families from 96 different cities and towns (in 30 different counties) in Ohio and Michigan. A complete list of exhibitors as well as a video and pictures of the event is available at www.STEMinthepark.org. The evaluation report can be found at www.nwocenter.org/reports. See Appendix K for examples of the advertising and recognition.

Women in STEM

Brief Description

Women in STEM is an outreach and engagement program that exposes sixth through eighth grade girls from the region to STEM education and professions. The program goal is two-fold as it (1) aims to connect high impact and fun-filled STEM-based activities to the real world while (2) inspiring students to pursue higher education and careers in STEM fields.

The annual Women in STEM program is held on BGSU's main campus to give students the experience of the college setting. Scores of dedicated BGSU students and staff members volunteer to escort students around campus and share their collegiate experiences. The schedule of events begins with a welcome and interactive keynote address followed by over 40 hands-on breakout sessions provided by dynamic and devoted STEM professional role models. Additional information can be found on the NWO website at <http://cosmos.bgsu.edu/womeninSTEM/index.htm>. **Meets NWO Goal: 2**

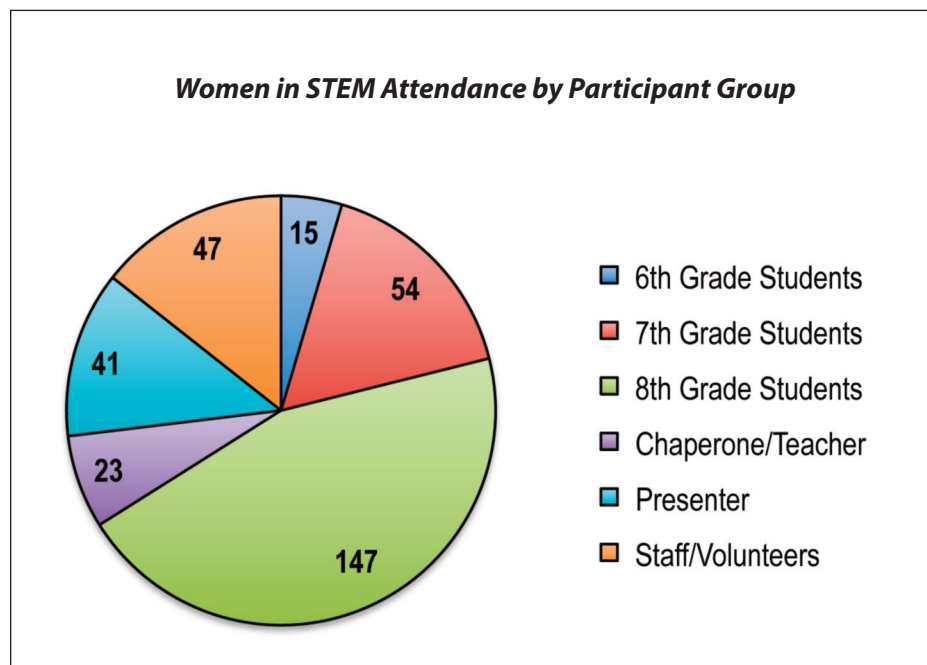
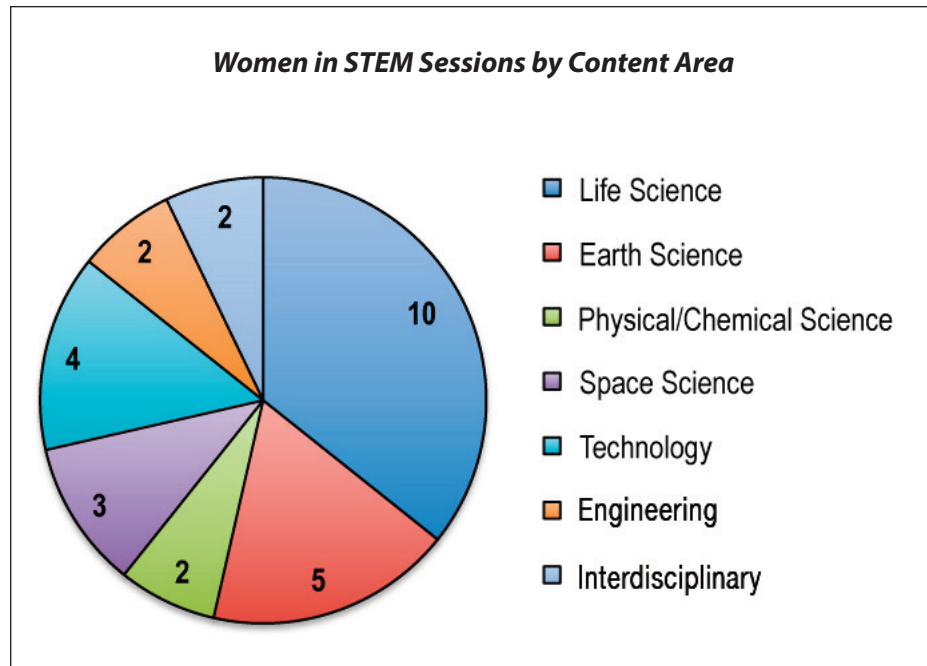
FY 2015 Activity Information

The 2014 Women in STEM program was held on the Bowling Green State University main campus on November 21st. The program focus of "Empowering young women in STEM education while fostering confidence and a can-do attitude" attracted over 200 sixth through eighth grade young women from the northwest Ohio area. A program fee of \$22 was charged for all student attendees and \$17 for school chaperones.

The schedule of events began with a welcome by BGSU President, Dr. Mary Ellen Mazey, and an interactive keynote by BGSU faculty member, Dr. Jodi Haney. The students were then divided into groups of 12 to 15 and each group engaged in multiple program activities including the opening remarks, an engaging keynote presentation, and three hands-on fun-filled STEM-based workshops.

Many dedicated BGSU staff members and students volunteered their time and shared their experiences in STEM education and employment with the middle school girls throughout the day. Over 40 STEM professional role models from BGSU faculty, students and the surrounding community facilitated the hands-on workshops.

Below is a breakdown of the sessions offered by content area. The overall attendance for this year was 327. Many sessions were offered more than once during the day. The evaluation report can be found at www.nwocenter.org/reports. See Appendix L for examples of the advertising and recognition.



You Be The Chemist Challenge

Brief Description

The You Be The Chemist (YBTC) Challenge is a fun and innovative academic competition that engages 5th – 8th grade students in learning about important chemistry concepts, discoveries, and chemical safety. Challenge competitions are exciting events that take place across the country, encouraging the collaboration of community organizations, schools and the chemical industry, as together they educate students about the benefits and value of the study of chemistry. Ohio schools take part in local challenges within their school districts, and winners attend a state competition held in northwest Ohio to qualify for the YBTC National Challenge. **Meets NWO Goal: 2**

FY 2015 Activity Information

This year's statewide competition took place at Bowsher High School in Toledo on April 18, 2015. Twenty-four students from all over Ohio came together to try and earn the top prize of representing Ohio at the National YBTC in Philadelphia in June. This year's winner was Ottawa Hills 5th grader, Daniel Lui, who went on to win the national competition!

All participants at the state competition earned certificates and trophies were awarded to the top three students. PVS-Nolwood Chemicals, Inc. also distributed technical devices to 1st & 2nd place students and a gift card to the 3rd place student. The Local and State Challenge events were sponsored by NWO, The University of Toledo's American Chemical Society, Toledo Public Schools, PVS-Nolwood Chemicals, Inc., and Imagination Station. See Appendix M for an example of the YBTC recruitment materials and recognition.

NWO Role in YBTC in FY 2014

- Funding for student awards and certificates of participation
- Advertisement/recruitment via Constant Contact to 8,000+ regional K –16 contacts
- Announcement in NWO e-newsletter



Student Scholarship Programs and Grants

Academic Investment in Mathematics and Science (AIMS)

Brief Description

The Purpose of the Academic Investment in Math and Science (AIMS) Program is to increase the number of women and students of color who graduate from BGSU with majors in Science, Technology, Engineering & Mathematics (STEM), and who proceed to get terminal degrees in their fields then ultimately perform cutting-edge research and/or teaching.

All AIMS Scholars have a unique array of resources to help them strengthen their academic skills and to increase their likelihood for academic success in college, by developing professional leadership skills required for advancement in mathematics and the sciences. The AIMS Program requires study leading to a bachelor's

Continued on page 27

degree in STEM related fields or teacher education with majors in these areas. The AIMS program has two scholarship packages with distinct requirements. The AIMS Standard scholarship is traditionally awarded to women and students of color with STEM majors. The AIMS BOSEF scholarship targets Ohio residents majoring in the following programs: chemistry, physics, biology, geology, environmental science, applied mathematics, engineering technology and those students with career goals related to renewable and sustainable energy. More information about AIMS can be found at www.bgsu.edu/aims.html. **Meets NWO Goals: 1, 2, &3**

NWO Role in ACTION in FY 2014

- Oversight and management of the project including financial management of the budget
- NWO Director also serves as the AIMS Director
- Assist in the management of scholarship awards and renewals
- Assist with student advising
- Assist with academic mentoring and support

Building Ohio's Sustainable Energy Future (BOSEF)

Brief Description

BOSEF is a scholarship project funded by the Choose Ohio First program of the state of Ohio. BOSEF increases the recruitment, training, and graduation of STEM students to supply the growing job markets in renewable energy and sustainable environment technologies. Northwest Ohio has a growing reputation for research, development, and manufacturing in the high technology, renewable energy fields of photovoltaics (PV) and wind. In addition, northwest Ohio has major research and development strengths in environmental analysis and remediation technologies. The University of Toledo (UT), Bowling Green State University (BGSU), and the community colleges of Owens, Terra, and Northwest State work together to leverage the enormous public interest and burgeoning job markets in these fields to recruit, educate, and retain the best and brightest of Ohio's students to support these rapidly developing high tech professions. Student success is enhanced through a cooperative summer bridge program focused on mathematics, undergraduate research experiences for all, and integration with the Wright Center for PV Innovation and Commercialization, the Lake Erie Research Center, Center of Photochemical Sciences, and the Environmental Remediation and Restoration Experimental Park. It prepares students for scientific and technical careers by providing internships with business, industry, agencies, and non-profits in renewable energy and environmental sustainability fields. Although the primary program focus is on the undergraduate STEM pipeline, it also includes masters and PhD students. The participating institutions have a comprehensive and vertically integrated approach to STEM education that maximizes student success and provides skilled professionals in these crucial STEM areas.

Meets NWO Goals: 2 & 3

NWO Role in BOSEF in FY 2015

- Oversight and management of the grant project including financial management of the grant budget
- Direct recruitment of students through AIMS and the chemistry and physics departments at recruiting events
- Advertisement/recruitment to ~ 4,300 regional K-12 contacts
- Advertisement/recruitment at NWO Inquiry Series
- Management of scholarship awards and renewals
- Career development
- Student advising
- Academic mentoring and support

Granting Access to Mathematics and Science (GRAMS)

Brief Description

GRAMS (Granting Access to Mathematics & Science) is a scholarship up to \$10,000 per student each year for up to four years program supported by two 5-year grants totaling \$1,200,000 from the National Science Foundation. In this project, Bowling Green State University collaborates with two regional community colleges, Owens and Terra, to increase the number of highly qualified and capable students who are able to complete degrees in STEM majors by providing approximately 20-30 need-based scholarships up to \$10,000 per student each year for up to four years and a proven support program to foster student success. Student persistence and success was fostered with two major projects: (a) BGSU's NSF-funded STEP grant project Science, Engineering, and Technology Gateway Ohio (SETGO) which ended in 2013 and (b) the BGSU Academic Investment in Mathematics and Science (AIMS). These programs include a 4-week summer bridge for entering students, to prepare them for the rigors of college science and math courses; a tiered system of mentoring by peers and faculty; learning communities with monthly events that draw students and faculty together by merging academics and social networking; and summer research opportunities. These strategies have been proven in BGSU's AIMS program to increase student persistence and success, particularly of under-represented minority students majoring in science and math disciplines and are based on research that has identified the factors that most account for student attrition from these disciplines. **Meets NWO Goals: 2 & 3**

NWO Role in GRAMS in FY 2015

- Oversight and management of the grant project including financial management of the grant budget
- Direct recruitment of students through AIMS and the chemistry and physics departments at recruiting events
- Advertisement/recruitment to ~ 4,300 regional K-12 contacts
- Management of scholarship awards and renewals
- Career development
- Student advising
- Academic mentoring and support

Science and Math Education in ACTION (ACTION)

Brief Description

BGSU received \$3,000,000 in funding from the Ohio Board of Regents through the Choose Ohio First program to recruit and train undergraduates to become Ohio mathematics and science teachers. ACTION focuses on the use of innovative strategies for preparing highly effective science and mathematics teachers for grades 5-12. Students involved in the project participate in: (a) a 4-week summer bridge program preceding the first regular semester of college; (b) a collaborative science or mathematics research team that addresses a real community problem or concern; (c) a co-op or internship work experience in a regional science or mathematics related business or industry in their second year; (d) early teaching experiences in a regional school; and (e) the creation of a capstone project that involves applying research techniques to determining the best teaching practices that advance the students' learning. **Meets NWO Goal: 1, 2, & 3**

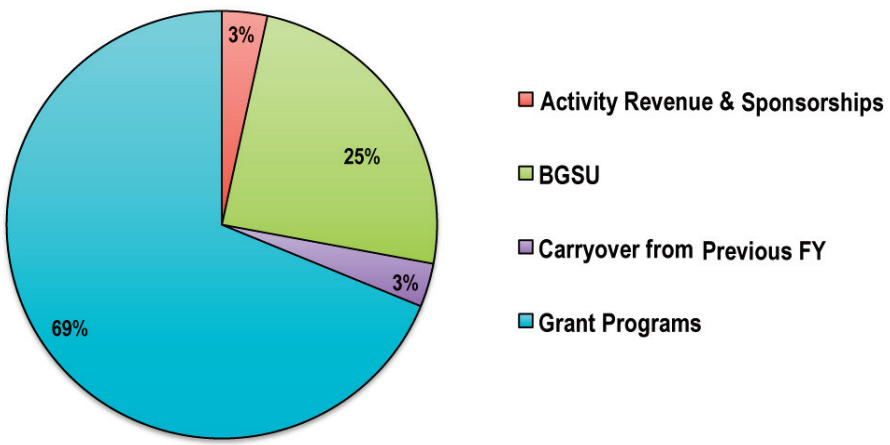
NWO Role in ACTION in FY 2014

- Assistance with the undergraduate research component of the project
- Assistance and advice for project activities and logistics



FY 2015 NWO Budget

FY 2015 Income Sources



TOTAL INCOME FOR FY 2015 **\$2,889,887.41**

Continued on page 31

The table below shows funding sources that supported FY 2015 NWO Activities.

