



Northwest Ohio Center for
Excellence in STEM Education

2013 Annual Report

Fiscal Year 2013
(July 1, 2012 – June 30, 2013)



Connections • Communication • Collaboration

www.nwocenter.org

FY 2013 NWO Staff

W. Robert Midden	Director
Emilio Duran	Faculty Associate Director
Jodi Haney	Faculty Associate Director
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 S. Kynard	Office Manager/BOSEF & GRAMS Project Coordinator
Jenna Pollock	STEM in the Park Coordinator/Project pi r ² Program Manager
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 for Excellence in STEM Education 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.

Dear Friends of NWO,

2012 – 2013 was a very exciting year for NWO. We saw many changes this year, but the most exciting change was the start of our 5-year \$7.28 million project from the National Science Foundation: Math and Science Partnership (NSF:MSP) program. We are partnering with BGSU, Perkins Local Schools, Sandusky City Schools, and several local community members on this project aimed at enhancing grades 3-8 education across the curriculum, using citizen science as a foundation for promoting student mastery of the Ohio Learning Standards.

We have continued to find success in funding our activities including, STEM in the Park, NWO Inquiry Series, and the NWO Symposium. These events are very successful and continue to be the focal point activities for NWO. Other changes this year include the addition of new staff members who bring years of experience and new ideas to our team.

We anticipate further growth in FY 14 as we continue our many projects and add new activities to our portfolio. I hope this annual report gives you a glimpse into the efforts of the NWO Staff and Team and heightens your awareness of our efforts in the many areas of STEM education.

Sincerely,
W. Robert Midden, NWO Director

Table of Contents

3 ... NWO Goals

4 ... Educator Professional Development and Outreach

NWO Activities

- NWO STEM Education Inquiry Series
- NWO Symposium on Science, Technology, Engineering, and Mathematics Teaching (NWO Symposium)
- “NWO STEM Connection” Print and E-Newsletters
- NWO STEM Resource Center Website
- Community Resources Workshop (CRW)
- Literacy Design Collaborative College Ready Tools
- Rural STEM Learning Platform
- STEM Training Center

NWO Grant Projects

- iEvolve with STEM
- History Lab
- Project pi r² *THREE*

19 ... Faculty Professional Development and Collaborative Education Research

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

23 ... K-12 School, Business, and Community Activities

- Business and Community Partners
- Ohio Junior Science and Humanities Symposium (OJSHS)
- STEM Consortium Advisory Board
- STEM in the Park
- You Be the Chemist Challenge

30 ... Affiliated Grant Projects

- Science and Math Education in ACTION
- Building Ohio’s Sustainable Energy Future (BOSEF)
- Common Core for Reasoning and Sensemaking – Elementary ((CO)²RES)
- Common Core for Reasoning and Sensemaking – Secondary ((CO)²RES)
- Granting Access to Math and Science (GRAMS)
- Village of Ottawa: Collaborative Research: Constructive Chemistry & Manure Feasibility Study

35 ... FY 2013 NWO Budget

40 ... Appendices

- | | |
|---|---|
| A. Community Resources Workshop Recruitment Email | G. NWO Publications and Presentations |
| B. Faculty and Student Recognition | H. NWO Symposium Advertising |
| C. History Lab Recruitment Email | I. OJSHS Recruitment Email |
| D. Learning Community Poster | J. Project pi r ² <i>THREE</i> Recruitment Materials |
| E. “NWO STEM Connection” Print and E-Newsletters | K. STEM in the Park Advertising |
| F. NWO STEM Education Inquiry Series Advertising | L. You Be The Chemist Challenge Recruitment Email |

NWO Goals and Corresponding Activities



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

NWO Activities

- NWO Inquiry Series
- NWO Symposium on STEM Teaching (NWO Symposium)
- Undergraduate and graduate teacher preparation courses or program modification

Affiliated Activities

- Grant projects
- Undergraduate professional organizations (BGCTM, BGSECO, etc.)
- Community Resources Workshop

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

NWO Activities

- Ohio Junior Science and Humanities Symposium (OJSHS)
- STEM in the Park
- Grant Projects (GRAMS, BOSEF, etc.)
- iEvolve NSF MSP grant project

Affiliated Activities

- Grant projects (ACTION, etc.)
- You Be the Chemist Challenge
- Support and assist with other university recruiting activities

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

NWO Activities

- COSMOS STEM Education Learning Community
- Faculty presentations at NWO Symposium
- Submitting manuscripts for publication
- Faculty/staff research and participation in NWO

Affiliated Activities

- Faculty/staff research and participation in NWO
- Continued support of the development of the Learning Sciences PhD program
- Grant projects

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.

NWO Activities

- STEM Consortium Advisory Board & Leadership Team
- NWO website and STEM Resource Center Website
- "NWO STEM Connection" Print and E-Newsletters
- Ohio STEM Learning Network Hub Activities
- Evaluation and Marketing Services for NWO Partners

Affiliated Activities

- Community Resources Workshop
- Business and community partnerships on grant projects

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.

NWO Activities

- Professional development for higher education faculty at NWO Symposium and NWO Inquiry Series
- COSMOS STEM Education Learning Community
- Support for faculty development and administration of STEM education research and innovation grant projects

Affiliated Activities

- Continued support of the development of the Learning Sciences PhD program

Educator Professional Development and Outreach



NWO Activities

NWO STEM Education Inquiry Series

Brief Description

Sustained professional development is offered by NWO throughout the academic year in 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 2013 Activity Information

The 2012-13 NWO STEM Education Inquiry Series was held at WGTE Public Media in Toledo, OH on the following Tuesday nights: October 2, 2012, November 27, 2012, January 8, 2013, February 12, 2013, and March 12, 2013. A \$20/night fee was charged for all attendees (undergraduates were charged \$10). The theme for this year was “STEM Speaks!” and featured 3-hour long inquiry based presentations from some of the leading names in STEM education research and professional development. Below is a list of the STEM opportunities offered at each monthly meeting and the overall attendance data. All of the events were funded in part by two OSLN/Battelle grants and participant fees. The November 27 event was also sponsored in part by Carolina Biological Supply Company.

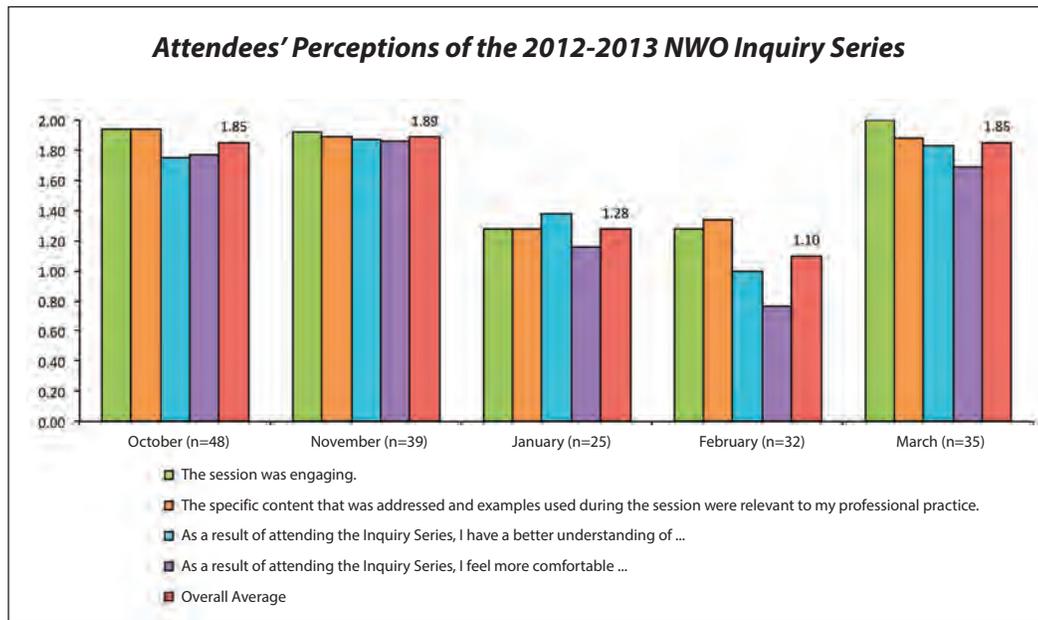
Date	Session Title	Presenter(s)	Total Attendance
Oct. 2	Supporting Science Inquiry Through Formative Assessment	Page Keeley, National Science Teachers Association Author 	84
Nov. 27	Picture-Perfect Science: Using Picture Books to Guide Inquiry	Emily Morgan & Karen Ansberry, National Science Teachers Association Authors  	76
Jan. 8	Everyday Engineering: Integrating the STEM Disciplines	Susan Everett, National Science Teachers Association Author 	37
Feb. 12	Generative STEM Teaching Practice Through a Brain-Mind Lens!	Karl Klimek, Square One Education Network 	44
Mar. 12	Rethinking Mathematics as a Verb	Daniel Brahier, Bowling Green State University Professor 	47

Continued on page 6

Participant Group	Total Attendance for 2012-13 (Unique Visitors)	Total Attendance for 2012-13
Pre-Service Educators	21	21
K-12 Educators	136	181
K-12 Administrators	9	9
Higher Ed Faculty/Staff	6	10
Community/Business Partners	14	19
NWO Center Staff/Facilitators	14	31
TOTAL	200	271

Evaluation Summary

The 2012-2013 Inquiry Series was evaluated using an online survey that was administered after each Inquiry Series event (data were collected from five surveys). The average number of survey responses each month was 36 with an average response rate of 84%. The survey required respondents to rate certain aspects of the Inquiry Series (e.g., engagement, value of information) as well as provide written comments regarding their experience. In general, the results demonstrate that attendees perceived the Inquiry Series to be engaging, valuable, informative, applicable, and motivating. The figure below illustrates the attendees’ responses regarding each Inquiry Series session.



The “overall average” scores reflect the responses to all of the survey items for a given session.

One common theme in the participants’ written comments was the applicability of the presentation in the classroom. Overall teachers felt that much of the information was exceptionally useful, often times even if it wasn’t geared specifically towards their particular grade level. Some teachers wrote, “Great combination of addressing the mathematical practices with examples of how to do that in our classrooms,” and “I came away with some good ideas of ways to integrate STEM into some lessons I already teach.”

Continued on page 7

Also, many teachers reacted positively to what they perceived as vast personal growth as educators as a direct byproduct of the presentations. With the implementation of many of the ideas presented by the guest speakers, participants felt their methods of teaching had been vastly improved. Some wrote, *“Events such as this inspire me to continue to improve my classroom,”* and *“I gained valuable knowledge about the Standards for Mathematical Practice which will help me to plan more engaging Math lessons linked to real world experiences.”*

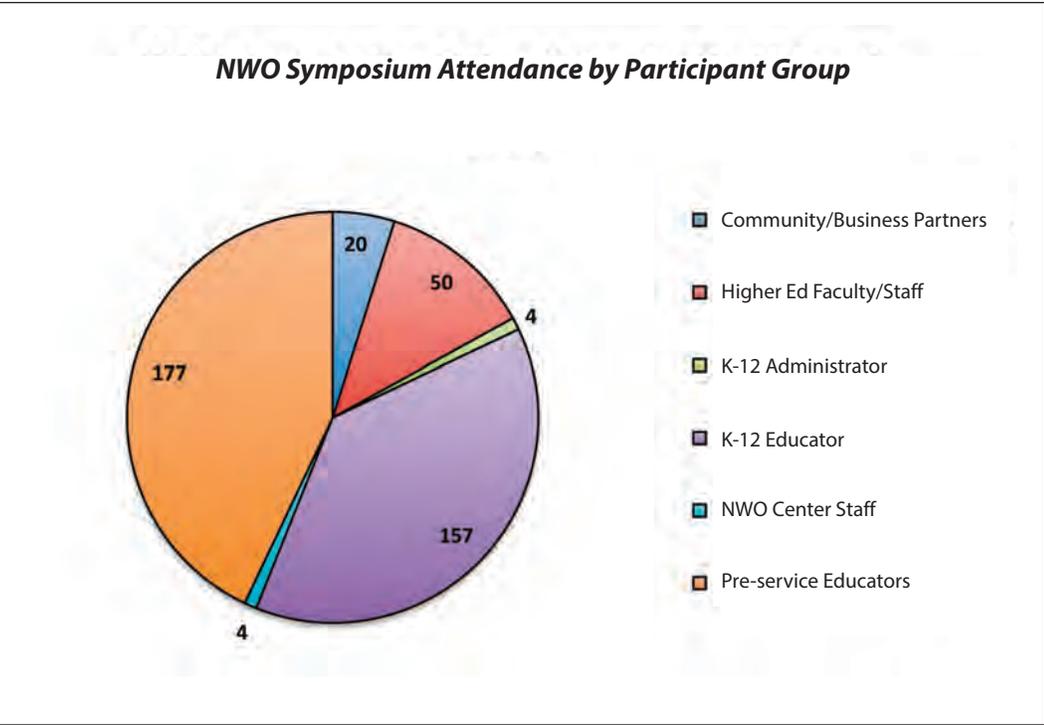
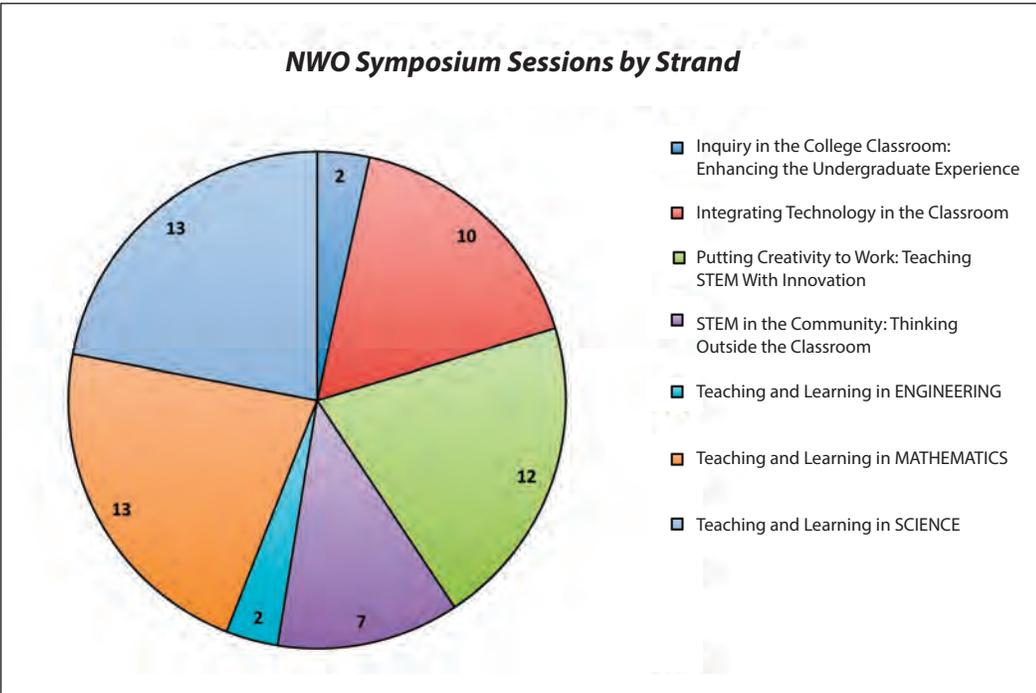
NWO Symposium on Science, Technology, Engineering, and Mathematics Teaching (NWO Symposium)

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 2013 Activity Information

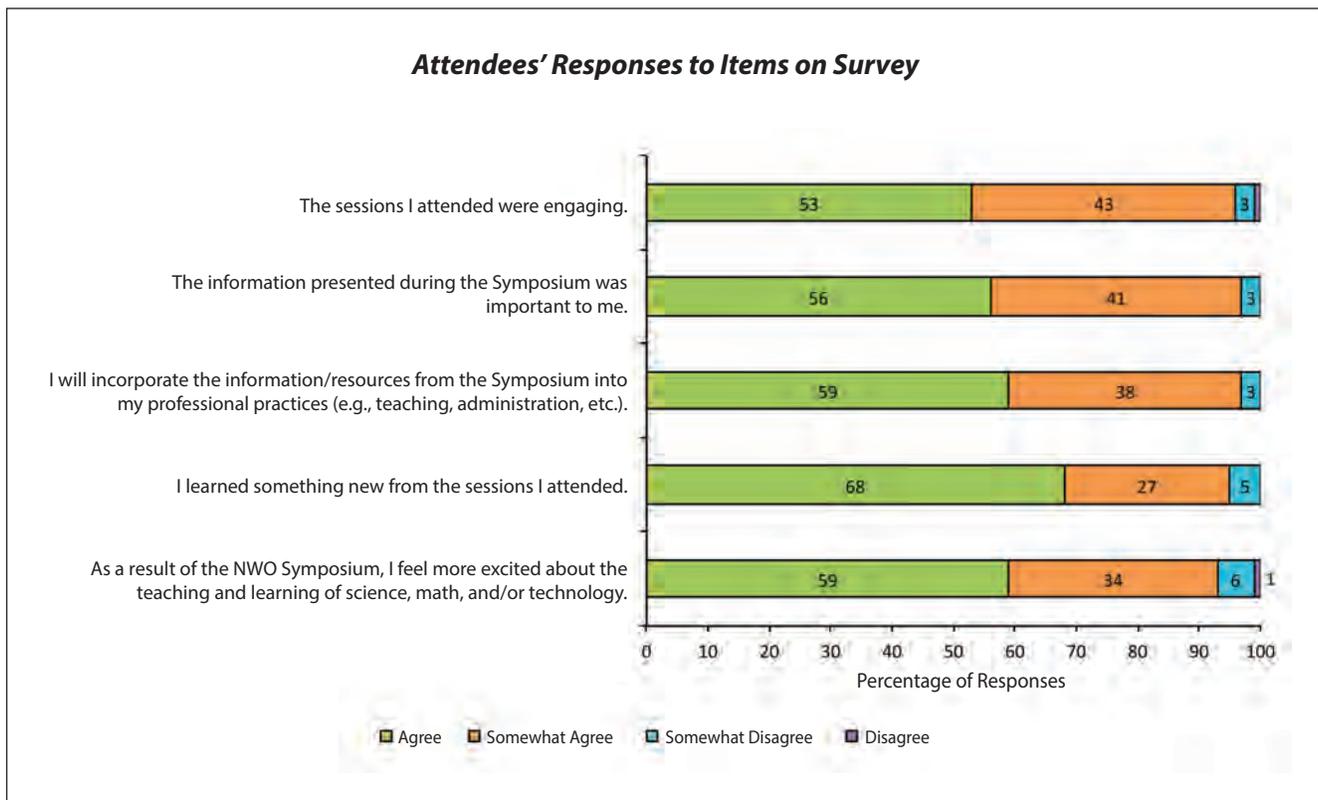
The 2012 NWO Symposium was held for the first time on the BGSU campus on Saturday, October 27. The Symposium began with a keynote address by chalk artist and inspirational speaker Kelly Croy, and continued with five one-hour blocks of content sessions, with an average of 13 sessions being offered during each block. A registration fee was charged for all attendees (\$35 for educators and \$20 for undergraduate students). Presenters remained free, but for-profit vendors were charged \$100. This year we saw a significant increase in attendance, up 54% from the previous year. The number of Pre-Service Educators, in particular, increased by 282% from last year, due in large part to having the Symposium on the BGSU campus. This was the first year that we created session strands which helped attendees determine what sessions were ideal for their personal professional development. One such strand was the “Inquiry in the College Classroom: Enhancing the Undergraduate Experience”. This strand was the first of its kind for the Symposium and targeted recruitment was done to increase the number of higher education faculty attendees. Other strands included, “Putting Creativity to Work: Teaching STEM With Innovation” and “STEM in the Community: Thinking Outside the Classroom”. On the following page is a breakdown of the sessions offered by strand (59 total) and the overall attendance (412).