BGSU FUNDS	
Agency: Program	Award Amount
Bowling Green State University Fiscal Support for NWO	\$340,404.65
Bowling Green State University Fiscal Support for AIMS	\$362,549.02
Bowling Green State University Fiscal Support for CURS	\$101,234.05
BGSU Cost Share for NWO Grants	\$19,725.05

Continued on page 32

The table below shows funding sources that supported FY 2015 NWO Activities.

GRANT PROGRAMS		
*Funding amount listed is for the grant award period which could be longer or shorter than the NWO fiscal year.		
Agency: Program	Description	Award Amount
Academy of Applied Science	Ohio Junior Science & Humanities Symposium	\$20,000.00
Martha Holden Jennings Foundation	iTraining	\$16,100.00
National Science Foundation: S – STEM	GRAMS II: Granting Access to Mathematics and Science II (Year 5 of 5)	\$67,950.00
National Science Foundation: Math Science Partnership Program	iEvolve: Inquiry and Engagement to Invigorate and Optimize Learning for Everyone (Year 3 of 5)	\$1,617,741.00
Ohio Board of Regents: ITQ Program	Black Swamp – Math Teacher Circle (BS-MTC)	\$46,597.00
	Common Core for Reasoning and Sensemaking – Elementary ((CO) ² RES) (Year 3)	\$168,456.00
	Common Core for Reasoning and Sensemaking – Secondary ((CO) ² RES) (Year 3)	\$168,202.00
	Science Teaching Advancement through Modeling Physical Science (STAMPS IV) (NWO Subaward for Evaluation Services)	\$8,353.80
Ohio Board of Regents: Choose Ohio First Program	BOSEF: Building Ohio’s Sustainable Energy Future (Year 6 of 6)	\$83,125.00
Ohio Department of Development: Math Science Partnership Grant Program	Common Core for Mathematical Proficiency in Elementary Schools ((CO) ² MP Elementary)	\$154,187.00
	Common Core for Achievement & Middle Grades Mathematical Proficiency (C ² AM ² P Middle Grades)	\$170,868.00
Ohio Water Development Authority	Mitigation of Agricultural Nutrient Loss by Novel Manure Treatment	\$291,801.00
OSLN/Battelle Foundation	OSLN/Battelle Hub Grant	\$25,000.00
United States Department of Labor	Pathways to Prosperity (NWO Subaward for Evaluation Services from Toledo Public Schools)	\$10,000.00

We wish to thank the following for their support of NWO activities during FY 15!



Bill Rowles Youth Foundation Fund
of the Toledo Community Foundation

Bowling Green
Community Foundation



The Andersons
Foundation





Appendices

- A. (CO)²MP & C²AM²P Recognition
- B. Community Resources Workshop Recruitment Email
- C. Faculty and Student Recognition
- D. Falcon Best Recruitment Email & Recognition
- E. iEvolve with STEM Recognition
- F. iTraining Advertising
- G. NWO STEM E-Newsletters
- H. NWO STEM Inquiry Series Advertising
- I. NWO Symposium Advertising & Recognition
- J. Ohio JSHS Advertising & Recognition
- K. STEM in the Park Advertising & Recognition
- L. Women in STEM Advertising & Recognition
- M. You Be The Chemist Challenge Recruitment Email & Recognition

Appendix A: (CO)²MP & C²AM²P Recognition

Twitter



Sandusky Schools on Twitter

"Our elementary teachers working through math problems thanks to our COMP grant with BGSU!"

TWITTER.COM | BY SANDUSKY SCHOOLS

Sandusky
Register
NAMED BEST PAPER & WEBSITE IN OHIO

★ Tuesday ★
February 17, 2015
75 cents

OHIO DEPARTMENT OF EDUCATION GRANT

Sandusky teachers go back to school

BGSU lands \$500,000 grant to teach math educators new techniques

By ALISSA WIDMAN NEESE
widman@sanduskyregister.com

HURON TWP.
The tables have certainly turned for some of Sandusky's elementary math teachers. They're the ones hitting the books this school year, thanks to an innovative grant worth almost \$500,000 from the Ohio Department of Education. The award will provide state-of-the-art mathematics instruction to area educators for two years. Its first year is now in full swing. Earlier this month, about 30 educators from Sandusky's public and Catholic elementary schools gathered at BGSU Firelands for a full day of professional development with mathematics education professors from Bowling Green State University's main campus. "It went very well," said Gabriel Matney, one of the professors who crafted the grant. The event included plenty of hands-on activities and lengthy discussions. Next month, teachers will develop and implement lesson plans together, based on what they



Sandusky Central Catholic School teacher Marci Wheeler and BGSU math education professor Gabriel Matney look over a lesson study Friday during their mathematics session at BGSU Firelands.

Register photo/
ERIN McLAUGHLIN

■ See MATH, Page A7

Appendix A: (CO)²MP & C²AM²P Recognition

Thursday, October 23, 2014

ZOOM news

BOWLING GREEN STATE UNIVERSITY

Boosting teachers' Common Core math skills | BGSU garners two silver CASE awards



Teacher Erica Brunow (left) works with students at Glenwood Middle School as part of a lesson study for the CAMP grant led by Dr. Jonathan Bostic.

MATH EDUCATION FACULTY EQUIP OHIO TEACHERS TO ADDRESS COMMON CORE

Drs. Jonathan Bostic and Gabriel Matney traded their BGSU campus classrooms this summer to work with public school teachers in their home districts, preparing them to address the new Common Core State Standards for math. The two mathematics education faculty from the College of Education and Human Development have partnered to provide professional development in schools since 2012.

Funded with nearly \$1 million from two Ohio Department of Education - Mathematics Science Partnership grants, Bostic and Matney are providing training to give teachers in several Ohio school districts a confident, stronger foundation in math so they are comfortable designing effective lessons that will enable students to become mathematically proficient thinkers.

The standards adopted by Ohio and other states have changed the equation for math teachers. Teachers must not only deepen their own content knowledge of the proficiencies students will now be expected to master, they must also expand their repertoire of teaching methods, including the use of educational technology.

Appendix A: (CO)²MP & C²AM²P Recognition

BGSU NEWS
INTERNATIONAL MYBGSU EMAIL SEARCH

BGSU MATH EDUCATION FACULTY EQUIP OHIO TEACHERS TO ADDRESS COMMON CORE

Bowling Green State University / News / 2014 / October / BGSU math education faculty equip Ohio teachers to address Common Core

Tweet (1) Like Share (0)

BOWLING GREEN, O.—Drs. Jonathan Bostic and Gabriel Matney traded their Bowling Green State University campus classrooms this summer to work with public school teachers in their home districts, preparing them to address the new Common Core State Standards for math. The two mathematics education faculty from the College of Education and Human Development have partnered to provide professional development in schools since 2012.

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The standards adopted by Ohio and other states have changed the equation for math teachers. Teachers must not only deepen their own content knowledge of the proficiencies students will now be expected to master, they must also expand their repertoire of teaching methods, including the use of educational technology.

Contrary to a popular misconception, the math standards do not prescribe a curriculum, Matney said. They set out a list of eight required proficiencies. Districts must determine how to teach so that students achieve those math skills.

"This is an approach I've always wanted to take, but I wasn't quite sure how to do it," said Susannah Harris of Jackson Center Local Schools, expressing the sentiments of many of the participants. Harris has been teaching for 19 years.

That is where Matney and Bostic come in. As former K-12 mathematics teachers, they are only too familiar with the challenges teachers face, which is part of the reason they are willing to travel the sometimes 75 miles to reach their professional development participants.

"I call this generation of teachers the 'in-betweens,'" Matney said. "We weren't educated this way, but now we have to teach it."

To implement their respective grant projects, they have put together diverse teams and serve as each other's co-directors. Dr. Jessica Belcher, assistant director of the Northwest Ohio Center for Excellence in STEM Education/COSMOS, is managing the grants and organizing the teacher sessions. Each team includes an assessment expert who will evaluate the effectiveness of the programs so they may be refined as needed.

"For short, we call the two grants COMP and CAMP," Matney said. "COMP [Common Core for Mathematical Proficiency in Elementary Schools] is for K-5 teachers, and CAMP [Common Core for Achievement and Middle Grades Mathematical Proficiency] is for grades 6-8 teachers. The grants not only serve different grade levels, they also reach out to teachers in completely different geographical areas of Ohio."

In the COMP program, led by Matney, 30 teachers in three schools in the Sandusky area – Ontario Elementary, Osborne Elementary and Sandusky Central Catholic – are receiving professional development.

In Bostic's CAMP program, 30 teachers in Lima City Schools, Findlay City Schools, Fairlawn, and the Jackson Center, Bellfontaine and Hardin-Houston districts are participating. "We have seven schools in six districts, some of which are really small," Bostic noted. "Some of the schools are very rural, while others are more urban. We also have special education teachers."

To qualify for the professional development from the two grant-funded programs, districts had to have 80 percent participation among their schools, Bostic said. "Without that, the program couldn't be as comprehensive and teachers could not change their classroom instruction and foster systemic changes across their districts."

COMP and CAMP have been enthusiastically embraced by building principals. And for teachers like BGSU alumni Harris, who teaches math to students in grades 7-12 and provides math intervention for all fourth- and fifth-grade students each week, and Mark Shively, who teaches math in grades 6-8 in Findlay's Glenwood School and also serves as an intervention specialist for students with special needs, the extended timespan of the training and having most of their colleagues on board has allowed for more collaborative learning, not only in their home buildings but across the counties and districts.

"It opens up a line of communication, and we can really get to know one another," Harris said.

"This is the first professional development in a decade I feel I can really stand behind and feel good about," added Shively.

Both he and Harris had worked with Bostic and Matney before and were eager to continue developing their skills in the new approach to math.

"When I heard that Dr. Bostic and Dr. Matney were offering this, I had no problem making the commitment, Harris said. "It's an amazing thing that they're doing, and they embrace what they do."

In fact, Bostic noted, about a third of the teachers in his CAMP program participated in a previous grant-funded Improving Teacher Quality program for secondary teachers, Common Core for Reasoning and Sense Making: Secondary (CORES). "They found it so helpful that they've bought in for two more years," he said. "CAMP will help them enact all the things they've been working on."

"This will allow us to move forward," Shively said. "The approach is versatile enough that we can make it our own and create exciting, rich and mathematically challenging lessons that engage our students and keep them thinking about math."

"We don't just ask students to give their answer, but also to explain it. Having to verbalize their thinking ensures that they grasp the concepts. We want them to be logical, independent, critical thinkers, and to have the abilities that will get them satisfying jobs."

Following this summer's initial large-group meetings, the two programs have each begun a "lesson study" using an approach borrowed from collaborative international research. One teacher delivers the lesson in his or her own classroom while the others in the group observe. Based on what they see and how the students respond – what questions did the students ask, how were they answered, what questions were not asked? – they together revise and refine the lesson, and another teacher will give it in his or her classroom. This continues until they are satisfied with the effectiveness of the lesson.

"This is authentic professional development," Matney said. "Student ideas are part of the process. We know that as we understand the complexity of teaching better, we will implement it better."

Bostic and Matney chose their CAMP and COMP team members to help ensure the thoroughness of the training. CAMP includes mathematics department faculty Christina Miller and Sandy Zirkes; School of Intervention Services faculty Dr. Brooks Vostal, Liberty Center mathematics teacher Dianne Mott, and Dr. Toni Sondergeld from BGSU's Center for Assessment and Evaluation. The COMP team includes Zirkes, nationally known education consultant Sherry Lane; and Jacob Burgoon of NWO/COSMOS as lead evaluator.

Both the CAMP and COMP programs address problem solving, a critical element of the new standards. "One of the standards calls for students to be able to 'Make sense of problems and persevere in solving them,'" Matney noted.

Some things have not changed, he said. By third grade, for example, students must know their multiplication tables up to 9 x 9 by memory. However, he said, "There are lots of ways one can come to be able to remember multiplication products. We want students to understand the relationships between quantities and how we group them."

"Rigor is not about doing more math exercises. It's about understanding mathematics problems and going deeper."

Both Bostic and Matney are adamant that teachers should not be faulted for their sometimes-shallow knowledge of math, particularly in the elementary grades where they must teach all subjects.

"Math is so dense that it takes multiple experiences of engagement in problem solving to develop a deep understanding of the connections found in mathematics," Bostic said. "Time spent during this professional development is intended to further extend knowledge gained from teacher-preparation courses and on-the-job wisdom."

It's a big job, all agree, and they are taking it in small steps.

The best place to do that is directly in the classroom with the teachers. Their work will continue throughout the next two school years – "and we'll need every second of it," Matney said.

Appendix B: Community Resources Workshop Recruitment Email



2015 Community Resources Workshop for Educators

June 15-19, 2015

REGISTRATION NOW OPEN!

Spend a Week of Your Summer Vacation on a Fun-Filled Field Trip for Educators While You Earn College Credit or 40 Contact Hours!

Registration Fee: \$150 Early Bird Registration before April 15 * \$165 after April 15

Registration Fee Includes:

- Light breakfast daily, lunch provided Monday, Wednesday, Thursday, Friday and dinner also provided on Wednesday
- Parking and entrance fees
- CEUs/Contact Hours for the entire week
- Teaching resources and hands-on materials

Join us for an exciting week packed with activities aligned with state content standards, STEM learning and career and college readiness.

You'll visit some of northwest Ohio's best informal and formal education institutions as well as learn about hidden gems to energize classroom instruction!

Here's what some participants had to say about last year's workshop:

"This workshop is excellent. I've lived in Toledo for 27 years and I am amazed how much I did not know was there!"

"It was well organized and everything was explained thoroughly. A lot of the information can be adapted to the classroom."

"Hands-on experience provided useful information to pass on..."

"I was very impressed with the amount of materials that were presented during these week long workshops."

This opportunity is open to all educators, including administrators, homeschooling educators, and pre-service teachers. This workshop is recommended for preK-8 educators but is open to all grade levels.

Online Registration: <https://docs.google.com/spreadsheets/viewform?formkey=dDRJWXQ3SUJUd0s4dHVN2JRbWdoOHc6MQ#gid=0>

Payment Information: After completing the online registration form you can access the [online credit card payment system](#). You can either pay online through this system or mail a check (payable to BGSU) or purchase order to:

NWO-Community Resources Workshop
c/o COSMOS/NWO
241 Math Science Bldg.
Bowling Green State University
Bowling Green, OH 43403

PLEASE NOTE: TITLE I PART A FUNDS OR TITLE III FUNDS CAN BE USED TOWARD THIS WORKSHOP

For more information and to register visit:
<http://www.nwocenter.org/CRW/CRWHome.htm>

2015 Community Resource Partners



Appendix C: Faculty and Student Recognition

BGSU NEWS

ATHLETICS ALUMNI RESEARCH STUDENT LIFE INTERNATIONAL GIVE MYBGSU EMAIL SEARCH

BGSU FACULTY RECEIVE GRANTS TO ADVANCE STEM TEACHING

Bowling Green State University / News / 2015 / February / BGSU faculty receive grants to advance STEM teaching

Tweet 6 Like Share 5

Area math and science teachers will learn new ways to improve student learning and add excitement to class thanks to grants issued by the Ohio Board of Regents to faculty in the Bowling Green State University Colleges of Education and Human Development and Arts and Sciences.



Tracy Huziak-Clark

Dr. Tracy Huziak-Clark, education, and Dr. John Laird, chair of the Department of Physics and Astronomy, received \$154,864 for "Science Teaching Advancement through Modeling Physical Science V" or STAMPS V. The goal is to provide high school physical science teachers tools to increase student learning and excitement about science by implementing research-based modeling instruction in their classrooms.

According to Huziak-Clark, modeling instruction involves engaging students in creating conceptual models that are graphical, pictorial, verbal and mathematical so that they look at the concept they're trying to understand from multiple perspectives. "The process is student-centered and requires a great deal of active learning," she explained. "Students are learning about science concepts in a similar fashion to how scientists work."

The fifth incarnation of the STAMPS program will continue to involve Toledo Public Schools and support teachers in Hancock and Wood Counties.

The teachers will attend a two-week summer institute where they will learn about physical science concepts, modeling methods to teach these concepts, and how to overcome student misconceptions. These strategies will be implemented during the academic year. In addition, they will meet six times to further elaborate content and physical science models, discuss issues, concerns and successes, and participate in online learning communities.

The project will also allow 12 former participants to return and learn how to adapt modeling for physical sciences for Biology.

"We have really had a lot of teachers who have embraced modeling pedagogy," Huziak-Clark said. "What I have heard from teachers is that it has rejuvenated and refreshed how they teach and how their students learn. Teachers can immediately understand what students know, and what they don't, and can tailor their instruction to what they don't really understand. It's really a way to help teachers think about their instruction to help further their students' understanding and learning."

Dr. Gabriel Matney, education, and Deb Gallagher, education, received \$46,595 for Black Swamp-Math Teachers Circle [BS-MTC]. The goal of the project is to continue to help teachers implement the new Common Core Standards for Mathematics.

BS-MTC involves primarily teachers at Fostoria Local Schools, though Matney said teachers throughout the Black Swamp region will be involved. The goal is to assist them in fully understanding the mathematics content of Ohio's New Learning Standards and effective mathematics classroom implementation related to the Standards for Mathematical Practice.

Administrators from the partner districts will select 20 math teachers as participants. The professional development will involve four full days in the summer of 2015, during which time they will deepen their mathematics content knowledge, explore the use of inquiry, technology, mathematical tools, mathematical models, and other research-based effective teaching practices. Follow-up sessions will continue throughout the fall of 2015 and spring of 2016.

As teachers implement these ideas in their lessons, continue to collaborate with one another, and refine their teaching practices, Matney said they will be instrumental in assisting other teachers in the process of change and encouraging them to join the future BS-MTC that will continue to meet and support teachers after the grant funding has concluded.

Matney said he hopes the sessions will help teachers throughout northwest Ohio deepen their content knowledge in mathematics together. "We want teachers to come together and think about math and advance our understanding in teaching it, as well as provide context to talk about what we need to do to help each other," he said.

"Ohio's New Learning Standards give us a very rich description of what it means for classrooms to promote students' mathematical proficiency, and math is something we have traditionally struggled with in this country," he explained. "Through the BS-MTC community we will strive for both engagement and rigor to invigorate an enjoyment of mathematics in our classrooms."



Gabriel Matney

Appendix D: Falcon Best Recruitment Email & Recognition



**Registration for the FalconBEST
2014 BLADERUNNER Robotic
Competition is open!**

FalconBEST is a robotics competition and much, much more! Learn about the BEST Inc. organization this year's competition. Dates and registration instructions are below!

Registration Instructions

1. Go to <http://www.bestinc.org/>
2. Click the "Get Involved" link
3. Select "Register as a team"
4. Select 2014 FalconBEST Season Team Registration
5. Follow the instructions to register

Schedule of Events

Teacher Workshop - August 11, 2014

Kickoff - Sat, Sep 27, 2014, 2:30pm - 5:00pm, Miletta Alumni Center, BGSU, Bowling Green

Practice Day - Sat, Oct. 25, 2014 - 10:00am - 2:00pm, Woodland Mall, Bowling Green

Contest Day - Sat, Nov. 8, 2014, 9:00am - 4:00pm, Stroh Center, BGSU, Bowling Green

For more information visit the website at: <http://bit.ly/Falconbest>



Recruitment Email

Appendix D: Falcon Best Recruitment Email & Recognition cont.

Falcon Best Recognition


Register SANDUSKY NORWALK FIRELANDS 411
NEWS EPAPER OBITUARIES SPORTS ENTERTAINMENT LIFESTYLE PHOTOS

EDUCATION @ f

Doing the robot

Port Clinton High schoolers take home top prize in Robotics competition

ALEX GREEN PORT CLINTON NOV 9, 2014



green@oc-register.com

Robotics club members may look like they're playing video games after school based on the remote control they pass back and forth to each other.

But don't mistake some of Port Clinton High School's brightest students for video gamers. Rather, the "Robo-skins" have built a somewhat intelligent robot that stands about two feet tall. Its capabilities fall just short of being able to talk.

"We did well at a recent practice," sophomore Melvin McCord said. "Ours was more solid (than other team's)."

For six weeks this group of sophomores designed and built the ultimate play toy. With the push of a button, they raced it around the school's old welding lab with both speed a precision last Friday.

Members Melvin McCord, Kenny Boyle, Dylan Ireland and his twin Caleb Ireland were gearing their baby up for the Falcon Best Robotics Competition that was held over the weekend at Bowling Green State University. The team was confident the day before.

"I think we'll have one of the best designs," Caleb said.

Ireland was correct and the team eventually earned top prize for best use of engineering design process.

The "Robo-skins" also placed third in the overall competition which required the robot to complete tasks, such as moving around objects with a steel rod attached to the robot's front.

Their performance earned them a future trip to North Dakota to compete in a regional competition.

"Even if you fail, you win," Caleb said prior to Saturday's competition

The boys certainly did not fail and represented their school about as well as their football team that has earned umpteen times more attention.

And the skills they've practiced throughout the robot-building process align well with today's technological world. They essentially made a battery-powered rectangular piece of wood that can be controlled with an XBOX-like controller.

How they did it can hardly be understood by a mere journalist.

But one thing anyone can understand after spending just 30 minutes with the youngsters — who plan on dominating the competition the next two years — is that they all have bright futures.

They're all enthused about pursuing careers in the multi-billion dollar worlds of technology, computers and engineering.

If they already built a robot at 15- and 16-years-old, who knows what they're capable of?


Register SANDUSKY NORWALK FIRELANDS 411
NEWS EPAPER OBITUARIES SPORTS ENTERTAINMENT LIFESTYLE PHOTOS

EDUCATION @ f

Domo arigato

Roxanne the robot created by St. Mary students

ALISSA WIDMAN NEESE SANDUSKY NOV 17, 2014



widman@sanduskyregister.com

For years, seniors Nick Lewis and Keegan Murray have exercised their muscles on their school's swimming team.

More recently, the pair joined another competitive group at St. Mary Central Catholic High School — the robotics team, best equipped to exercise minds.

"It's a lot of fun," Murray said, tinkering with a remote control. "How often do you get a chance to do something like this?"

This past week, some team members showcased their latest creation for the Register.

They affectionately named the robot "Roxanne."

For six weeks, the students arrived an hour early to school every day to build her, using parts donated from Bowling Green State University.

On Thursday, the finished machine cruised smoothly across a classroom floor, aimed its hooked arm through an eyelet and lifted a plastic object into the air.

Roxanne's sole purpose: to conquer the Falcon BEST Robotics Competition this past weekend at Bowling Green State University main campus, a contest involving more than a dozen schools from northern Ohio.

The team set the bar high in 2013 — its debut year — when their robot "Charlotte" placed third.

This year, the team placed eighth out of 13 schools, and fell just three points short of placing seventh and qualifying for a regional competition in North Dakota.

To score points, students maneuvered their robot through a course, all while moving objects and constructing miniature windmills.

"It was a close match until the end," said team adviser Meagan Howman, who is also the school's guidance counselor.

Despite the loss, Roxanne provided a valuable learning experience, she said.



Additionally, participating in the competition has helped the team establish a presence at the school.

"Kids are recognizing it now," Howman said. "They realize that even if you're not going into engineering, or if you don't know everything about robotics, you can still lend a hand on the team."

St. Mary Central Catholic High School is one of just two area teams that competed in this year's Falcon BEST Robotics Competition. The other school, Port Clinton High School, placed third.

Appendix D: Falcon Best Recruitment Email & Recognition cont.

Falcon Best Recognition



HOME NEWS SPORTS LIFESTYLE OBITUARIES PHOTOS CLASSIFIEDS BUSINESS

Front Page Local News OH-MI-IN News AP News Opinion Farm Blotter Education

Education Headlines

- 'Harvey' comes to Rossford
- Otsego board recognizes student-athlete A.J. Digby
- Honor Roll: 11-09-13
- Financial aid night at Eastwood
- Elmwood eligible for national robotics event
- Student of the Month: 11-07-13

Elmwood eligible for national robotics event

WRITTEN BY SENTINEL-TRIBUNE STAFF
THURSDAY, 07 NOVEMBER 2013 09:28

The Falcon BEST Robotics Competition held on Oct. 26 in Anderson Area was intense with the crowds cheering and clapping for their favorite teams. The participants on the court were focused on making their teams' robots work. The contest, hosted by Bowling Green State University, was the culmination of six weeks of effort by nearly 300 students from 14 area middle and high schools. Gatekeeper 2013, this year's theme, required the teams' robots to move inventory in different stages. The higher the difficulty of movement, the more points the robots earned. The top-producing robot was designed and built by Findlay High School. Elmwood High School, coached by Eric Poffenbaugh, won second place, followed by the St. Mary Central Catholic (Sandusky) Panthers and McComb High School Panterbotz in third place. The Findlay team also won the Founder's Award and the Most Robust Machine Award. In addition to the robotics competition, teams were judged on marketing presentations, team displays, team spirit and sportsmanship, and their engineer's notebooks. The team that "best embodies the concept of Boosting Engineering, Science and Technology" and scores the most points in all elements of the contest earns the BEST Award. The Vanguard Technology Center Bot-tastic Inc. team of Fremont won the awards for BEST T-shirt, spirit and sportsmanship, exhibit and interview, engineering notebook and marketing presentation, which cemented the team winning the first place BEST Award, as well as the awards for engineering notebook, exhibit and interview, marketing presentation, T-shirt and spirit and sportsmanship. Perrysburg High School Creative Processing Unlimited, coached by Nate Ash, was the second-place BEST Award recipient, and Sylvania Schools Syborgs placed third in the BEST category. Five teams are eligible to go to the regional competition in Fargo, ND, Dec. 5-7: Vanguard Technology Center, Sylvania Schools Findlay City Schools (Millstream Career Center), Elmwood High School and McComb High School. "This robotics competition is an important step in promoting and supporting STEM (Science, Technology, Engineering and Mathematics) education at Bowling Green State University," BGSU President Mary Ellen Mazey announced during the opening ceremony. "This is a wonderful way to teach science, technology, engineering and mathematics with hands-on, problem-solving experiences. "We are so pleased to be a part of this exciting endeavor for these middle and high school students," she added. Students had to build a working robot in six weeks with the supplies and parts provided by the Falcon BEST Hub. Schools that participated included Port Clinton High School, St. Mary Central Catholic High School, Bowling Green High School, McComb High School, Sylvania Schools, Vanguard Technology Center, Elmwood Local Schools, Anthony Wayne Local Schools, Maumee Valley Country Day School, Patrick Henry High School, Findlay High School, Perrysburg High School and Penta Career Center.



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Cardinal Stritch robotics team advancing to Midwest competition

Posted: Nov 12, 2014 10:35 AM EST
Updated: Nov 12, 2014 10:35 AM EST

Posted by Trevor Ault CONNECT
Reporting by Steven Jackson CONNECT



Sixteen Cardinal Stritch High School students have been applying their critical thinking skills to build a robot, and they've already qualified for a competition in North Dakota next month.

The students built 'Marvin', a robot capable of picking things up and moving them across various distances.

The Robotics Club was established two years ago, and their skills have grown every year.

The team finished in second place overall at a competition at Bowling Green State University, qualifying them for the midwestern competition in North Dakota.

"We knew we were going to do okay, better than last year, but we were very thrilled and excited when we found out we have the ability to move on," said student Matthew Szymanski.

There will be 37 teams competing from across the midwest. In addition to building a robot, teams have to create a marketing plan and also fully document all their activities and ideas related to the robot.

Marvin will be put to the test December 4-6.

Appendix E: iEvolve with STEM Recognition

iEvolve with STEM Recognition


Register SANDUSKY NORWALK FIRELANDS 411
NEWS EPAPER OBITUARIES SPORTS HEALTH ENTERTAINMENT LIFESTYLE PHOTOS BLOG

EDUCATION @ f t

Students evolve

Program helps area children become citizen scientists

ALISSA WIDMAN NEESE SANDUSKY NOV 24, 2014



widman@sanduskyregister.com

In a few months, young students from two area districts should be well on their way to becoming full-fledged "citizen scientists."

For now, they're just getting their feet wet.

Except fifth-grader Elly Birmingham — she dived right in.

Literally.

On a chilly October day, she donned a pair of bulky waders and was quickly up to her knees in the waters of Mills Creek. She churned up its contents by kicking her booted feet.

But one kick too many sent Elly toppling into the stream.

"Luckily I brought a change of clothes," the Meadowlawn Intermediate School fifth-grader said, giggling.

One of the area's largest educational grants, [iEvolve with STEM](#), is thriving in its second year in Perkins and Sandusky elementary schools.

A recent project for fifth-graders: studying the ecosystems of Mills Creek, near the Sandusky golf course of the same name.

Among the tasks they completed:

- Collecting critters — crayfish, guppies, minnows, larvae and more — from Mills Creek to observe, and then returning them to the water.
- Examining water clarity using a turbidity tube.
- Analyzing the amount of oxygen, phosphorous and other elements in water samples, as an indicator of the water's overall health.