Continued on page 9

Evaluation Summary

The 2012 NWO Symposium was evaluated using session evaluation surveys (attendees completed a paper survey for each session they attended) and two online surveys (one for attendees and another for presenters/vendors). The results of the session evaluation surveys indicated that attendees perceived the Symposium sessions to be engaging, valuable, and informative. Furthermore, participants reported feeling motivated to try innovative teaching techniques and planned on sharing the information with their colleagues. The results of the attendee online survey echoed the results of the session evaluation surveys, with 93% of attendees ranking the NWO Symposium overall as either Good (46%) or Excellent (47%). Overall, the attendees ranked the various components of the Symposium (e.g., for food, venue, vendor exhibits) higher than the previous year, indicating the changes that were made for this year’s Symposium resulted in a better event for participants. In addition, many attendees reported coming away from the NWO Symposium with new ideas or resources to implement in their classrooms. One attendee wrote, “Every year I go, I pick up something new or different. I’ve learned over the years that I can always use what I have seen, learned, or experienced some way or some how in my classroom.” The figure below illustrates attendees’ responses to five items on the online evaluation survey.



Continued on page 10

The results of the presenter/vendor online survey indicated that most presenters/vendors perceived that their participation in the Symposium was worthwhile due to the number and receptivity of the attendees at their session/exhibit. Most of the attendees (76%) and presenters/vendors (85%) reported that it was moderately or very likely that they would attend or participate in the 2013 NWO Symposium. The recommendations for the 2013 NWO Symposium are to 1) keep a session strand dedicated to teaching in the university/college classroom, 2) offer more technology sessions, as well as sessions that focus on the new Ohio standards, special education, and problem-based learning, and 3) remind attendees throughout the day to complete the session evaluations. The 2012 NWO Symposium Evaluation Report offers a more thorough account of the implementation and impact of the 2012 NWO Symposium, and can be found at www.nwocenter.org/reports.

“NWO STEM Connection” Print and E-Newsletters

Brief Description

The NWO STEM e-newsletter and STEM Connection newsletter are focused on bringing attention to new programs and events happening in STEM K-16 education. Monthly e-newsletters feature stories about area K-12 schools focusing on STEM learning. Each month also includes a community partner feature story revealing how business and non-profit organizations are working with K-12 schools to enhance STEM teaching and learning. The “NWO STEM Connection” newsletter is published quarterly. Both newsletters feature a hands-on, inquiry-based STEM activity for easy use in K-16 classrooms, upcoming teacher professional development and student opportunities, and STEM resource announcements. **Meets NWO Goals: 1, 2, & 4**

FY 2013 Activity Information

In 2012-13, NWO continued distributing monthly STEM e-newsletters. During the 2012-2013 school year we published and emailed 10 e-newsletters to 7,000+ educators, administrators, partners, and stakeholders and completed one print newsletter. After analyzing the cost-benefit ratio on the print newsletters, NWO has decided to continue to publish the monthly STEM e-newsletters only.

NWO STEM Resource Center Website

Brief Description

The NWO STEM Resource Center website was created as part of the 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 looking for STEM teaching resources in northwest Ohio. It is designed mainly to assist preK-12 educators in locating and using STEM resources in the area. Many of the resources are available in other places on the internet, but the STEM Resource Center is designed to put all the information in one searchable database where visitors can narrow their search by many filters including geographical area, grade level(s), subject area(s), type of resources, and many more. The STEM Resource Center can be viewed at <http://nwostemresources.org>. **Meets NWO Goal: 4**

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**

FY 2013 Activity Information

In 2013, 29 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. For the first year, CRW included 5 graduate students from Lourdes University who assisted the teachers in using online tools for daily reflections.

Evaluation Summary

The 2013 Community Resources Workshop was evaluated using an online survey that was completed by 27 participants (93%) after the workshop. The results of the survey demonstrate that participants perceived the workshop to be of high quality and highly valuable. The findings also indicate that as a result of attending the CRW, participants were significantly more aware of community resources, held more positive attitudes regarding the use of community resources in their classroom, and planned to increase their use of community resources in their classroom. The most prominent outcome was the participants' self-reported change regarding their awareness of community resources, particularly low cost alternatives to field trips. Overall, comments given by participants regarding the CRW were extremely positive. Many of the teachers specifically wrote positive comments regarding the organization of the workshop and the value and applicability of the resources to their classroom. The 2013 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.

Literacy Design Collaborative College Ready Tools

Brief Description

The Ohio STEM Learning Network is coordinating the adoption and dissemination of the Literacy Design Collaborative College Ready Tools (LDC-CRT) throughout school districts in the state. One STEM school in each region is serving as the first adoption site. At each of those schools, four teacher leaders have been trained in the use of LDC-CRT and are teaching the other teachers in their school to also use these tools. Each of the regional STEM Hubs are supporting this development. When the first schools have fully adopted LDC-CRT they will then train three other schools. Those schools will train others and eventually LDC-CRT are expected to be used throughout the state. CRT is a system of learning for all of the core academic disciplines including English language arts, social sciences, natural sciences, and mathematics. CRT focuses on development of literacy skills within each of these primary domains with the aim of improving student mastery of the common core standards. The goal is to establish an aligned system for teaching college-ready literacy in all subject areas with a well-defined methodology and a clean, understandable structure. As a result, students will engage in more intense literacy practices than they now generally experience, integrated throughout all of the core disciplines, to deepen their learning and improve their critical thinking and communications skills. **Meets NWO Goals: 1, 2, & 4**

FY 2013 Activity Information

In northwest Ohio, Perkins Local Schools is serving as the first school to adopt LDC-CRT, thus providing inspiration and support for adoption in other schools throughout the region. A team of four teachers from Perkins Local Schools, one in each of the four core academic disciplines, participated in LDC training initiated through the Ohio STEM Learning Network in conjunction with Battelle and the Gates Foundation. These four teachers are piloting the use of CRT modules in their classes and have trained other core discipline teachers in Perkins High School. Perkins will be offering this training to other schools in the region during the 2013-14 academic year.

Rural STEM Learning Platform

Brief Description

The new STEM learning platform is intended to provide a model for rural schools that struggle with the challenge of offering a rich array of stimulating and engaging STEM courses based on problem-based learning, hands-on inquiry, and partnerships with STEM businesses due to low enrollments and lack of resources.

This is being overcome in part by sharing courses among multiple school districts via distance learning, video conferencing, shared staff, and inter-school visits. The new model is being developed among the nine public school districts of Putnam County, coordinated by the Putnam County Educational Service Center.

This effort is based on the impressive record of achievement of these schools in their highly effective STEM programs. It involves creating a number of new, innovative STEM courses that will be shared among all nine school districts and made available to all students throughout the county via multiple modes of distance learning. **Meets NWO Goal: 4**

Continued on page 13

FY 2013 Activity Information

Putnam County School Updates

In addition to the achievements listed below, many of the schools have purchased tablets for eighth through twelfth grade students to further their education and familiarity with technology. Over 200 students spread throughout the nine county schools are doing field research in partnership with BGSU and the Village of Ottawa as part of the Manure Treatment Feasibility Study. Sixty teachers throughout the county will also be trained in the use of tablets in the classroom as a result of a grant received through partnership with BGSU.

Columbus Grove:

Currently offering four years of High School of Business, Bio Medical Classes, AP courses in Calculus, Statistics, English Literature, and U.S. History. The high school physics teacher was awarded a "Square One Incubator" grant focusing on student-based STEM projects.

Continental:

Currently offering courses in Microsoft Office, Flash, Adobe Photoshop, and Vocational Agriculture. Offering STEM focused PCS Edventures curriculum in the K-6 after school programs.

Ft. Jennings:

Currently offering an Environmental Science course for preK-12 students. The Envirothon team also tied for first place.

Kalida:

Currently offering both Project Lead The Way: Engineering and Biomedical classes. Participated in the VEX Robotics Competitions.

Leipsic:

Currently offering High School of Business and Vocational Agriculture programs. Purchased 30 Chromebooks for educational purposes throughout the district. Offering STEM focused PCS Edventures curriculum in the K-6 after school programs.

Miller City:

Currently offering Vocational Agriculture courses and Project Lead The Way: Engineering and Biomedical courses. The high school science teacher partnered in the "Square One Incubator" grant focusing on student-based STEM projects.

Ottawa – Glandorf:

Currently offering Project Lead the Way: Introduction to Engineering, Principles of Engineering, Digital Electronics, and Principles of Biomedical Sciences. An OG student was the national winner of the 2013 STEM Video Game Challenge.