"Hopefully, at the end of this project, the students will have a deeper understanding of the environments around us," Meadowlawn Intermediate School teacher Erich Fahr said.

The iEvolve with STEM program's goal is to provide children with opportunities to collect and analyze data as "citizen scientists."

The "STEM" acronym stands for "Science, Technology, Engineering and Math" — in-demand, flourishing careers educators nationwide are urging students to pursue post-graduation.

As such, iEvolve with STEM not only showcases the fun, rewarding aspects of science careers, but also provides students real-world applications for their projects.

The Mills Creek program, for example, will culminate with students submitting their water data to [GLOBE](#) — Global Learning and Observations to Benefit the Environment — a worldwide research and conservation project.

They will also use the data for math problems, writing projects and other classroom activities.

"Everything we do is cross-curricular, and very hands-on," Osborne Elementary School teacher Linda Marks said. "Every student had an opportunity to put the waders on, record data, read protocols and manage equipment."

The National Science Foundation awarded a \$7.28 million grant to Bowling Green State University main campus to make the iEvolve with STEM program possible for five total years.

It was one of only six such awards distributed in the U.S. in 2012, and it's equally divided between Perkins and Sandusky schools, the two districts the university chose to sponsor.

Funding pays for supplies and training for local teachers.

Emily Vaccaro and Tanner Martin, two fifth-graders from Osborne Elementary School, said the program provides priceless opportunities.

"It was a great learning experience," said Emily, who hopes to become a marine biologist. "I really liked being able to go into the field, to learn about the animals, the water and the different instruments we used."

Partnerships with several other entities make the program possible, including Ohio State University, the Erie Soil and Water Conservation District, Lourdes University, University of Toledo, the Northwest Ohio Center for Excellence in STEM Education, the Toledo Zoo and Metroparks of the Toledo Area.

Appendix E: iEvolve with STEM Recognition cont.

iEvolve with STEM Recognition

Register SANDUSKY NORWALK TODAY'S ADS LOCAL GUIDE
NEWS EPAPER OBITUARIES SPORTS HEALTH ENTERTAINMENT LIFESTYLE PHOTOS

R REGISTER VIEWPOINT @ f t

iEvolve helps students learn about their world

ANONYMOUS JUN 2, 2015

More than 1,300 students from Perkins and Sandusky schools gathered at Sawmill Creek Resort recently for an iEvolve with STEM program. STEM stands for Science, Technology, Engineering and Math, which all added up to some serious fun for the "citizen scientists" at the program.

It has been widely reported that our nation's economic prosperity depends greatly upon our students' success in STEM fields. Making these sometimes challenging subjects fun, yet educational, ensures that promising future by opening students' eyes to the wonders of science.

The National Science Foundation awarded a \$7.3 million grant to Bowling Green State University to fund iEvolve with STEM programs for five years, starting in 2012. Judging by the smiles and interested looks on the students' faces at the Sawmill Creek event, the money is being well spent.

Getting students out of the classroom to participate in hands-on learning with actual experts in the field is a powerful teaching tool. The participants in the iEvolve with STEM program learned about real science problems -- such as the effects of the annual algal bloom on fish and wildlife in Lake Erie.

Perhaps a student learning about these real-world issues today will help make the world a better place for all of us tomorrow.

*

This Viewpoint reflects the majority opinion of the Register editorial board. Members of the board are: Tim Parkison, publisher; Matt Westerhold, managing editor; Mike Schaffer, chief design editor; Kathy Lilje, features editor; and LaTasha Webb, home delivery manager.


Register SANDUSKY NORWALK FIRELANDS 411
NEWS EPAPER OBITUARIES SPORTS HEALTH ENTERTAINMENT LIFESTYLE PHOTOS

EDUCATION @ f t

Science program keeps evolving

1,400 students from Perkins, Sandusky schools showcase grant-funded 'STEM' projects Tuesday at Sawmill Creek Resort

ALISSA WIDMAN NEESE HURON TWP. MAY 26, 2015



widman@sanduskyregister.com

Most children would be frightened by the sight of a buzzing honey bee zipping around their face. But not third-grader Aaron Welch.

In fact, a new science project has helped him grow quite fond of the often misunderstood insects.

On Tuesday, Aaron and Tracy Plue, his teacher at Meadowlawn Intermediate School, shared their newfound knowledge of bees with hundreds of area children — especially their favorite facts about the "waggle dance," a fascinating maneuver honeybees use to communicate.

Fellow third-grader Tyler Schultz chimed in with some valuable information, too.

"If you leave them alone, they won't sting you," he advised.

More than 1,300 students from Perkins and Sandusky schools gathered at Sawmill Creek Resort on Tuesday to showcase what they learned this year through the thriving [iEvolve with STEM program](#).

The acronym stands for "Science, Technology, Engineering and Math."

The grant-funded program provides children with opportunities to collect and analyze data as "citizen scientists," while also collaborating with professional scientists in the field.

Students in grades 3-5 participate, and data they gather will be submitted to real-world studies.

This year's projects: monitoring area frog populations, analyzing the quality of local bodies of water and studying pollinator and rain gardens.

Hancock Elementary School's frog-focused presentation was a popular spot Tuesday.

While fourth-graders Rayce Klein and Emerie Morgan distributed information, crafty classmate Mackenzie Funni created and doled out paper frogs.

The trio said they all learned plenty this school year, thanks to their research project.

"I think every school should do projects like this," Emerie said. "It's important to a lot of people."

The National Science Foundation awarded a \$7.3 million grant to Bowling Green State University main campus to fund iEvolve with STEM for five years, starting in 2012.

It was one of only six such awards distributed in the U.S. in [its debut year](#), and it's equally divided between Perkins and Sandusky schools, the two districts the university chose to sponsor.

Funding pays for supplies and training for local teachers.


But the projects are entirely hands-on, meaning students lead the learning activities.

Starting next school year, students will start publishing their findings online and in printed media.

"This is real world stuff — real science that can have a real impact on our lives," said Bob Midden, a Bowling Green State University administrator, professor and the program's principal investigator. "Students aren't learning unrelated facts anymore. They're contributing to real research."


Partnerships with several entities support iEvolve with STEM, including Ohio State University, the Erie Soil and Water Conservation District, Lourdes University, University of Toledo, the Northwest Ohio Center for Excellence in STEM Education, the Toledo Zoo and Metroparks of the Toledo Area.

Appendix F: iTraining Advertising



Attention Elementary Teachers!

iTraining



Professional Development opportunity:

Through a grant provided by the Martha Holden Jennings Foundation and the Northwest Ohio Center for Excellence in STEM Education, Beth H. Putnam, Putnam County Curriculum Coordinators, will be conducting iPad trainings at Putnam County ESC. These trainings are designed to train you in effective and engaging technology integration for your digital classroom. Topics will include:


- using mobile apps for professional collaboration;
- managing a digital classroom;
- implementation of mobile apps.

Thursdays – September 19, October 17, & November 14
4-7 pm at the Putnam County ESC

**Must attend all three sessions*


Snacks and beverages will be provided. **REGISTER NOW**, space is limited to 35 participants. *Please bring your own tablet/iPad. A limited number of iPads will be available for use.*

Please register at www.nwocenter.org/iTraining



Attention High School Teachers!

iTraining



Professional Development opportunity:

Through a grant provided by the Martha Holden Jennings Foundation and facilitated by the Northwest Ohio Center for Excellence in STEM Education, Gary Herman, Putnam County Curriculum Coordinator, will be conducting iPad trainings at the Putnam County ESC. These trainings are designed to train you in effective and engaging technology integration for your digital classroom. Topics will include:


- using mobile apps for professional collaboration;
- managing a digital classroom;
- implementation of mobile apps.

Thursdays – January 16, February 20, & March 27
4-7 pm at the Putnam County ESC


**Must attend all three sessions **Please note this class is NOT for beginners*

Snacks and beverages will be provided. **REGISTER NOW**, space is limited to 35 participants. *Please bring your own tablet/iPad. A limited number of iPads will be available for use.*


Please register at www.nwocenter.org/iTraining



iTraining




MARTHA HOLDEN
JENNINGS FOUNDATION



NWO
Northwest Ohio Center for
Excellence in STEM Education

Appendix G: NWO STEM E-Newsletters



Advancing science, technology, engineering, and mathematics education for people of all ages

Vol. 7, Issue #1 January 2015

In This Issue

K-16 STEM in the News

Toledo Technology Academy Ranked One Of The Best STEM Schools

Community STEM in the News

Maumee Valley Country Day School Teacher Receives STEM Grant from FirstEnergy

STEM Opportunities

Ohio JHS

Lowes' Toolbox For Education

NCTM Announces Two Grant Opportunities

Prospective Middle School Mathematics Teacher Course Work Scholarships

Back to Top

Professional Development Opportunity: Climate Hope



Presenters: Jodi Henry, BGSU & Xolita Learning & Sam Evans, Maumee High School


Climate change. It's real. It's bad, and it's not just for some good news... we CAN do something about it. Join us in conversation and action planning to reduce the consequences of climate change. Develop "Do Something" strategies at the individual, local, regional, and national levels to combat this issue. Learn how to talk with others about climate change by instilling **HOPE** over fear. We **HOPE** to see you at this season's Teachers, invite your students to attend this talk with you to enrich the conversation by including tomorrow's leaders!

Cost: \$10
Wednesday, January 28, 6:30 - 8 pm
 at 577 Foundation, 577 East Front Street, Painesville, Ohio

[Click here to download a flyer \(pdf\)](#)

[You may register at: www.577foundation.org](#)
 (Go to Get Involved/Take A Class/Climate Hope)

Blizzard Bags For K-12 Available Through INFOhio



While the Blizzard Bags for the different grade bands center on different themes, they all support Ohio's New Learning Standards, especially research standards. Following the Dimensions of Inquiry (<http://nctm.infohio.org/inquiry>) students create and explore essential questions, locate and evaluate information, apply and share information with others, and reflect on their learning.

Go to <http://blizzardbags.infohio.org> to see a list of all the Blizzard Bags and choose the appropriate grade level. Review the tabs, especially the Teacher Guide, where information can be found on standards, differentiation, assessments, cross-curricular connections, etc.

Electricity Common Core Workshop

Presented by Cal's Science Club

January 27, 2015
4:00 - 7:00 PM
Robert Fulton Ag Center



Engage Students' Interest

Bring hands-on science into the classroom with exciting activities that will captivate students' interest. Why just read about it when you could do it? Enjoy the shocking excitement kids will have learning while investigating and observing about electricity.

Build your own batteries!
Make your own generator!
Construct your own mini wind turbine!

Participants will connect Common Core to their curriculum, discover new ways to peak students' curiosity, and build models to demonstrate basic principles of electricity.

[Click here to download a brochure \(pdf\)](#)

For more information visit <http://www.calsciencclub.com>

P-20: Educating Ohio's Future




Ohio Educational Technology Conference
 February 19-20, 2015 | Greater Columbus Convention Center

The Ohio Educational Technology Conference is the largest P-20 state educational technology conference in the nation. Each year, more than 5,000 educational technology professionals and enthusiasts come together to explore the forefront of P-20 learning and innovation in Ohio.

For more information, visit <http://oetc.ohio.gov/home.aspx>

Lowes' TOOLBOX FOR EDUCATION



The Lowe's Toolbox for Education grant program Spring 2015 cycle is now open. The deadline for submitting applications for this grant cycle is **February 13, 2015 11:59pm EST**.

Lowe's will donate up to \$5 million to public schools and public school parent teacher groups - at as many as 1,000 different public schools per school year.

Lowe's Charitable and Educational Foundation (LCEF) is dedicated to helping teachers and parent-teacher groups achieve even more for schools.

<http://www.toolboxforeducation.com>

NCTM Announces Two Grant Opportunities



PreK-4 Pre-Service Teacher Action Research Grant

The National Council of Teachers of Mathematics is inviting proposals from pre-K teachers to support a collaborative action research project by university faculty, pre-service teachers, and classroom teachers seeking to improve their understanding of mathematics in pre-K-4 classrooms.

Primary emphasis will be placed on collaboration among a team of researchers consisting of university, elementary/middle school teachers, and pre-service teachers from the undergraduate ranks. Research should be designed, implemented, and completed with a focus on enhancing the teaching and/or learning of mathematics in grades pre-K-4.

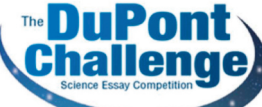
A single grant of up to \$3,000 will be awarded. Grant funds should be used to support project expenses to plan and carry out the research.

<http://www.nctm.org/resources/content.aspx?id=15479>

Prospective Middle School Mathematics Teacher Course Work Scholarships

The purpose of this scholarship is to provide financial support to college or university students preparing for teaching middle school mathematics. For 2014-2015, one scholarship, with a maximum value of \$3,000, will be awarded to a person currently completing their junior year of college or university, scheduling for full-time study at a four- or five-year college or university in the next academic year, and pursuing a career goal of becoming a certified teacher of middle school mathematics.

<http://www.nctm.org/resources/content.aspx?id=15689>




The DuPont Challenge, North America's premier science essay competition, encourages students to delve deep into interests in science, technology, engineering, and math with creativity and purpose. This is a growing world that faces new challenges each day, and DuPont wants students to share ideas for how science can help keep the global population supplied with food, safety, and clean energy.

Essays must be between 700 to 1,000 words in length, include a list of research sources, and fall under one of these four categories:

- Together, we can lead the world.
- Together, we can build a secure energy future.
- Together, we can protect people and the environment.
- Together, we can be innovative anywhere.

<http://thechallenge.dupont.com/essay/index.php>

2015 Discovery Education 3M Young Scientist Challenge




Now Open for Entries!

The Discovery Education 3M Young Scientist Challenge is the nation's premier science competition for grades 5-8. This one-of-a-kind video competition has sparked the imaginations of hundreds of thousands of students and enhanced science exploration, innovation and communication across the United States.

The Discovery Education 3M Young Scientist Challenge is now open for entries. By registering young scientists today, they'll get a jumpstart on the 2015 competition - including extra time to brainstorm, access to registrant tip emails, and more!

<http://www.youngscientistchallenge.com/about>

Call For Video Submissions - 2015 E4U2 Video Competition



The National Academy of Engineering has outlined 14 game-changing opportunities for the 21st century called the Grand Challenges for Engineering. They invite individuals or teams to review the 14 Grand Challenges, and then create and submit a 1 to 2 minute video that shows how achieving one or more of the NAE Grand Challenges for Engineering will lead to a more sustainable, healthy, secure, and/or joyous world!