Ottoville:

Currently offering a locally designed Principles of Engineering course and an Environmental Science course. Beginning at the middle school level, the district offers several robotics classes.

Pandora – Gilboa:

Currently offering Project Lead the Way: Principles of Biomedical Sciences, Human Body Systems, and Medical Interventions.

STEM Training Center at the Toledo Technology Academy

Brief Description

The Ohio STEM Learning Network (OSLN) has established seven STEM Hubs and eight training centers throughout the state of Ohio. While each Hub is unique, all are coordinated under the realm of advancing STEM disciplines within their region, and each serves the schools in its region by providing a variety of resources to encourage and support the adoption of best practices and teaching and learning in STEM subject areas.

NWO serves as the Northwest Ohio OSLN Hub for a 29-county region and contains a regional STEM training center at Toledo Technology Academy (TTA). TTA is a magnet high school formed by a highly successful collaborative venture between Toledo Public Schools and many local businesses and scores in the top academic tier of schools in Ohio. Along with a mission to deliver high quality academics and world-class technology, TTA provides:

- Professional development sessions for teachers.
- Visits of teacher leaders to schools to demonstrate use of best practices in classrooms and to discuss STEM education with teachers and administrators.
- Hosting visits of teachers and administrators at the training center to watch best practices in use in the classroom.
- Providing access to video recorded classroom sessions that demonstrate exemplary practices.
- Providing access to live video streaming of classroom activity.

TTA specializes in extensive and productive partnerships with regional STEM-related businesses. The academy is transforming the way students learn and develop 21st century skills by offering real-world experiences and classes not found in a more traditional high school curriculum.

The topics that TTA will offer includes:

- Senior capstone projects using Problem Based Learning
- Diverse and intense hands-on training
- Preparation and skill sets for employment and/or secondary education
- Industrial specific Certifications
- Leadership training
- Practices for developing and strengthening partnerships with businesses.

Meets NWO Goals: 1, 2, & 4

NWO Grant Projects

iEvolve with STEM

Brief Description

The iEvolve with STEM project is funded by the National Science Foundation: Math and Science Partnership Program. This 5-year project aims to improve science teaching through intense professional development of teachers, with an emphasis on inquiry-based learning and involvement in citizen science research. 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. Key innovations are (1) students and teachers in grades 3 – 8 participate in science research projects led by professional scientists in association with a variety of community and higher education partners; (2) teachers learn how to lead students in science research by participating in a rigorous 3-year program of professional development as members of professional learning communities; (3) teachers and students learn to lead through publication of their findings to their peers, to their local communities, and to the professional science community; and (4) teachers adopt efficient strategies for differentiating instruction to maximize learning for all students.

Two cohorts of approximately 50 teachers each will participate in the project, with the first cohort focusing on teachers of students in grades 3 – 5 (years 1 – 3) and the second cohort working with teachers of grades 6 – 8 (years 3 – 5). The first year of each cohort will center on learning how to use inquiry in the classroom, while the second year will incorporate citizen science research. In the third and final year, teachers and students will disseminate their research findings. Throughout the three years, teachers will meet regularly in Professional Learning Teams (PLTs) to continually evaluate and revise their instructional practices. **Meets NWO Goals: 1, 2, 3, 4, & 5**

FY 2013 Activity Information

The iEvolve with STEM grant was awarded in the fall of 2012 for a total of \$7.28 million, which was followed by recruitment and registration of 56 teachers in grades 3 – 5. A Curriculum Development Team was formed with representative teachers across districts and all designated grade levels, to revise and align the curriculum to better incorporate inquiry learning and integrate content from other subject areas. Both the Perkins Local and the Sandusky City School districts have worked together to share materials, facilities, and personnel for implementation of the new science curriculum in the fall of 2013. The first cohort of teachers participated in a two-week summer institute in June to deepen science content knowledge and learn how to implement the new Full Option Science System (FOSS) materials, which center upon inquiry-based science. Teachers also learned specific ways to holistically differentiate science instruction in this new context.

Evaluation Summary

The iEvolve with STEM summer institute was evaluated using a baseline pre-institute survey and a follow-up post-institute survey, both developed and administered online by Horizon Research Inc., who are serving as the external evaluators for this project. The surveys were developed to measure several important variables,

Continued on page 16

including teachers' beliefs, teachers' use of best-practices, teachers' self-confidence in teaching science, and leadership. In addition, the surveys measure teachers' perceptions of the quality of various project components such as the Professional Learning Teams (PLTs) the teachers engaged in during the summer (and will continue during the school year). Findings from these surveys are currently pending.

Much work was also done during this fiscal year in preparing student evaluation and research instruments to be used in the fall of 2013. The iEvolve Research Team developed three content assessments (one for each grade, three to five) and a motivation and engagement survey. The content assessments were developed according to a rigorous process that included several iterations of alignment to the Ohio Revised Content Standards, review by a panel of scientists and teachers, and pilot testing. The motivation and engagement survey was developed in consultation with Stuart Karabenick and his research group at the University of Michigan. Dr. Karabenick has years of experience working with National Science Foundation projects, and has published extensively regarding teacher and student motivation. The upcoming fiscal year will yield more evaluation results including teacher interviews, classroom observations, and results from the student assessments and surveys.

History Lab

Brief Description

History Lab is a professional development project funded by the Ohio Humanities Council that aims to (1) increase teachers' knowledge of traditional American history and science content (2) improve their ability, with the aid of humanities scholars, education faculty and informal educators, to translate this knowledge to students to improve acquisition and retention, (3) raise teachers' awareness of and knowledge about regional historical sites, (4) increase student knowledge of local history and science content and 5) to improve the attitudes of students toward history, science, and culture through inquiry-based, hand-on activities. **Meets NWO Goal: 1**

FY 2013 Activity Information

History Lab engaged ten northwest Ohio teachers in a three-day summer workshop focused on improving teachers' knowledge of American history and the instructional resources and strategies most effective in teaching American history.

Evaluation Summary

The History Lab summer workshop was evaluated using a content knowledge assessment and a focus group interview. The results of the content knowledge assessment demonstrated that teachers significantly increased their knowledge about American history, specifically regarding the War of 1812, features of Fort Meigs, and Native American-European relations. In addition, the focus group interviews indicated that teachers perceived the workshop to be valuable and effective in improving their knowledge about history as well as their instructional practices for teaching history. Most teachers reported thinking about the project to at least some extent when planning their history instruction for the school year. Teachers observed that their students were excited and engaged during the activities related to the History Lab project. Teachers' suggested that their experience in History Lab allowed them to better relate history content to their students, and therefore better facilitate student learning.

Project pi r² *THREE* (Partners in Inquiry Resources and Research *THREE*)

Brief Description

Project pi r² unites the resources of NWO and BGSU in conjunction with principal partner Toledo Public Schools, a high-need local educational agency, and additional partners Challenger Center of Lake Erie West, Educational Service Center of Lake Erie West, Imagination Station, Ohio Energy Project, Toledo Botanical Garden, and Wood and Lucas County Soil and Water Conservation Districts for a proven model in professional development. The Principal Investigator on the project is Dr. Emilio Duran of Bowling Green State University's School of Teaching and Learning. The program's overall goals are to (a) improve teachers' content knowledge in science; (b) increase teachers' use of reform-based teaching strategies in science; and (c) improve student achievement in science. **Meets NWO Goal: 1**

FY 2013 Activity Information

Project pi r² *THREE* is a \$94,743 Ohio Board of Regents: Improving Teacher Quality funded grant spanning across FY 2013 and FY 2014. The project provides 30 grades 2 – 5 teachers with 105 hours of thorough and sustained professional development and reaches over 1,200 students in high needs schools with state-of-the-art inquiry science education. The teachers who participate in the project represent nineteen different schools from northwest Ohio, seventeen of which are public. Teachers started with the project in July 2013 by attending an eight-day summer institute. This professional development opportunity provided exciting opportunities for teachers to participate in hands-on content sessions relevant to the revised science standards at each grade level. Experienced science educators (all lead classroom teachers in their districts) along with scientists delivered high quality investigative sessions in a 5E lesson format along with assistance of community resource partners. Teachers came away with ready-to-go units to implement in their classrooms and have the opportunity to invite the community resource partners into their classrooms to collaborate in extending science concepts with their students.

The summer institute also offered general sessions facilitated by education experts where teachers learned about broader educational topics such as assessment, the new learning standards, the 5E learning cycle, differentiated instruction, and how to create a classroom wiki.

The teachers involved in the project have developed a Project pi r² wiki page where every teacher has contributed lesson plans, videos, photos, web resources, and other information relevant to each grade level's learning standards. The teachers continually post their own information and explore others' posted information for the purposes of increasing the effectiveness of their science teaching.

Teachers will continue with the project through the 2013-2014 school year by participating in the highly popular STEM in the Park and NWO Symposium events. Participants will also engage in four cohort meetings in conjunction with the NWO Inquiry Series which will be facilitated in a 'lesson study' format as teachers reflect and report on the 5E investigative units in which they are integrating in their classrooms.

Continued on page 18

The final phase of professional development will focus on teacher reflective practices. This phase will also include teachers hosting a 'Science Expo' in their school where students will work collaboratively to highlight the design process of an investigation completed in the classroom.

Evaluation Summary

Evaluation data are still being collected for Project πr^2 , but preliminary findings demonstrate that teachers find the project to be engaging and impactful on their science knowledge and teaching practices. Teachers responded to a reflection survey after attending the summer workshop, and the responses from this survey indicate that teachers felt re-energized and more prepared to teach science than before. Some of the teachers wrote:

"This Project experience was power packed! It energized my spirit and rekindled my love for teaching. I have been teaching for a while. I have become stuck in routine and began to lose passion for teaching. I am always excited to start the school year, but I have never felt this passionate and better equipped at the same time. I feel like I have a new teacher's passion and an old (experienced) teacher's knowledge, especially in the science field."

"I definitely think I am a stronger science teacher than I was last year because of this (πr^2 three) workshop. I will use the 5E model to engage my students and allow them to explore and engage in their own learning. So many times teachers open up books and have students discuss vocabulary first, and then read a science lesson (which is so boring, but I am guilty of having done that in the past). I will now use the 5E model to engage my students first. I know that science is all about exploring, collaborating, and communicating. Having been able to do that for this workshop really taught me as a teacher that I need to teach science this way. I really need to teach all subjects this way! The students will then take ownership of their learning and learning really becomes an intrinsic motivator."

Faculty Professional Development and Collaborative Education Research



COSMOS STEM Education Learning Community

Brief Description

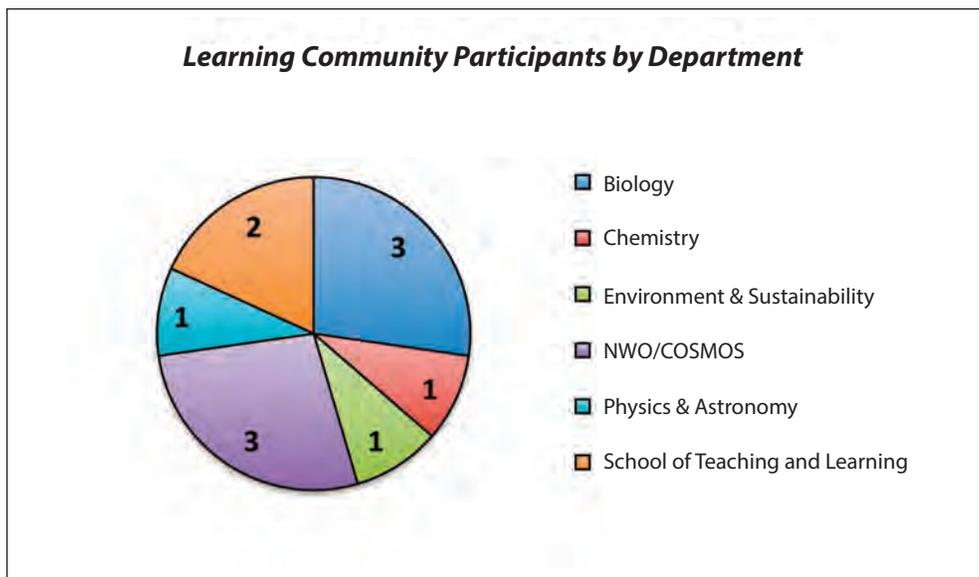
Faculty, graduate students, and others with a common interest in STEM teaching and learning come together throughout the academic year to collaboratively examine and design high tech and highly engaging environments to enhance student attitudes, motivation, engagement, and ultimately success. The learning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

Goals: 3 & 5

FY 2013 Activity Information

The 2012-13 faculty and staff learning community “HI-TECH STEM Learning Community: Highly Engaging Learning Environments by Design!” was co-led by Dr. Jodi Haney (School of Teaching & Learning and Department of Environment & Sustainability) and Dr. Matthew Partin (Department of Biological Sciences). Members of the community worked together to explore (a) education applications (apps), (b) productivity tools, (c) educational games, (d) social media tools, and (e) HI-TECH devices. The ideas and materials explored during the 2012-13 Learning Community were presented at the 2013 Learning Community Fair. The poster from this presentation can be found in Appendix D.

Participation in the COSMOS STEM Education Learning Community shows a diverse group of faculty and staff participants from 6 university departments and 2 corresponding colleges (Arts and Sciences and Education). The community consisted of 11 regular attendees and met bi-weekly throughout the academic year.



COSMOS Team and Research Dissemination

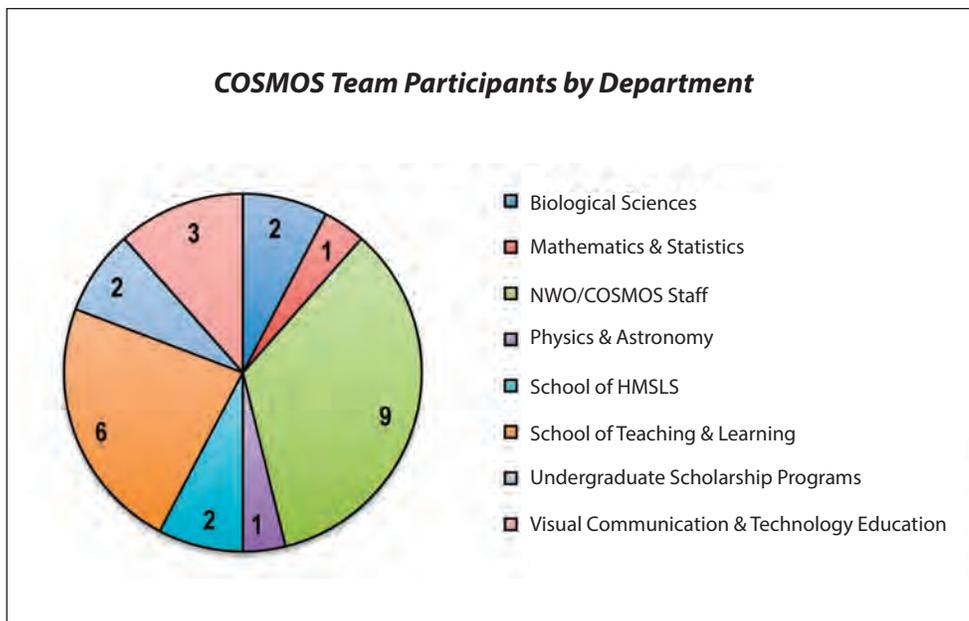
Brief Description

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 2013 Activity Information

Participation in the COSMOS Team shows a diverse group of faculty participants from 7 university departments and 3 corresponding colleges (Arts and Sciences, Education, and Technology). Representatives from 2 unique undergraduate scholarship programs were also in attendance and brought new insight to the group regarding the undergraduate student experience at BGSU. The team consisted of 26 total attendees and met 8 times over the course of the 2012-13 academic year.

A total of 24 refereed presentations and 15 refereed publications focusing on STEM education were accomplished during FY 2013 by COSMOS Team members. A full list of presentation and publications is available in Appendix G.

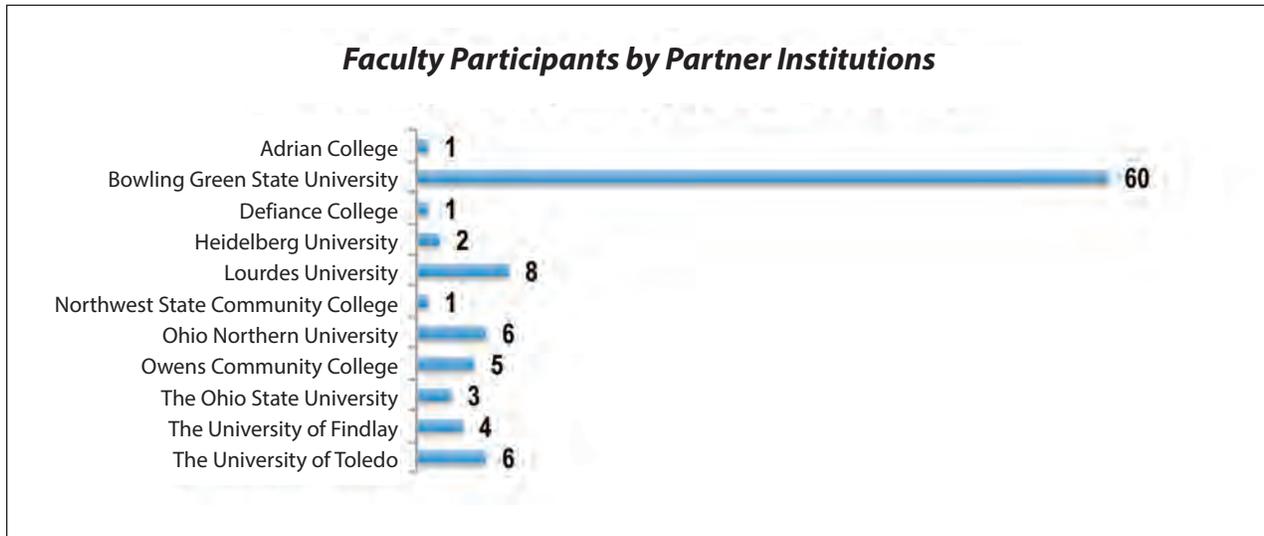


NWO Faculty Participants

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) STEM Consortium 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 2013 Activity Information



K-12 School, Business, and Community Activities



Business and Community Partners

Brief Description

NWO impacts and works with collaborative partners all over northwest Ohio. Many institutions have become formal partners. Below is a list of some of our most active partners during FY 2013. A complete list of partners as well as the application to become an NWO partner is available at www.nwocenter.org/partners.

Meets NWO Goal: 4

FY 2013 Activity Information

School Districts

These are the main district collaborations, as cited in our current grant projects; however, we recruit/disseminate to 29 counties.