The E4U2 Video Contest is open for video submissions from January 5, 2015 to March 2, 2015.

Visit www.e4u2contest.org to learn more!

[\[back to top\]](#)

NWO Hands-On STEM Activity

This month's hands-on activity is from Discovery Educators' Siemens Science Day

<http://www.siemensscienceaday.com/pdf/ICE-Cores.pdf>

Ice Cores

Hands-on Activity 4th - 6th grade students

Summary: Students will evaluate water ice balloons to reconstruct recent climate history by sorting different layers of evidence.

Overview: Topic: Climate Trends
 Real World Science: Topics: A comparison of the ice balloon to an ice core taken from a glacier. An understanding of how glaciologists remove ice cores from glaciers.

Objective: After completing this activity, students should have a better understanding of the way scientists study ice cores in order to learn the history of Earth's climate change.

Download a pdf of the complete hands-on activity by [clicking here!](#)

[\[back to top\]](#)

Share Your Story!

Thank you for your support of NWO, our programs, our activities, and our partners. Please send us updates, press releases, and news of STEM happenings at your school, district, or organization. Please submit to news@nwocenter.org. We are always looking for great STEM education stories to feature in upcoming newsletters.

Join NWO on Facebook

Follow NWO on Twitter

Find Even More Ohio STEM Education Resources


Visit our STEM clearhouse, nwocenterresources.org, for more STEM activities, programs, and information.

Print and eNewsletters from the past!

Looking for past articles from our print and eNewsletters?


[Click here](#) view and download from our Print Newsletter archives.
[Click here](#) view and download from our eNewsletter archives.

Appendix H: NWO STEM Inquiry Series Advertising



Northwest Ohio Center for
Excellence in STEM Education

**2014 - 15 NWO Inquiry Series
Presents the...**



**Connecting the Standards to Best
Mathematics Teaching Practice (K - 12)**

The **NWO Inquiry Math Mini-Series** will examine the standards for mathematical practices and the best practices for mathematics teaching through 4 evening meeting dates (16 hours of mathematics professional development).

Dates and Times: Wednesday's from 4:30 - 8:30 PM (4 hours per evening)

- October 29, 2014
- November 12, 2014
- November 19, 2014
- December 3, 2014

Price and Space Limitations:

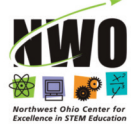
- \$160.00 total for all four events. Teacher's must sign up and commit to all four meetings. Meals and snacks provided for all events.
- **Space is limited** to 20 teachers in the K - 5 elementary session and 20 in the 6 - 12 secondary session. Both sessions meet on the dates listed above but in separate classrooms.

Register and pay today to guarantee your spot in the training!

Location: Life Science Building, Bowling Green State University

Instructors: Each mini-series will feature two instructors who will co-teach the mini-series session. One instructor is a Mathematics Education faculty member at BGSU and the other is a local K - 12 mathematics educator with current teaching experience in the classroom.

- K - 5 Elementary
 - Dr. Gabriel Matney, Bowling Green State University
 - Tami Matney, Imagine Clay Avenue Community School
- 6 - 12 Secondary
 - Dr. Jonathan Bostic, Bowling Green State University
 - Diane Mott, Liberty Center Schools




Northwest Ohio Center for
Excellence in STEM Education


[Click here](#) to register for the Math Mini-Series

For more information visit <http://cosmos.bgsu.edu/inquiryseries/index.htm> or e-mail nwo@bgsu.edu with questions.

Appendix H: NWO STEM Education Inquiry Series Advertising cont.



2015 NWO Inquiry Series
Presents the...



Science Mini-Series

From Science Activity to Supercharged Inquiry

For Grades 3-8 Teachers, Pre-Service Teachers, Administrators, and Informal Educators

- Are you searching for ways to go beyond simple science activities and further engage your students with supercharged science inquiry lessons that integrate powerful literacy strategies?
- Are you looking to better prepare your students for the more rigorous learning and assessment expectations that exist today?
- Do you need strategies for grasping your students' understanding of concepts in order to promote higher achievement in your classroom?

If so, you will want to be a part of this four evening Science Mini-Series!

Dates and Times: All dates will be from 4:30-7:30pm (3 hours per evening)

- January 8, 2015
- January 15, 2015
- February 3, 2015
- February 12, 2015

Price and Space Limitations:

- \$160.00 total for all four events. Teacher's must sign up and commit to all four meetings. Meals and snacks provided for all events.
- **Space is limited** to 40 participants

Register and pay today to guarantee your spot in the training!

Location:
BGSU at Levis Commons
1655 N. Wilkinson Way
Perrysburg, OH 43551

Facilitators:

Dr. Jodi Haney, Jodi recently retired from Bowling Green State University where she held a joint appointment in the departments of Teaching and Learning and Environmental Sustainability. She is now an educational consultant and owner and operator of Xcite Learning. Jodi's journey in education began as a middle and high school science teacher in the public schools where she served for nearly a decade. She then spent the next 21 years on faculty at BGSU. Dr. Haney's research and professional work focuses on attitudes, motivation, and engagement needed for deep learning. During this time, she taught numerous science education courses, curriculum courses, and courses in environmental studies and sustainability at BG. A productive grant writer, Jodi has earned and directed over 20 million dollars in local, state, and federal funding to support science and environmental education programs. As an educational consultant, Haney has worked with well over 100 Ohio schools to date. Haney believes that teaching is the essence of her identity and she is passionate about her role to inspire the love of learning through active, engaged, and authentic experiences both within the classroom and the local community.

Page Keeley, Page works as an independent consultant, speaker, and author providing professional development to school districts and organizations in the areas of science, mathematics and STEM diagnostic and formative assessment; setting learning targets and success indicators; SAIL Cycle- Science Assessment, Instruction, and Learning Cycle; deep dives into standards with curriculum topic study (CTS); designing instruction for conceptual change; linking formative assessment, inquiry, and engineering; instructional coaching, and linking science practices and literacy in the NGSS and Common Core. Page is a past NSTA President and prolific author of seventeen national best-selling books, including nine books in the Uncovering Student Ideas in Science series, four books in the Curriculum Topic Study series, and three books in the Science and Mathematics Formative Assessment- 75 Practical Strategies for Linking Assessment, Instruction, and Learning series. In addition, a collection of her Science and Children K-5 science formative assessment articles, along with study and reflection questions for professional learning groups, was recently published by NSTA: *What Are They Thinking? Promoting Elementary Science Learning Through Formative Assessment*. She is a frequent invited speaker at regional and national conferences on the topic of formative assessment in science and teaching for conceptual change. We are fortunate and thrilled that she will be facilitating a portion of this mini-series!

Key Professional Development Learning Targets:

Learn how to effectively use all of these tools and build a repertoire of strategies that can not only promote learning, but also change the culture of your classroom!

- Uphold the basic tenets of the **5E Instructional Model** (this is embedded in Ohio's New Learning Standards for Science).
- Examine the levels of **inquiry**, from cookbook inquiry (using basic processing skills) to guided and open inquiry including student investigation, citizen science research, problem-based learning (PBL) and more.
- Integrate inquiry that goes beyond basic skills to meet the more challenging state and national **science standards and assessment** expectations.
- Integrate **common core reading strategies** into the 5E model in ways that **CONTRIBUTE** to (vs. distract from) scientific inquiry.
- Align classroom activities to BOTH national and state standards and assessment guidelines, including both **content and skills-based standards** (inquiry, technology, engineering practices).
- Infuse "on-line science simulation tools", free, internationally benchmarked online science **performance-based assessments**, and the free Nearpod presentation tool (with embedded assessment and feedback features - works on all platforms and devices) into the 5E Picture Perfect Science Lessons to supercharge the inquiry experience even further.
- Learn how to properly use **formative assessment** probes and strategies to inform classroom instruction, address student misconceptions about science concepts and use student ideas to **design learning experiences that promote deep and lasting understanding**.

Registration Information

Fee:

- \$160 (for all four sessions). The registration fee must be received in full before the first meeting date.
- Check with your district to see if you can use Title I Part A funds, Title III funds or School Improvement Funds to pay for this training.

[Click here](#) for payment information. (scroll to the bottom of the page).

Registration Fee Includes:

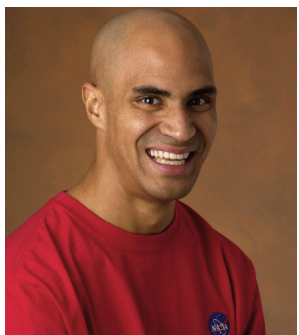
- Dinner and snacks each evening.
- Contact Hour Certificate for the entire series.
- Teaching Resources and hands-on materials.
- All participants will receive "Picture Perfect Science Lessons" (\$35 value), an award-winning program loaded with science lessons that combine science and reading in a natural way and provides easy-to-grasp background in physical science, life science, and Earth and space sciences. The classroom-tested lessons are aligned with both national and state science standards.
- All participants will also have the opportunity to purchase (at a reduced rate) "Uncovering Student Ideas in Science" Series and "Science Formative Assessment" Series by Page Keeley. These resources include science content probes and instructional strategies in order to address the need to balance the opportunity to learn, which includes assessment for learning with assessment of learning. They provide teachers with the content specific tools they need to bring about conceptual change.

[Click here](#) to register for the Science Mini-Series

For more information visit <http://cosmos.bgsu.edu/inquiryseries/scienceminiseries.htm> or e-mail nwo@bgsu.edu with questions.



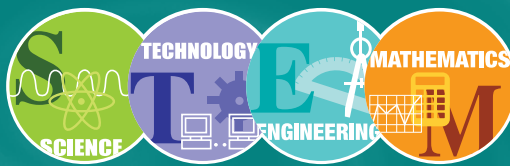
Appendix I: NWO Symposium Advertising & Recognition



Courtesy NASA/JPL-Caltech

Keynote Speaker
Kobie Boykins, NASA Engineer

2014 NWO Symposium



Northwest Ohio Symposium on Science, Technology, Engineering, and Mathematics Teaching

Professional Development for preK-12 in-service and pre-service teachers, informal educators, and college faculty.

Saturday, November 1, 2014

8:30 am - 4:00 pm Olscamp Hall @ Bowling Green State University

Featuring a keynote presentation by NASA Engineer Kobie Boykins! A dynamic young engineer at NASA's Jet Propulsion Laboratory, Kobie Boykins is on the front line of Mars exploration. He has overseen the designing, building and testing of mechanisms and other mechanical hardware for a wide range of robotic space vehicles. He designed the solar arrays that powered the Mars Exploration Rovers, Spirit and Opportunity, and currently supervises the mobility and remote sensing teams for the Mars Science Laboratory, better known as the Rover Curiosity. In 2013, Boykins was awarded a NASA Exceptional Achievement Medal, one of the highest honors given to NASA employees and contractors. A featured National Geographic explorer and presenter, Boykins is also a featured scientist for Dr. Robert Ballard's JASON project educating youth in STEM.

\$35 (deadline Oct. 24); \$45 onsite • Scholarships for free attendance are available for pre-registered undergraduates/graduates • Multiple Participant Discount (\$30/person) for 5 or more participants from the same school

Registration Fee Includes:

- 7 hours of high quality professional development
- Keynote address by Kobie Boykins, NASA Engineer
- Conference bag
- Light breakfast & full lunch

Contact Hour Certificate Available



For more information or to register visit: <http://nwocenter.org/nwoSymposium>

4 x 6 Postcard



This program is presented in association with National Geographic Live, a mission program of speakers and events that brings the National Geographic experience to communities worldwide.

Sponsored in part by



141550_082014_7500

Appendix I: NWO Symposium Advertising & Recognition cont.

Recruitment Email - Attendee

2014 NWO Symposium



Northwest Ohio Symposium on Science, Technology, Engineering, and Mathematics Teaching

Professional Development for preK-12 in-service and pre-service teachers, informal educators, and college faculty.

2014 NWO Annual Symposium on Science, Technology, Engineering, and Mathematics Teaching

Online registration is now open!
[Click here to register](#)

November 1, 2014 8:30 am - 4:00 pm

**Olscamp Hall @
Bowling Green State University**


Registration Fee:

- \$35 (deadline Oct. 24); \$45 onsite
- Scholarships for free attendance are available for pre-registered undergraduates/graduates
- *Multiple Participant Discount (\$30/person) for 5 or more participants from the same school*

Registration Fee Includes:

- 7 hours of high quality professional development
- Keynote address by Kobie Boykins, NASA Engineer
- Conference bag
- Light breakfast and full lunch

Contact Hour Certificate Available




Featuring a keynote presentation by NASA Engineer Kobie Boykins!


A dynamic young engineer at NASA's Jet Propulsion Laboratory, Kobie Boykins is on the front line of Mars exploration. He has overseen the designing, building and testing of mechanisms and other mechanical hardware for a wide range of robotic space vehicles. He designed the solar arrays that powered the Mars Exploration Rovers, Spirit and Opportunity, and currently supervises the mobility and remote sensing teams for the Mars Science Laboratory, better known as the Rover Curiosity. In 2013, Boykins was awarded a NASA Exceptional Achievement Medal, one of the highest honors given to NASA employees and contractors. A featured National Geographic explorer and presenter, Boykins is also a featured scientist for Dr. Robert Ballard's JASON project educating youth in STEM.






Photo courtesy NASA/JPL-Caltech

For more information or to register visit:
<http://nwocenter.org/nwoSymposium>



Northwest Ohio Center for Excellence in STEM Education


 **NATIONAL GEOGRAPHIC LIVE!** This program is presented in association with National Geographic Live, a mission program of speakers and events that brings the National Geographic experience to communities worldwide.

Sponsored in part by     with support from 

Appendix I: NWO Symposium Advertising & Recognition cont.

Recruitment Email - Presenter

Deadline: August 31, 2014



Northwest Ohio Symposium on
Science, Technology, Engineering,
and Mathematics Teaching

The Northwest Ohio Center for Excellence in STEM Education

brings you the 2014 NWO Symposium on Science,
Technology, Engineering, and Mathematics Teaching

Saturday, November 1, 2014
8:30 AM - 4:00 PM
Olscamp Hall, Bowling Green State University
Bowling Green, OH 43403

Featuring the 2014 keynote speaker:
Kobie Boykins, NASA Engineer

You can learn more about Kobie at
<http://events.nationalgeographic.com/events/speakers-bureau/speaker/kobie-boykins/>

Presentation Proposal Information

Thank you for your interest in presenting at the 2014 NWO Symposium on Saturday, November 1st at Bowling Green State University. To submit a presentation proposal, please click the link below and complete the online form. **Please review the Symposium Strands listed below; you will need to choose one of these strands for your presentation.**

[Click Here To Apply by August 31](#)

All presentation proposals must be submitted by AUGUST 31st at 5:00PM. Beginning September 1, NWO staff will review the proposals and notify prospective presenters if their proposal has been accepted. Accepted presenters will be not be charged a registration fee.