- Bowling Green City Schools
- Findlay City Schools
- Fort Recovery Local Schools
- Four County Career Center
- Lima City Schools
- Maumee City Schools
- New Bremen Local Schools
- Penta Career Center
- Perkins Local Schools
- Perrysburg Exempted School District
- Putnam County Schools (9 School Districts)
- Rossford Exempted Village School District
- Sandusky City Schools
- Springfield Local Schools
- St. Henry Consolidated Local Schools
- Sylvania Local Schools
- Toledo Public Schools
- Toledo Technology Academy
- Vanguard-Sentinel Career Center

Businesses

- Ball Corporation
- British Petroleum-Husky, LLC
- Canberra Corporation
- Carolina Biological Supply Company
- Cooper Tires
- Delta Education
- Educaching by SDG Creations, Ltd.
- Kroger
- Libbey Glass
- Lubrizol
- Mother Hubbard's Reading Cupboard
- Perstorp Polyols, Inc.
- PNC Bank
- Sheridan Worldwide
- Spectra
- Texas Instruments
- The Andersons
- Time Warner Cable
- Tony Packo's
- Verizon
- Wal-Mart

Educational Service Centers

- Hancock County
- Lake Erie West
- Mid-Ohio
- North Central Ohio
- Northwest Ohio
- Putnam County
- Shelby County
- Wood County

State Support Teams

- Region 1
- Region 6
- Region 7

Community & Non-Profit Organizations

- Armstrong Air and Space Museum
- Challenger Learning Center of Lake Erie West
- Erie County Soil and Water Conservation District
- Fort Meigs: Ohio's War of 1812 Battlefield
- Imagination Station
- Lucas County Soil and Water Conservation District
- Northwest Ohio Educational Technology (NWOET)
- Sauder Historical Village
- The Ohio State University: Stone Lab
- Toledo Area Metroparks
- Toledo Blade
- Toledo Botanical Gardens
- Toledo Museum of Art
- WGTE Public Media

Ohio Junior Science and Humanities Symposium (OJSHS)

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 2013 Activity Information

Bowling Green State University hosted the 3-day event for the fifth year in a row from March 20-22, 2013. This year marked the 50th Anniversary of the OJSHS program. Dr. Karen Bjorkman, a Distinguished Professor of Astronomy and Dean of the College of Natural Sciences and Mathematics at The University of Toledo gave the keynote address. There were 24 paper presentations and over 53 poster presentations. Bluyé DeMessie from William Mason High School was the 1st place winner for paper presentations with his project titled "Sustainable and Low Cost Approach for Cleaning Metal Contaminated Water Using Pyrolyzed Banana Peels". Bluyé, along with 5 other OJSHS winners traveled to the National JSHS in Dayton, Ohio in April 2013. A complete program and other information about the 2013 OJSHS can be found at www.ojshs.org. Above is a breakdown of attendance data for the 2013 Symposium.

Participant Group	Total Attendance for 2013
High School and Middle School Students	84
K-12 Educators	11
Higher Education Faculty (Poster & Paper Judges)	25
Staff and Volunteers	25
Parents and Guests	24
TOTAL	169

Evaluation Summary

The 2013 OJSHS was evaluated using an online survey, which was completed by participating students, teachers, parents, paper and poster judges, and OJSHS staff and volunteers. The total number of survey responses was 43 for students and 27 for non-students. The results of the survey demonstrate that both students and non-students perceived the 2013 OJSHS as a high-quality worthwhile event. Almost all of the participants (95%) rated the 2013 OJSHS overall as either good or excellent. Furthermore, most OJSHS components (e.g., evening activities, paper and poster judges, awards ceremony) were rated as good or excellent by more than 90% of participants. The survey results also indicate that the 2013 OJSHS increased student interest in STEM research and careers and provided students with opportunities to network with other students and STEM professionals. And although it is likely that most of the participating students were already interested in STEM, many

Continued on page 26

non-student participants suggested that the OJSHS provided students with motivation to continue learning and conducting research about STEM. The recommendations for the 2013 OJSHS event are to 1) increase the diversity of academic fields represented by OJSHS judges, 2) standardize and enforce the amount of space allowed for each poster, and 3) continue to offer ice skating, curling, and add other activities. The 2013 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.

STEM Consortium Advisory Board

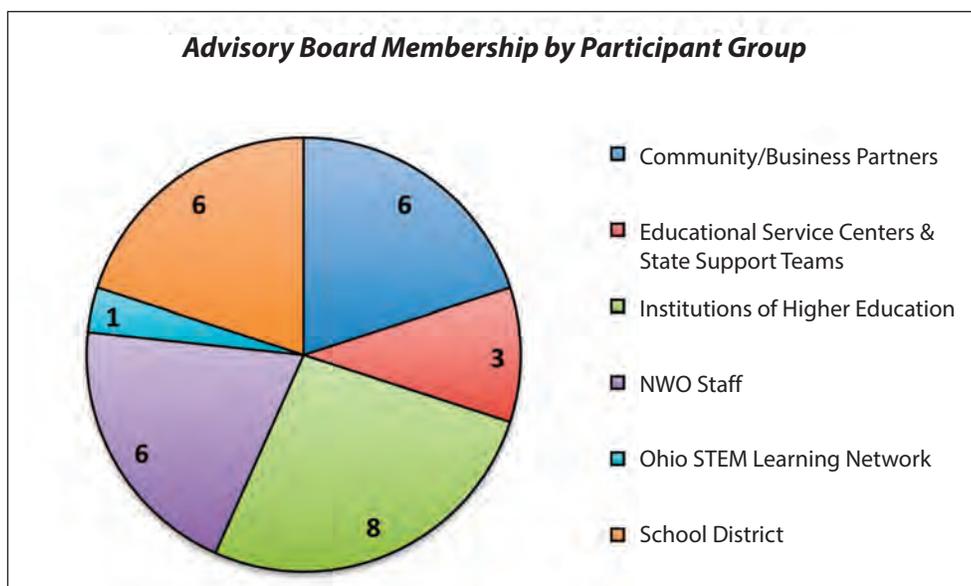
Brief Description

The NWO STEM Consortium Advisory Board was created as part of the STEM Consortium grant that NWO received from the Ohio STEM Committee, Ohio Board of Regents, and Ohio Department of Education in association with the Ohio STEM Learning Network. **Meets NWO Goal: 4**

FY 2013 Activity Information

The Board advised and guided the organization, implementation, and assessment of the NWO STEM Hub ensuring that the voices of all STEM education stakeholders of northwest Ohio are heard and regional needs are met. The Advisory Board included members from several different participants groups in order to have adequate representation of all STEM constituencies in northwest Ohio.

The Board met periodically to generate ideas, provide advice regarding direction and strategies, raise awareness of opportunities, foster collaboration, form new partnerships and strengthen existing partnerships, recruit resources for new initiatives, and help to ensure that the Hub is serving the greater good of the entire region. Attendance information by participant group is available below.



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 three and a half 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 2013 Activity Information

The September 8, 2012 event provided free lunch for all participants provided by BGSU Dining Services. Over 50 activity station providers were involved in STEM in the Park including many NWO community and business partners and university departments. Presenting sponsors for the event were Kroger and BGSU, with support from The Andersons; BGSU Foundation; BP-Husky, LLC; Battelle; Bowling Green Community Foundation; Carolina Biological Supply Company; Time Warner Cable; NWO; Ohio STEM Learning Network; and Wal-Mart. The event was held at the Perry Field House for the second consecutive year. The attendance was the largest to date, with a total of 2,681 attendees/exhibitors/staff/volunteers (a 57% increase in attendance from 2011). The event attracted families from at least 90 different cities and towns in Ohio and Michigan. Below is attendance data as well as a breakdown of the types of exhibitors at the event. A complete list of exhibitors is available at <http://nwocenter.org/STEMinPark>.

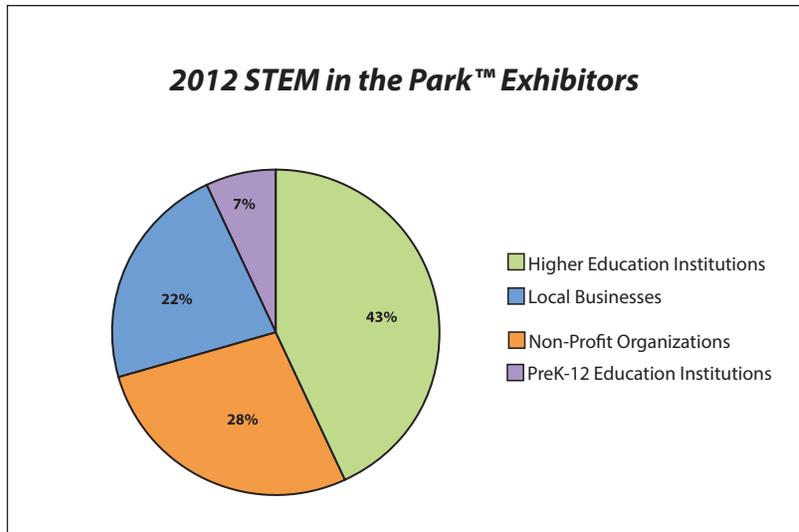
STEM in the Park™ Attendance from 2010 to 2012

STEM in the Park Participants	2010	2011	2012
Adults	620	617	991
Children 0-2 yrs.	96	103	150
Children 3-5 yrs.	201	181	307
Children 6-10 yrs.	339	355	597
Children 11-13 yrs.	118	95	160
Children 14-18 yrs.	31	25	65
Total Children (0-18 yrs.)	785	759	1,279
Total Attendees	1,405	1,376	2,270
Volunteers/Staff	32	65	69
Exhibitors	177	270	342
Total Staff and Exhibitors	209	335	411
Total Attendance	1,614	1,711	2,681

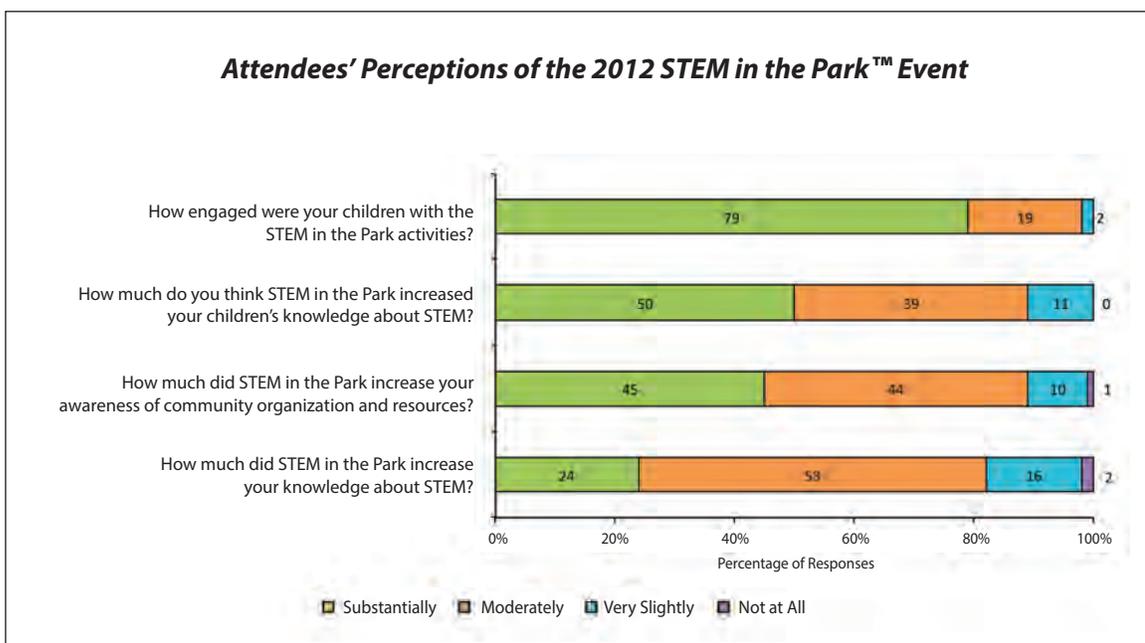
Continued on page 28

Evaluation Summary

The 2012 STEM in the Park event was evaluated using two online surveys (one for attendees and another for exhibitors). The total number of responses to the attendee and exhibitor surveys was 268 and 29, respectively. Most of the attendees reported staying at STEM in the Park for the full duration of the event (three and half hours) and visiting 11 to 30 activity stations. Also, 86% of attendees reported that their family had done (or planned to do) one



of more of the take home activities that were handed out during the event. In response to the question, "What were your family's favorite activity stations?" all but three activity stations were listed by at least one respondent, and several respondents wrote that they liked all of the activity stations. This finding indicates that the activity stations were high in quality and appealed to the preferences of many different people. The results of the attendee survey demonstrated that STEM in that Park was successful in engaging attendees in STEM activities, as well as increasing their knowledge and awareness of STEM. Two attendees wrote: "I was VERY impressed by this event. I've worked in higher education for 14 years and at 5 institutions and have never seen a community partnership program quite like this. I REALLY enjoyed it and I think that this is what public higher education is all about. Well done!" and "We were very impressed with the extensive community involvement, as well as the quality of the 'presenters'. The atmosphere was very positive and encouraging. It was great that kids could wander from place to place and do whatever caught their interest."



Continued on page 29

In addition, a majority of the attendees reported that after coming to STEM in the Park, their children were much more interested in STEM and their family was much more likely to do activities related to STEM. The results of the exhibitor survey mirrored those of the attendee survey – most of the exhibitors reported that the children and parents that visited their station were substantially engaged with the STEM activities. In addition, almost all of the exhibitors reported that STEM in the Park was a worthwhile experience, and most reported that being an exhibitor was beneficial for their organization. The recommendations for the 2013 STEM in the Park event are to: 1) increase the length of the event, 2) keep the event indoors, but use a larger space, and 3) organize activity stations by age-appropriateness. The figure below illustrates the attendees' responses to four of the questions on the attendee survey. The 2012 STEM in the Park Evaluation Report offers a more thorough account of the implementation and impact of the event, and can be found at www.nwocenter.org/reports.

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 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 2013 Activity Information

Fifty-three 5th-8th grade students from schools all over northwest Ohio competed in the You Be the Chemist Challenge held at Imagination Station in downtown Toledo on April 20, 2013. Competitors answered questions on topics concerning important chemistry concepts, processes, and historical discoveries over eight rounds of elimination until Michael Allen, a 7th grade student at the Franciscan Academy in Sylvania, emerged as the winner. He is the 2012 state of Ohio champion as well. Michael traveled to Philadelphia on June 24, with all expenses paid, to compete against twenty-six other students in the national competition. The Canberra Corporation, the Chemical Educational Foundation, Imagination Station, NWO, PVS-Nolwood Chemicals, Inc., The University of Toledo's American Chemical Society, and Toledo Public Schools sponsored the 2013 Ohio Challenge. Robert Mendenhall, Director of Science at Toledo Public Schools, chaired the event.

NWO Role in YBTC in FY 2013

- Staffing support provided for event organization and planning
- Funding for student awards and certificates of participation
- Advertisement/recruitment via Constant Contact to 7,000+ regional K-12 contacts

Affiliated Grant Projects



Science and Math Education in ACTION (ACTION)

Brief Description

BGSU, in collaboration with three regional community colleges and The University of Findlay, 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 5-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; (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: 2

NWO Role in ACTION in FY 2013

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

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 will include PhD students and in-service high school teachers working toward MS degrees. 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 Goal: 2**

Continued on page 32

NWO Role in BOSEF in FY 2013

- 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
- Student advising
- Academic mentoring and support

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). 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 in FY 2013

- Financial management of the grant budget
- Evaluation services
- Grant 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). 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 in FY 2013

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

Granting Access to Mathematics and Science (GRAMS)

Brief Description

GRAMS (Granting Access to Mathematics & Science) is a scholarship 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 and a proven support program to foster student success. Student persistence and success will be fostered with two major projects: (a) our NSF-funded STEP grant project Science, Engineering, and Technology Gateway Ohio (SETGO) and (b) the BGSU Academic Investment in Mathematics and Science (AIMS). These programs include a 5-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 2013

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

Village of Ottawa: Collaborative Research: Regional Water Treatment & Manure Treatment Feasibility Study

Brief Description

The Manure Treatment Feasibility Study and The Regional Water and Sanitary Sewer Feasibility Study are grant projects funded by the Local Governmental Innovation Fund and are undertaken in partnership with the Village of Ottawa and Putnam County Educational Service Center. The projects aim to (1) address the possibility of integrating sustainable manure management practices and long-term regional development while assessing the environmental and economic context of the area of interest, (2) estimate the feasibility of applying an integrated regional water and sewer system approach as a response to growing environmental concerns and regional development, (3) expand the educational potential by including the participation of high school students in the public school districts of Putnam County in the research, development and economic analysis aspects of the studies and (4) increase teachers' and students' interest in real science research that could have an important impact on the development of their local communities. **Meets NWO**

Goals: 2, 3 & 4

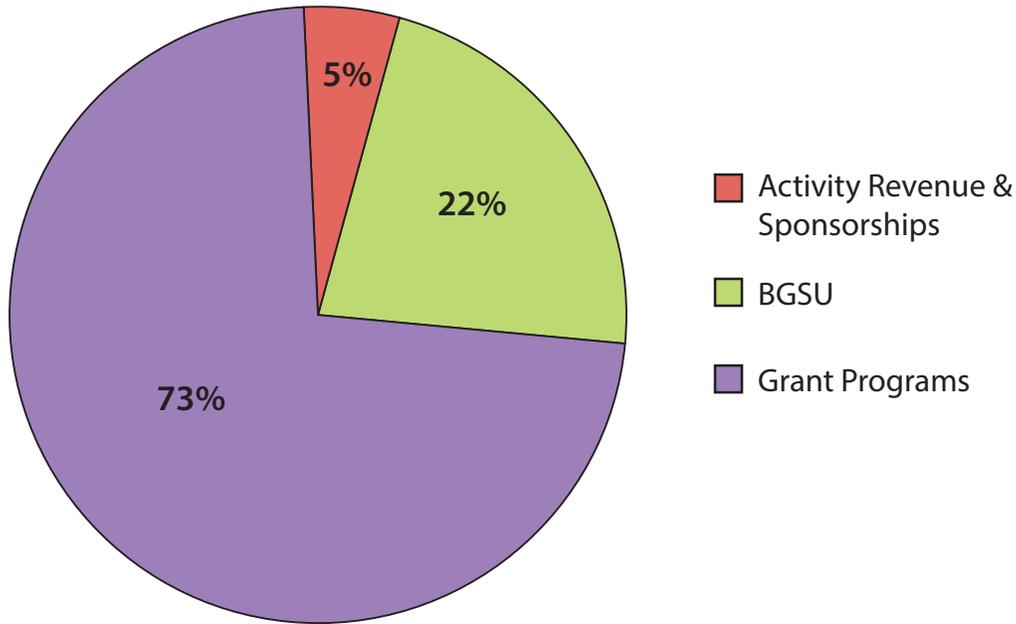
FY 2013 Activity Information

Ottawa Grant Projects engaged nine public school districts of Putnam County in 34 workshops that included various research activities and field trips for data collection. The Ottawa Grant Projects provided the teachers from Putnam County schools with scientific protocols designed in accordance with the curriculum programs, various equipment and science kits for water and soil testing. In addition, BGSU students participated in laboratory research related to the manure treatment optimization process and facilitated the workshop sessions at Putnam County schools. Teachers and K-12 students will continue their participation in Ottawa Grant Projects FY 2013 by incorporating the economic analysis aspect of the projects into their classes.