For more information visit the Symposium website at nwocenter.org.

Questions? Contact nwo@bgsu.edu.

2014 NWO Symposium Strands

- 1. Inquiry in the College Classroom: Enhancing the Undergraduate Experience**

Inquiry-based teaching practices and active learning strategies are often difficult to implement in the high-enrollment courses that tend to make up much of the early undergraduate experience. These difficulties, however, are not insurmountable. *Sessions in this strand will demonstrate how inquiry-based practices and active learning strategies can effectively be implemented in undergraduate STEM courses, especially those that are high-enrollment.*
- 2. STEM in the Community: Thinking Outside the Classroom**

Making STEM relevant for students serves an instrumental purpose in improving motivation and learning. Showing students the applications of STEM outside the classroom is a great way to get them engaged. There are dozens of valuable community resources in northwest Ohio that can supplement and support your STEM teaching efforts. *Sessions in this strand will demonstrate some of the community resources that are available, and how they can be integrated into the classroom.*
- 3. Putting Creativity to Work: Teaching STEM With Innovation**

Creativity and innovation might aptly be described as the drivers of educational growth and success. New and innovative approaches to STEM teaching and learning result in deeper and more meaningful STEM learning for students. *Sessions in this strand will explore some innovative ways to teach STEM.*
- 4. Integrating Technology in the Classroom**

Sessions in this strand will focus on how to use technology in STEM teaching focusing more on the technology being used than a specific content area.
- 5. Teaching and Learning in SCIENCE**

Sessions in this strand will focus on deepening science content and/or exploring interesting and effective ways to teach science.
- 6. Teaching and Learning in MATHEMATICS**

Sessions in this strand will focus on deepening mathematics content and/or exploring interesting and effective ways to teach mathematics.
- 7. Teaching and Learning in ENGINEERING**

Sessions in this strand will focus on deepening engineering content and/or exploring interesting and effective ways to teach engineering.

Recruitment Email - Vendor

Deadline: August 31, 2014



Northwest Ohio Symposium on
Science, Technology, Engineering,
and Mathematics Teaching

The Northwest Ohio Center for Excellence in STEM Education

brings you the 2014 NWO Symposium on Science,
Technology, Engineering, and Mathematics Teaching

We are seeking vendors for the upcoming 2014 event

Saturday, November 1, 2014
8:30 AM - 4:00 PM
Olscamp Hall, Bowling Green State University
Bowling Green, OH 43403

Featuring the 2014 keynote speaker:
Kobie Boykins, NASA Engineer

You can learn more about Kobie at
<http://events.nationalgeographic.com/events/speakers-bureau/speaker/kobie-boykins/>

Vendor Registration and Fee Information

Please follow the link below to apply as a vendor for this outstanding educational opportunity expected to draw over 350 preK-16 educators!

[Click Here to Register by August 31](#)

After your registration has been submitted, you will receive a confirmation e-mail for your records. Closer to the event date, you will receive an email with further information regarding the symposium.

If you are also interested in presenting, please [click here](#) to submit a presentation proposal by August 31.

For more information, please contact nwo@bgsu.edu.

Registration Fee:

- For-Profit Businesses: \$100
- Non-Profit Organizations: \$25 (501C3 may be requested as proof of non-profit status)

Registration Fee Includes:

- ONE eight foot table
- Meal Tickets for up to 3 people (additional tickets can be purchased on site for \$10 each)
- Limited Access to Electricity
- Wireless Internet Access

Additional Items:

- Additional Meal Ticket: \$10 (paid on-site at the event)
- Additional Table: \$10 (pre-paid as part of registration payment)

Payment Information:

- Option 1: [Credit Card Payment](#) (Link also available on the vendor registration webpage)
- Option 2: Mail check or money order **payable to BGSU** to address below:

NWO Symposium
241 Math Science Bldg.
Bowling Green State University
Bowling Green, OH 43403

Appendix I: NWO Symposium Advertising & Recognition cont.

NWO Symposium Advertising


BGSU COLLEGE OF ARTS AND SCIENCES

ABOUT UNDERGRADUATE GRADUATE ACADEMIC UNITS STUDENTS FACULTY/STAFF ALUMNI

COLLEGE OF ARTS & SCIENCES

205 Administration Building
Bowling Green State University
Bowling Green, OH 43403
419-372-2015
contactcas@bgsu.edu

Join Us On Facebook



2014 NWO Symposium

NASA ENGINEER TO SPEAK AT BGSU SYMPOSIUM ON NOVEMBER 1ST

NASA Engineer Kobie Boykins will be the keynote speaker for the Northwest Ohio Center for Excellence in STEM Education annual Symposium on STEM [science, technology, engineering and mathematics] Teaching on November 1. The event will be held on the BGSU campus from 8:30 – 4:00 pm. The Symposium is sponsored in part by BGSU's College of Arts and Sciences; College of Technology, Architecture and Applied Engineering; College of Education and Human Development; Ohio Northern University; The Anderson's, and BP. [READ MORE](#)

BGSU
Campus Update
Bowling Green State University Campus News

1. BGSU Fall Preview Day this Saturday, Oct. 18
25. Performers and MC's needed
26. HABIT Open Forum - Business Automation Spotlight
27. Math 2130/2150 Placement Test
28. Throw Balls to Save Balls for Testicular Cancer
29. Aid for Change first general body meeting
30. Tickets to Camelot - Oct. 24 at 8 p.m.
31. BGSU Police Lt. John Shumaker to retire
32. 2014 NWO Annual Symposium on STEM Teaching
33. Make a playlist and win money for your org.

32. 2014 NWO Annual Symposium on STEM Teaching

Professional Development for PreK-12 In-service and Pre-service Teachers, Informal Educators and College Faculty.

Saturday, Nov. 1, from 8 a.m. - 4 p.m.
Olscamp Hall at Bowling Green State University

Special Rate for BGSU Faculty & Staff: \$20
Scholarships for FREE attendance are available for pre-registered undergraduates.

Featuring keynote speaker Kobie Boykins, an engineer at NASA's Jet Propulsion Laboratory. He has overseen the designing, building and testing of mechanisms for a wide range of robotic space vehicles. He designed the solar arrays that powered the Mars Exploration Rovers, Spirit and Opportunity, and currently supervises the mobility and remote sensing teams for the Mars Science Laboratory, better known as the Rover Curiosity. A featured National Geographic explorer and presenter, Boykins is also a featured scientist for Dr. Robert Ballard's JASON project educating youth in STEM.

For more information or to register, [click here](#).



THE PAPER, WITHOUT THE PAPER

Oct. 27, 2014

Woman shot twice at Toledo apartment

A woman was shot twice by a male suspect Sunday at a Toledo apartment building.

The woman, who has not been identified by Toledo police, was shot in the chest and leg. She was taken to ProMedica Toledo Hospital, and her injuries appeared serious, police said.

The incident occurred before noon at 3544 Grantley Rd., between Monroe Street and Groveland Road.

Toledo police identified a man as a suspect in the shooting, but he had yet to be arrested or publicly named Sunday afternoon.

The suspect's relationship to the victim was unknown, police said.

Forum on Springfield school levy issues set

Two parents in the Springfield Local Schools district have organized a community forum today regarding the district's levy requests on the Nov. 4 ballot.

The forum's purpose is to provide

information about the school district and the levy, and "hopefully persuade more people to support" Springfield Local Schools, according to a flyer Tom and Lindsay Christie created for the event.

The Springfield schools' two proposals on the ballot are a new, 7.9-mill continuing levy for operating expenses and a five-year renewal of a 1.35-mill tax for permanent improvements.

The forum will begin at 7 p.m. in Providence Lutheran Church on Airport Highway near Albon Road.

Toledo leaf collection gets under way today

Toledo's municipal leaf pickup will start today with collections on curbed and uncurbed streets in the 43613 ZIP code area, the city division of streets, bridges, and harbor said. Crews should extend into the 43623 ZIP code area by Tuesday, officials said.

Only loose leaves will be collected. Leaves should not be bagged and should be kept free of twigs, branches, wood, or any type of trash or debris, which may damage leaf-collecting machinery and thus delay pickups, the city

cautioned.

Officials also ask people to place their leaves at the edge of the roadway, not in the street, to avoid creating a traffic hazard or interfering with drainage.

NASA engineer to talk Saturday at BGSU

BOWLING GREEN — A NASA engineer will give the keynote address at a Bowling Green State University symposium highlighting science, technology, engineering, and mathematics.

Kobie Boykins, a jet propulsion laboratory engineer, will speak Saturday at the university's Northwest Ohio Center for Excellence in STEM Education event. The symposium runs from 8:30 a.m. to 4 p.m. at Olscamp Hall.

The solar arrays powering the Mars Exploration Rovers were designed by Mr. Boykins, who supervises work on the Curiosity rover. The cost to register in advance for the event, which includes more than 70 informational sessions, is \$35. On-site registration is \$45. For more information, call 419-372-2718.

Appendix I: NWO Symposium Advertising & Recognition cont.

NWO Symposium Recognition

Sentinel-Tribune

HOME ▾ NEWS ▾ SPORTS ▾ A&E ▾ OBITUARIES COMMUNITY ▾ OPINION ▾ MULTIMEDIA ▾

Home ▸ Community ▸ Education

NASA engineer to speak at STEM symposium at BGSU

Story Comments Print Font Size:

Posted: Thursday, October 23, 2014 8:56 am

By Sentinel-Tribune Staff

NASA engineer Kobie Boykins will be the keynote speaker for Bowling Green State University's Northwest Ohio Center for Excellence in STEM (science, technology, engineering and mathematics) Education's annual symposium on Nov. 1.

The event will run from 8:30 a.m. to 4 p.m. inside Olscamp Hall.

The preregistration fee is \$35 and onsite registration is \$45.

There is a special online registration rate for BGSU faculty of \$20. A multiple participant discount is also available for \$30 per person for five or more participants from the same school.

Boykins, an engineer at NASA's Jet Propulsion Laboratory, is on the front line of Mars exploration. He designed the solar arrays that powered the Mars Exploration Rovers, and currently supervises the mobility and remote sensing teams for the Mars Science Laboratory, better known as the Rover Curiosity.

In his keynote presentation, "Exploring the Red Planet: Engineering, Innovation, and Perseverance," Boykins will share his passion for space exploration by recounting the design and construction of the rovers and the story of their successful missions. He will also describe how he overcame the challenges and failures that inevitably arose during the development of the Mars Rovers.

In 2013, Boykins was awarded a NASA Exceptional Achievement Medal, one of the highest honors given to NASA employees and contractors. He was also a featured scientist for Dr. Robert Ballard's JASON project on educating youth in STEM.

Roger Gluckin, of Rossford, has been invited to lead a presentation on how to bring science to life for students over the Internet. Gluckin is a science teacher at a statewide virtual school. This year, more than 70 sessions will be offered encompassing seven STEM teaching and learning strands.

The symposium is sponsored in part by BGSU's College of Arts and Sciences; College of Technology, Architecture and Applied Engineering; College of Education and Human Development; Ohio Northern University; The Anderson's, and BP.

For more information and to register, visit the Northwest Ohio Center for Excellence in STEM Education website or call 419-372-2718.

Appendix J: Ohio JSHS Advertising & Recognition



imagine.design.create



March 18-20
2015

52nd

Annual Ohio Junior Science & Humanities Symposium

hosted by Bowling Green State University

Call for High School Research Papers and Posters

Sponsored by the Northwest Ohio Center for Excellence in STEM Education (NWO) and The School of Teaching and Learning at Bowling Green State University.

In cooperation with The Academy of Applied Science and with the support of the Departments of the Army, Navy, and Air Force.

Important Deadline ~ February 20, 2015

- Online registration is required for all participants including Paper Presenters, Poster Presenters, Teachers, Student Delegates.
- Registration fee: \$25 per student
- **Poster Presenters** must submit an **Abstract during the registration process.**
- **Paper Presenters** must submit an **Abstract** and a copy of the **Research Paper during the registration process.**



BGSU

Visit our web site for more information
www.ojshs.org

The National Association of Secondary School Principals has placed this program on the NASSP National Advisory List of Student Contests and Activities for 2014-2015

Recruitment Email




Appendix J: Ohio JSHS Advertising & Recognition cont.

Ohio JSHS Facebook & Twitter Postings



Appendix J: Ohio JSHS Advertising & Recognition cont.

Recruitment Email Sample



Registration is now OPEN!

Join us for the 52nd Ohio Junior Science and Humanities Symposium.

**March 18-20, 2015
at Bowling Green State University**

Student Presenter and Delegate Registration Deadline is Friday, Feb. 20, 2015

Ohio JSHS **Student Presenters and Delegates** - [Click here](#) to register.

Teacher Registration Deadline is Friday, Feb. 20, 2015




Ohio JSHS **Teacher Chaperones/Advisors** - [Click here](#) to register.

Parents and Guests Registration Deadline is Friday, March 13, 2015

Ohio JSHS **Parents and Guests** - [Click here](#) to register.

More information on the 2015 Ohio JSHS can be found at http://cosmos.bgsu.edu/nwo_ojshs/

Questions should be directed to NWO (nwo@bgsu.edu).

The National Association of Secondary School Principals has placed this program on the NASSP National Advisory List of Student Contests and Activities for 2014-2015

Ohio JSHS Recognition

THE BG NEWS

ESTABLISHED 1920 | An independent student press serving the campus and surrounding community
VOLUME 94, ISSUE 78 Monday, March 23, 2015

High school students honored for research

University hosts annual science symposium

By **Jon Stinchcomb**
Reporter

This past week the University served as home to the 52nd Annual Ohio Junior Science and Humanities Symposium, which brought together the state's leading high school students, each tasked with presenting an original scientific research project.

Originating over 50 years ago, the JSHS Program was designed to promote, encourage and recognize the nation's best scientific researchers at the high school level.

First place and the grand prize of a \$2,000 scholarship went to Pallavi Lanka of Sylvania Southview High School.

"I'm really, really excited," Lanka said. "I still can't believe that I got first place because there were so many amazing projects this year."

Lanka's research tested a new potentially more efficient production method of algal biofuel, an alternative to fossil fuels.

"Overall, I'm so happy with this research field," she said "It's something which I really want to do in the future, so I felt like it would be interesting if I could start doing that."

Lanka said her biggest inspiration is her high school science teacher, Blythe Tipping.

"I know how hard she has worked and I know how down on herself she has been," Tipping said. "It's torture for me because I'm saying the names and I don't see her name and I'm like, 'Oh, there's no way first, no way first, because you see these presentations,' and when it came across — it's just — you're so excited for the kids. It's just amazing."

"I didn't think I had it in me," Lanka said. "I'm really happy that my hard work and all my stress paid off this year."

Also joining Lanka at that National JSHS will be second place winner Srinath Seshadri of Village Academy.

"It feels really good," Seshadri said. "I'm glad I participated and it was a really fun experience."

Seshadri won a \$1,500 scholarship and will also be presenting his work at the next level. His research studied the cloning and sequencing of a particular gene that could be important to the future of bioethanol, another alternative source of energy.

"I've been working on the research for like three years

HOLLAND-SPRINGFIELD JOURNAL — April 7, 2015 — Page 7

Southview students take honors at science and humanities symposium



Front row, from left, are Shival Sinha, Sabrina Ayoub, Alan Fong, Allison Clausius, Francis Mok, Pallavi Lanka. Back row are Alec Morrissey, Eric Zhu, Julian Liber, Melissa Liang, Michael Burchfield, Valentina Carr, and teacher Blythe Tipping. Mary Grace Rees is not shown.

Southview High School students took numerous awards at the Ohio Junior Science and Humanities Symposium at Bowling Green State University on March 18 to 20.

Research Paper awards were presented to Pallavi Lanka, first place; Eric Zhu, fifth place, and Allison Clausius, who was named a second alternate.

Research Poster awards for the 9-10 grade level were presented to Alec Morrissey, first place; Mary Grace Rees, second place, and Sabrina Ayoub, who earned honor-

able mention. In the 11-12 grade level, Michael Burchfield received an honorable mention.

More than 90 students from throughout Ohio presented original research on topics in all areas of science. The eight paper sessions took place on Thursday and Friday awarding more than \$18,000 in scholarship money and cash awards. The top three paper presenters received scholarships and an all-expense paid trip to the National JSHS in Hunt Valley, Maryland, April 29 to May 2.

Sponsorship awards come from the United States Army, Navy, and Air Force, the Northwest Ohio Center for Excellence in STEM Education, BGSU's College of Arts and Sciences, College of Education and Human Development, Department of Biological Sciences, Department of Chemistry, and Department of Physics and Astronomy.

The Army Educational Outreach Program (AEOP) and the Academy of Applied Science sponsor the National JSHS as well as the 48 regional symposia.


Appendix J: Ohio JSHS Advertising & Recognition cont.

Ohio JSHS Recognition

BGSU Journalism 4200

High school students awarded in research competition

March 23, 2015 by Jon Stinchcomb



For some of Ohio's best and brightest young minds, an arduous yet rewarding journey of scientific curiosity and academic achievement came to an end this past Friday. For the top three among them, however, one more challenge remains ahead.

Bowling Green State University served as home to the 52nd Annual Ohio Junior Science and Humanities Symposium (JSHS), which brought together the state's leading high school students, each tasked with presenting an original research project in the STEM (science, technology, engineering, math) fields.

"There's very little like this around the country," said Emilio Duran, Ohio JSHS director. "There's a lot of science fairs, but this is way beyond that."

The symposium is also a prestigious competition, where students contend for a variety of notable awards, scholarships and a chance to advance to compete at the National JSHS.

"It's high stakes," Duran said. "The topics and the level of these presentations - it's unbelievable. These kids are remarkable."

The JSHS Program was first developed by the U. S. Army Research Office over 50 years ago to promote, encourage and recognize the nation's best scientific researchers at the high school level. It now receives the combined financial sponsorship of the Army, Navy and Air Force.

The Ohio JSHS was hosted by the Northwest Ohio Center for Excellence in STEM Education and the School of Teaching and Learning at BGSU.

"It's just an honor to be involved with these students," Duran said. "We have an opportunity to see what the top kids in Ohio are doing in our own backyard."

First place and the grand prize of a \$2,000 scholarship went to Pallavi Lanka of Sylvania Southview High School.

"I'm really, really excited," Lanka said. "I still can't believe that I got first place because there were so many amazing projects this year."

Lanka's research tested a new, potentially more efficient, production method of algal biofuel, an alternative to fossil fuels.

"Overall, I'm so happy with this research field," she said. "It's something which I really want to do in the future, so I felt like it would be interesting if I could start doing that."

Lanka said her biggest inspiration is her high school science teacher, Blythe Tipping.

"She inspires us every day to just go and search for our answers, instead of giving it to us," Lanka said. "It's really nice that she's been one of those people that inspired me."

"I know how hard she has worked and I know how down on herself she has been," Tipping said. "It's torture for me because I'm saying the names and I don't see her name and... when it came across - it's just - you're so excited for the kids. It's just amazing."

"I didn't think I had it in me," Lanka said. "I'm really happy that my hard work and all my stress paid off this year."

Tipping will be continuing to help Lanka prepare for the National JSHS.

"I got to go last year to the national level for the first time - blew me away," Tipping said. "Oh my gosh, I mean you have the top kids from all over in one place and it is really intimidating."

She said they will definitely be doing some more practices before making their way through.

"It's very fast-paced and incredibly fascinating - so much fun - but they've got a lot of work," Tipping said. "They have got to be prepared for anything."



Srinath Seshadri won second place at the Ohio JSHS.

Also joining Lanka at that National JSHS will be second place winner Srinath Seshadri of Village Academy.

"It feels really good," Seshadri said. "I'm glad I participated and it was a really fun experience."

Seshadri won a \$1,500 scholarship and he, too, will be presenting his work at the next level.

His research studied the cloning and sequencing of a particular gene that could be important to the future of bioethanol, another alternative source of energy.

"I've been working on the research for like three years now and it generally just stemmed from a concern for the environment," he said. "I do research on cellulosic bioethanol and it's kind of been blossoming into something."

Ohio's final representative at the national competition will be Ethan Polster of Gahanna Lincoln High School. He won third place at OJSHS, earning a \$1,000 scholarship.

"This is a great event and that's pretty much exactly what I was going for," Polster said. "I've worked for a long time on the project and it feels good to go here where there are lots of other people like you - present, get recognized for the research you've done, and really just the whole experience, the research - everything about it was great."

Polster's research examined light data from stars within the Kepler telescope's field of view to test the possibility that they could be more accurately classified.

"I've always been a huge fan of space," he said. "I'm an astronomy person. I love astronomy, astrophysics, cosmology and learning about space."



Ethan Polster won third place at the Ohio JSHS.

A teacher connected Polster with Steve Howell of the Ames Research Center. Howell, a project scientist on NASA's Kepler Team, helped Polster with the idea for the project.

"[Howell] answered my questions when I had them, but really he just sort of set me loose on this Kepler problem," Polster said.

Polster will be presenting his research in the poster division of the National JSHS.

"For every problem there is a solution, I always say," BGSU President Mary Ellen Mazey said in a speech to the participating students. "And for every challenge out there, there's an opportunity. If you think about that in life, then you will go far. You will go far from your competition here because you've all already won a great deal."

Appendix K: STEM in the Park Advertising & Recognition



Free Family Event

SAVE TIME... Pre-register online!
at www.STEMinthePark.org
and be entered into a drawing to win a \$25 gift card to Amazon!

STEM in the PARK™
Science, Technology, Engineering, and Mathematics

Saturday, Sept. 27, 2014
10 am – 2 pm at BGSU
Perry Field House

FREE Lunch catered by Tony Packo's (while supplies last)

Robots and Lizards and Oobleck, OH MY!

STEM in the Park will feature interactive displays and activities created by area universities, community partners, and local businesses to engage children of all ages in science, technology, engineering, and mathematics.

Join us for a family day of **hands-on fun** at Bowling Green State University, featuring everything from sea creatures to pop rockets. Families will receive take-home STEM activities and a free lunch. You won't want to miss it!

NEW ACTIVITY ZONE THIS YEAR!

The Science of Sports
*How fast can you run?
How high can you jump?
How far can you throw a ball?
Analyze your golf or tennis swing.*
You can do all of that and MORE in this new and exciting addition to STEM in the Park!

Computer Equipment Recycling
Please bring your unwanted computer hardware equipment to recycle with ERG Environmental Services (i.e. laptop, keyboard, printer, mouse, tower) PLEASE NO MONITORS

Back by Popular Demand!
Roots to STEM Pre K-2 Zone
Featuring activities that cater specifically to younger children

presented by **BGSU**, **bp**, **Lubrizol**, **verizon**

with support from **Bill Rowles Youth Foundation Fund of the Toledo Community Foundation**, **COOPER TIRE**, **GIANT**, **Kroger**, **NWO**, **SSOE**, **Bowling Green Community Foundation**, **JOHN DEERE**, **meijer**, **spectra**, **WAL-MART**

Visit the website for more info at www.STEMinthePark.org

8.5 x 11 Flyer
11 x 17 Poster

4 x 6 Postcard



Free Family Event

STEM in the PARK™
Science, Technology, Engineering, and Mathematics

Saturday, Sept. 27, 2014
10 am – 2 pm at BGSU
Perry Field House

FREE parking and Lunch

Visit the website for more info at www.STEMinthePark.org

Appendix K: STEM in the Park Advertising & Recognition cont.

Recruitment Email



The flyer features a green and orange color scheme. At the top, it says "FREE FAMILY EVENT" in white text on a green background. Below this is the "STEM in the PARK" logo, which includes icons for a lightbulb, a gear, a hand, and a leaf, with the text "STEM in the PARK Science, Technology, Engineering, and Mathematics". The middle section is orange and contains the text "SAVE THE DATE", "Saturday, Sept. 27, 2014", and "10 am - 2:00 pm at BGSU". The bottom section is white and contains three photos: a woman and a child working on a project, a group of children in lab coats, and two mascots. Below the photos is a paragraph of text about the event, followed by another paragraph about the interactive displays, and a final paragraph with a website link. The bottom of the flyer has a green grass border.

FREE FAMILY EVENT

STEM
in the **PARK** Science, Technology, Engineering, and Mathematics

SAVE THE DATE
Saturday, Sept. 27, 2014
10 am - 2:00 pm at BGSU

Join us for **STEM in the Park**, an annual community day of **hands-on** fun for the whole family at Bowling Green State University. This rain or shine event will feature a free lunch, take-home STEM activities and materials, and much more!

STEM in the Park will feature interactive displays created by university departments and community partners to engage children of all ages in science, technology, engineering, and mathematics. Bring your family and bring your friends! The whole day is **FREE!**

For the latest information on this year's event, please visit our website at:
www.nwocenter.org/STEMinPark

Appendix K: STEM in the Park Advertising & Recognition cont.

Recruitment Email




presented by

BGSU.

Lubrizol

verizon

with support from

6th District Youth Foundation Fund of the South Community Foundation

Boys & Girls Clubs of America

Walmart

SSOE

KWO

SPECTRO

WAL-MART

**MEET US
AT THE PARK**

**For The 5th Annual
STEM in the Park**

**Saturday, September 27, 2014
10:00am-2:00pm**

**Held at the Perry Field House
Bowling Green State University**

FREE Lunch catered by Tony Packo's (while supplies last)

SAVE TIME... Pre-Register Online!

Click here to Pre-Register and be entered into a drawing to win a \$25 gift card to Amazon!

[BGSU Campus Map](#)

Robots and Lizards and Oobleck, OH MY!

STEM in the Park will feature interactive displays and activities created by area universities, community partners, and local businesses to engage children of all ages in science, technology, engineering, and mathematics.

Join us for a family day of **hands-on fun** at Bowling Green State University, featuring everything from sea creatures to pop rockets. Families will receive take-home STEM activities and a free lunch. You won't want to miss it!

**NEW Activity Zone This Year!
The Science of Sports**

Check out our new featured zone dedicated to the *Science of Sports!*

*How fast can you run?
How high can you jump?
How far can you throw a ball?
Analyze your golf or tennis swing.*

You can do all of that and MORE in this new and exciting addition to STEM in the Park!

**Back by Popular Demand!
Computer Equipment Recycling**

Please bring your unwanted computer hardware equipment to recycle with **ERG Environmental Services** (i.e. laptop, keyboard, printer, mouse, tower)
PLEASE NO MONITORS

**THANK YOU to the following organizations hosting
Activity Stations this year!**


For a complete list, please visit our website.
www.STEMinthepark.org

BGSU
Bowling Green Early Childhood Learning Center
Bowling Green Fire Division
Build It!
Challenger Learning Center of Lake Erie West
Curriculum Resource Center, Jerome Library
ERG Environmental Services
First Solar, Inc.
Gateway Pre-K School
Girl Scouts of Western Ohio
Imagination Station
K12/Ohio Virtual Academy
Lourdes University
Metroparks of the Toledo Area
Miss Rita the Balloon Lady
MVHS
New York Life Insurance Company
Ohio Northern University
PNC Bank
PVS Nolwood
Rain Garden Initiative
Rainbow Co-op Preschool
Saturn V Productions
Sauder Village
School of Teaching & Learning; Bowling Green State University
Science Alliance: Students Creating Inquiry Exploration Nside Classroom Education
Science Education of Ohio
Spark! Learning - Perrysburg
SSOE Group
St. Aloysius Elementary and Jr. High School
Thayer Family Dealerships
The University of Findlay
Toledo Zoo
Usborne Books & More
West Side Montessori
Wood County District Public Library
Wood County Historical Center and Museum
Wood County Hospital
Wood Lane
Zeemo Productions

Please visit our website for event details:
www.STEMinthepark.org

Appendix K: STEM in the Park Advertising & Recognition cont.

Recruitment Email - Exhibitor



STEM
in the **PARK** Science, Technology, Engineering, and Mathematics

There's still time to register to participate in the Fifth Annual **STEM in the Park** event!

The event will be Saturday, **September 27, 2014** from 10AM-2PM at Perry Field House on the campus of Bowling Green State University.

Last year's event drew over 3,000 people. This is a 23% increase from the previous year.

This family day of exciting hands-on STEM activities is growing and it is because of YOUR participation and dedication!



What is STEM in the Park?

STEM in the Park offers hands-on, family-friendly science, technology, engineering and mathematics activities, displays and/or equipment at a number of STEM Stations arranged in an open, festival-like atmosphere.

We invite you to select an activity or interactive display to bring to the event. Over 3,000 people including some 1,600+ children attended **STEM in the Park** with their parents, grandparents, caregivers, and neighbors.

STEM in the Park is a highly visible and unique opportunity for businesses, universities, colleges, and non-profit organizations to increase awareness and showcase regional STEM opportunities, careers and innovation across north Ohio.

Exhibitor provides:

- Hands-on activity plus materials for attendees to complete the activity
- The text for a **STEM in the Park** Take-Home Activity (see example, if desired)
- Take Home brochures and marketing material featuring your company, department, college or campus organization (if desired)



Registration:

Please click here to complete registration form

Questions? Contact Jenna Pollock at NWO/COSMOS (jpolloc@bgsu.edu) or Dr. Emilio Duran (eduram@bgsu.edu), School of Teaching and Learning.

Information regarding the previous years' STEM in the Park events can be found at www.STEMinthepark.org



NWO/COSMOS
241 Math Science, BGSU
Bowling Green OH 43403
419-372-2718
nwo@bgsu.edu

If this email was forwarded to you and you would like to be placed on our contact list for updates about this particular event, please email Jenna Pollock at jpolloc@bgsu.edu. We will see that you receive future communications regarding **STEM in the Park 2014**.

Appendix K: STEM in the Park Advertising & Recognition cont.

STEM in the Park Recognition



The image is a screenshot of a news article from the Toledo Free Press website. The header features the newspaper's name 'TOLEDO FREE PRESS' in large blue letters, with 'Digital Version' and an RSS icon to the right. Below the header is a navigation bar with links for Home, Opinion, Sports, Arts & Life, Business Link, Community, and Local Mus. A row of service icons follows, including social media (Facebook, Twitter, Instagram), TV Listings, Classifieds, Place Classified Ads, Distribution, and WSPD 1370. The article is under the 'EVENTS' category and has the title 'BGSU's annual STEM in the Park draws nearly 4,000 people'. The author is Chase Will, with the email cwill@toledofreepress.com. The article text describes the event at Bowling Green State University's Perry Field House, mentioning 110 activity tables, various STEM activities like making bubbles and testing wearable technology, and quotes from project coordinator Jenna Pollock and program evaluator Jake Burgoon. It concludes with information on evaluations and a link to the event's website.

EVENTS

BGSU's annual STEM in the Park draws nearly 4,000 people

Written by Chase Will | | cwill@toledofreepress.com

Nearly 4,000 people recently gathered at Bowling Green State University's Perry Field House for the fifth annual STEM in the Park event.

Over 110 activity tables provided kids as young as pre-kindergarten with new ways of investigating science, technology, engineering, and math.

"I feel this was the best event of all five years," said project coordinator Jenna Pollock. "It ran smooth, the crowd was spread out nice and there were no lines for food or exhibits."

Activities at the Sept. 27 event included making giant-sized bubbles, creating "silly putty" and testing wearable technology created by Verizon for athletes.

"We had a lot of BGSU athletes demonstrating the technology for kids," Pollock said.

The wearable technology helps athletes improves various aspects of their performance, such as striking better with a tennis racket or running efficiently, Pollock said.

BGSU's marine biology lab provided tanks where kids could touch starfish and other aquatic life.

"We like to have a take-home activity at each table, that way when kids go home they can try something which will extend their learning, and parents can get involved in keeping that excitement going," Pollock said.

Toledo School for the Arts entertained guests with an outdoor show from their steel drum band.

A free lunch was catered by Tony Packo's, and snacks were provided throughout the day.

"We purposely made this a no-cost event, and we feel very strongly about families not needing to pull out their wallets," Pollock said.

Everyone who registered was sent an evaluation, which helps Pollock and her colleagues improve the event each year. Everyone who returns a completed evaluation will be entered into a drawing for one of five \$100 Amazon gift cards.

Evaluations help in the year-long planning process, according to program evaluator Jake Burgoon.

"A lot of parents see big changes in their children's interests in STEM after the event," Burgoon said. "A lot of times I think these activities show aspects of STEM which aren't immediately realized. The kids are having too much fun to really think about it."

For more information on STEM in the Park, visit www.steminthepark.org.

Appendix L: Women in STEM Advertising & Recognition

Recruitment Email - Student



Empowering young women in science, technology, engineering, and mathematics. Fostering confidence and a can-do attitude.

Friday, November 21, 2014



for 6th through 8th Grade Girls

NWO is excited to announce the 30th annual **Women in STEM** program at Bowling Green State University for 6th, 7th and 8th grade girls.

A full day of fun-filled and interactive learning experiences for young women led by area STEM professionals!

Students will:

- Participate in hands-on learning activities throughout the day.
- Attend a keynote presentation by BGSU Faculty member Dr. Jodi Haney, titled "Roots to Women in STEM": Seeking creative problem solvers and critical thinkers to LEAD the way and CHANGE the world!
- Enjoy lunch on the BGSU Campus.

Due to past participation you get first chance to register your student. Space is limit, please register by October 3, 2014.

Schedule:

8:15 - 8:45 AM	Check-In
8:45 - 9:05 AM	Welcome Address
9:05 - 10:00 AM	Keynote Presentation
10:15 - 11:00 AM	First Activity
11:10 - 11:55 AM	Second Activity/First Lunch
12:05 - 12:50 PM	Third Activity/Second Lunch

1:00 - 1:45 PM	Fourth Activity
1:45 - 2:15 PM	Whole Group Activity
2:15 - 2:30 PM	Adjourn and Bus/Parent Pick-UP

Fee: (includes lunch)

- Students - \$22
- Adults - \$17

Notes:

- Groups need to arrive by 8:15 am
- Each school is limited to 50 students.
- Each group of students must be accompanied by a teacher or parent throughout the day (one adult per 10 students).
- Adults and chaperones need to register and attend all sessions with students.
- Campus maps, parking permits, and additional information will be sent to the registered adults from each school.

Please note: There may be reptiles, including snakes at the hands-on activities.

Students attending this program will:

- Participate in a program that values growth mindset vs fixed mindset education
- Get first hand exposure to STEM education at an early age outside of the classroom
- Have one-on-one interactions with Women in STEM role models from various STEM careers to include medicine, healthcare, arts/design, entertainment, social sciences
- Engage in fun and exciting hands-on activities throughout the day that show how to use science, technology, engineering and mathematics in everyday life experiences
- Meet like minded students and learn from and with peers
- Experience STEM programs in a college setting that fosters confidence in academic abilities while creating a greater vision of sciences
- Learn the facts about women's roles in STEM fields and see how they can make a difference in the world through STEM education

School Registration

Please click on the link below to register students.

https://docs.google.com/forms/d/1uTrj8n7nBbyklkdyhDGoRrao2TC_an-5SVktnOniKUC/viewform

Registration deadline is October 3, 2014

BGSU



Appendix L: Women in STEM Advertising & Recognition cont.

Recruitment Email - Presenter



Empowering young women in science, technology, engineering, and mathematics. Fostering confidence and a can-do attitude.

Friday, November 21, 2014



for 6th through 8th Grade Girls

NWO is excited to announce the 30th annual Women in STEM program at Bowling Green State University for 6th, 7th and 8th grade girls.

A full day of fun-filled and interactive learning experiences for young women led by area STEM professionals!

Students will:

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- Attend a keynote presentation by BGSU Faculty member Dr. Jodi Haney, titled "Roots to Women in STEM": *Seeking creative problem solvers and critical thinkers to LEAD the way and CHANGE the world!*
- Enjoy lunch on the BGSU Campus.

Schedule:

8:15 - 8:45 AM	Check-in
8:45 - 9:05 AM	Welcome Address
9:05 - 10:00 AM	Keynote Presentation
10:15 - 11:00 AM	First Activity
11:10 - 11:55 AM	Second Activity/First Lunch
12:05 - 12:50 PM	Third Activity/Second Lunch
1:00 - 1:45 PM	Fourth Activity
1:45 - 2:15 PM	Whole Group Activity
2:15 - 2:30 PM	Adjourn and Bus/Parent Pick-UP

We rely on the support of our presenters and volunteers like you in order to continue to provide this unique experience for area school girls. We are excited to host the 30th Women in STEM program and looking forward to your participation!

Presenters:

Keynote: Our Keynote speaker will present for approximately one hour. Presenters are welcome to attend the keynote presentation and are invited to attend lunch at the Oaks.

Breakout Sessions: There will be groups of approximately 24 girls with adult supervision in each session. Students will attend four breakout sessions (lunch included) which will last 45 minutes each. Sessions should be innovative and creative hands-on activities that are fun-filled and engaging. We would like to foster a collaborative growth minded atmosphere in the breakout sessions that gives students opportunities to interact with one another and YOU as a STEM academic/career Role Model.

We provide classroom and/or lab space, AV equipment and support. **BGSU can provide reimbursement for supplies that may be needed for hands-on activities.**

Please click the link below to register as a presenter.

<https://docs.google.com/forms/d/1jV6dB9jHRnw-kNvP30ADnZQSJWDkDPg-YEHJJF80s8/viewform>

Registration Deadline: October 3, 2014

Students attending this program will:

- Participate in a program that values growth mindset vs fixed mindset education
- Get first hand exposure to STEM education at an early age outside of the classroom
- Have one-on-one interactions with Women in STEM role models from various STEM careers to include medicine, healthcare, arts/design, entertainment, social sciences
- Engage in fun and exciting hands-on activities throughout the day that show how to use science, technology, engineering and mathematics in everyday life experiences
- Meet like minded students and learn from and with peers
- Experience STEM programs in a college setting that fosters confidence in academic abilities while creating a greater vision of sciences
- Learn the facts about women's roles in STEM fields and see how they can make a difference in the world through STEM education

BGSU



Women in STEM Recognition

“Empowering young women in science, technology, engineering, and mathematics. Fostering confidence and a can-do attitude.”

That’s the motto of BGSU’s Women in STEM program, which celebrated 30 years of conferences this fall. Held in November, the fun and interactive day full of learning experiences is open to 6th through 8th grade girls. TSA is sponsored by the University and has participated for a number of years. This time around, over 20 students traveled to campus for the experience.

“We make this a priority for our students because it is important for our students to see the potential opportunities for careers in Science, Technology, Engineering and Mathematics,” explained Morgan Ramsdell, junior division science instructor. She and Jessica Kuohn encouraged their young female students to attend, citing the conference’s goals to foster creative problem solving and critical thinking as motivators.

The day is full of hands-on learning activities and students are treated to lunch on campus. A keynote presentation was given by BGSU faculty member Dr. Jodi Haney titled “Roots to Women in STEM.” The presentation held extra impact for our students in particular, as Haney holds ties to TSA as a very active member of our Diversity Committee, an always helpful resource for our science department, and parent to TSA 7th grader Kiana Haney.

Of their experience, 8th grader Jolee Hatfield King responded, “It was very educational. It was all hands-on and very fun. It inspired me more to take a career in the mathematics program of the workforce.” Hatfield-King’s classmate Emma Rasar noted, “My favorite activity of that day was when we got to make the finger cast, even though it hurt! I feel that in a way, this day contributed to the visual arts because there were a lot of hands on activities. As far as having a future in science or math; everyone has a future in science or math!”

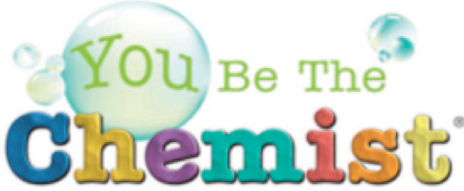
The next Women in STEM event at BGSU will be held Friday, November 6th, 2015. Students interested in being involved should contact Miss Kuohn, Ms. Ramsdell, or Mr. Johnson.



BGSU mascots Freddy and Frieda Falcon pose with TSA students during the Women in STEM event.

Appendix M: You Be The Chemist Challenge Recruitment Email & Recognition

Recruitment Email



Teachers: Announcing an exciting learning opportunity for students grade 5-8 called
"You Be the Chemist!"

"You be the Chemist" is a **FUN & INNOVATIVE** academic competition engaging students in learning about important chemistry concepts, discoveries, and chemical safety.

CHALLENGE COMPETITIONS take place across the country and encourage collaboration among community organizations, schools, and the chemical industry, as together, they educate students about the benefits and value of chemistry.

The **WINNER** of the State Challenge will qualify for an all expenses paid trip to the National Competition in Philadelphia, PA in June.

Interested students will take a qualifying exam to participate, which will enable the top-scoring students at each school and/or grade level to participate in the State Challenge. The qualifying exam is a multiple choice exam that is supplied by the district along with an answer key. Teachers are responsible for scoring the qualifying exam.


NOTE: *If a large number of schools participate in a particular region, a regional challenge may be necessary to qualify for the State Challenge.*

Participating is easy - please email **Bob Mendenhall** (Toledo Public Schools) at bmendenh@tps.org or call (419) 671-8320 more information. In the email include the following information: (**RETURN BY DECEMBER 19, 2014**)

Teacher Name:
Principal Name:
School Address (include County):
Number of Students Participating:

Please visit <http://www.chemed.org/ybtc/> for more information.

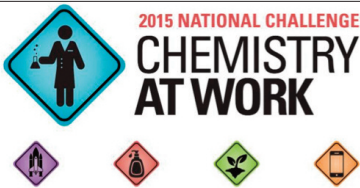
This event is supported by




Northwest Ohio Center for
Excellence in STEM Education

Appendix M: You Be The Chemist Challenge Recruitment Email & Recognition cont.


You Be The Chemist Challenge Recognition



2015 NATIONAL CHALLENGE
CHEMISTRY AT WORK



Congratulations to Daniel Liu, 2015 National You Be The Chemist Challenge® Champion!



2015 National Challenge Chemistry At Work

The *You Be The Chemist Challenge*®, created by the Chemical Educational Foundation® (CEF), is a quiz-bowl-style academic competition that aims to engage middle school students in learning important chemistry concepts and their real-world applications. The competition was created in 2004, as a means to spark student interest in the sciences and prepare students for future study and scientific careers.
[More Details](#)


Quick Links
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[Sponsors](#)
[Contact Us](#)

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[f](#) [t](#) [in](#)

We're excited to announce that Daniel Liu, a seventh-grader at Ottawa Hills Junior High School in Ottawa Hills, Ohio, is our 2015 National *You Be The Chemist Challenge*® Champion! At 10 years old, Daniel is our youngest ever National Challenge Champion. His quick thinking and impressive understanding of chemistry won him the title, but it was his infectious smile and on-stage victory fist pump that won the audience's hearts.

And this year's top four winners are...

Our first, second, and third runners-up also wowed with their chemistry knowledge and ability to stay cool under pressure. Congratulations to Aum Upadhyay of Washington, Raghav Ramanujam of California, and Rafay Ashary of Texas!



This year's top four were presented with scholarships for future educational use in the amounts of \$10,000 (champion), \$5,000 (first runner-up), \$2,500 (second runner-up) and \$1,000 (third runner-up). We can't wait to see where they go next!

The Challenge continues to grow!

We're already preparing for the 2015-2016 Challenge cycle. Are you interested in bringing the Challenge to your state or community? We would love to work with you to make that happen! Contact us at challenge@chemed.org to learn more.