FY 2013 NWO Budget



FY 2013 Income Sources



TOTAL INCOME FOR FY 2013 **\$1,629,861.97**

The table below shows funding sources that supported FY 2013 NWO Activities.

BGSU FUNDS		
Agency: Program	Description	Award Amount
Bowling Green State University Fiscal Support for NWO/COSMOS	<ul style="list-style-type: none"> • Director • Secretary • Fringes • Assistant Directors • Faculty Associates • Operating Budget 	\$256,344.12
BGSU Cost Share	BOSEF: Building Ohio's Sustainable Energy Future - BGSU portion (Year 4 of 5) <ul style="list-style-type: none"> • Support Staff Salaries • Fringes • Faculty Salaries • Supplies 	\$105,025.07
	History Lab <ul style="list-style-type: none"> • Student Scholarships 	\$1,754.00
BGSU FUNDS TOTAL		\$363,123.19

Continued on page 37

The table below shows funding sources that supported FY 2013 NWO Activities.

ACTIVITY REVENUE AND SPONSORSHIPS		
Agency: Program	Description	Award Amount
2013 Community Resources Workshop	Revenue from Registrations	\$4,532.50
Fort Meigs	In-Kind contribution for the History Lab grant program	In-Kind
Misc. Income	Payment for Services Provided <ul style="list-style-type: none"> • Poster Printing • Evaluation • Graphic Design • Registration 	\$13,759.87
2012 – 13 NWO Inquiry Series Education Inquiry Series	Revenue from Registrations	\$7,178.28
2012 NWO Symposium	Revenue from Registrations	\$7,725.00
2013 OJSHS Sponsors	BGSU College of Arts & Sciences	\$500.00
	BGSU College of Education & Human Development	\$150.00
	BGSU Department of Biological Sciences	\$250.00
	BGSU Department of Chemistry	\$250.00
	BGSU Department of Physics & Astronomy	\$100.00
	Perstorp Polyols	\$1,000.00
	Revenue from Registrations	\$2,235.00
2012 STEM in the Park Sponsors	The Anderson's	\$200.00
	BGSU College of Arts & Sciences	\$1,500.00
	BGSU College of Education & Human Development	\$1,500.00
	BGSU College of Technology, Architecture & Applied Engineering	\$1,500.00
	BGSU Department of Biological Sciences	\$500.00
	BGSU Department of Chemistry	\$300.00
	BGSU Department of Mathematics & Statistics	\$200.00
	BGSU Department of Physics & Astronomy	\$250.00
	BGSU Department of Visual Communication & Technology Education	\$500.00
	BGSU Foundation	\$4,000.00
	BGSU Office of Admissions	\$2,500.00
	BGSU School of Earth, Environment and Society	\$500.00
	BGSU School of Teaching & Learning	\$500.00
	Bowling Green Community Foundation	\$1,250.00
	BP	\$5,000.00
Kroger	\$15,000.00	
Time Warner Cable	\$2,500.00	
Wal-Mart	\$2,500.00	
You Be The Chemist	Canberra Corporation	\$250.00
ACTIVITY REVENUE AND SPONSORSHIPS TOTAL		\$78,130.65

Continued on page 38

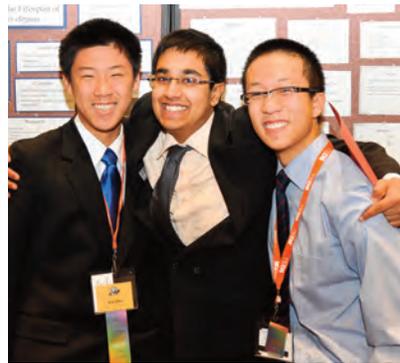
GRANT PROGRAMS		
Agency: Program	Description	Award Amount
Academy of Applied Science	2013 Ohio Junior Science & Humanities Symposium	\$20,000.00
National Science Foundation: S – STEM	GRAMS: Granting Access to Mathematics and Science (Year 4 of 5) & GRAMS II: Granting Access to Mathematics and Science II (Year 3 of 5)	\$358,627.00
National Science Foundation: Math Science Partnership Program	iEvolve: Inquiry and Engagement to Invigorate and Optimize Learning for Everyone	\$326,733.40
Ohio Board of Regents: ITQ Program	Common Core for Reasoning and Sensemaking – Elementary ((CO) ² RES)	\$6,637.48
	Common Core for Reasoning and Sensemaking – Secondary ((CO) ² RES)	\$5,654.45
	Partners in Inquiry Resources & Research (Project pi r ² THREE)	\$7,296.95
	Science Teaching Advancement through Modeling Physical Science (STAMPS III) (BGSU Subaward for Evaluation Services)	\$7,156.70
	STeM 2 STEM (Ohio Northern University subaward for Evaluation Services)	\$6,114.83
Ohio Board of Regents: Choose Ohio First Program	BOSEF: Building Ohio’s Sustainable Energy Future (Year 4 of 5)	\$273,915.00
Ohio Development Services Agency	Manure Treatment Feasibility Study (Subaward from the Village of Ottawa)	\$21,843.83
	Collaborative Research: Constructive Chemistry (Subaward from the Village of Ottawa)	\$20,761.09
Ohio Humanities Council	History Lab	\$10,000.00
OSLN/Battelle Foundation	Ohio Race to the Top	\$26,136.03
	Gates Foundation Subaward	\$45,284.56
	OSLN/Battelle Hub Grant	\$49,831.74
Toledo Community Foundation	SPACE 2012 (ESC of Lake Erie West subaward for Evaluation Services)	\$2,615.07
GRANT PROGRAMS TOTAL		\$1,188,608.13

Continued on page 39

GRANTS AND SPONSORSHIP PROPOSALS AWARDED IN FY 2013		
Agency: Program	Description	Award Amount
Academy of Applied Science	Ohio Junior Science & Humanities Symposium	\$20,000.00
BGSU Foundation	2013 STEM in the Park	\$3,000.00
BP	2013 STEM in the Park	\$10,000.00
Canberra Corporation	You Be The Chemist	\$250.00
Cooper Tire & Rubber Foundation	2013 STEM in the Park	\$250.00
Kroger	2013 STEM in the Park	\$500 Gift Card & 3,000 Bags
Lubrizol Foundation	2013 STEM in the Park	\$10,000.00
Martha Holden Jennings Foundation	iTraining	\$16,100.00
Perstorp Polyols	Ohio Junior Science and Humanities Symposium	\$1,000.00
PNC Bank	2013 STEM in the Park & 2013-14 NWO STEM Inquiry Series	\$22,580.00
Spectra Group Ltd.	2013 STEM in the Park	\$3,000.00
The Andersons	2013 – 14 NWO Symposium & NWO STEM Education Inquiry Series	\$5,000.00
Verizon	2013 STEM in the Park	\$10,000.00
Wal-Mart	2013 STEM in the Park	\$2,000.00
Ohio Board of Regents: ITQ Program	Common Core for Reasoning and Sensemaking – Elementary ((CO) ² RES)	\$89,164.00
	Common Core for Reasoning and Sensemaking – Secondary ((CO) ² RES)	\$87,545.00
	Partners in Inquiry Resources & Research (Project pi r ² <i>THREE</i>)	\$94,743.00
	Science Teaching Advancement through Modeling Physical Science (STAMPS III) (BGSU Subaward for Evaluation Services)	\$7,096.05
Ohio Development Services Agency	Collaborative Research: Constructive Chemistry (Subaward from the Village of Ottawa)	\$92,310.00
	Manure Treatment Feasibility Study (Subaward from the Village of Ottawa)	\$92,310.00
OSLN/Battelle Foundation	Gates Foundation Subaward	\$7,143.00
	OSLN/Battelle Hub Grant	\$25,000.00

Appendices

- A. Community Resources Workshop Recruitment Email
- B. Faculty and Student Recognition
- C. History Lab Recruitment Email
- D. Learning Community Poster
- E. "NWO STEM Connection" Print and E-Newsletters
- F. NWO STEM Education Inquiry Series Advertising
- G. NWO Publications and Presentations
- H. NWO Symposium Advertising
- I. OJSHS Recruitment Email
- J. Project π^2 *THREE* Recruitment Materials
- K. STEM in the Park Advertising
- L. You Be The Chemist Challenge Recruitment Email



Appendix A: Community Resources Workshop Recruitment Email



2013 Community Resources Workshop for Educators

June 17-21, 2013

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

Registration Fee Includes:

- Several lunches and one dinner
- CEUs/Contact Hours for the entire week
- Teaching resources and hands-on materials

Join us for an exciting week packed with activities addressing the new Common Core Standards, STEM learning and 21st Century Skills.

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/spreadsheet/viewform?formkey=dDRJWXQ3SUJUd0s4dHVNv2JRbWdoOHc6MQ#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>

Special on graduate credit!

In addition, Lourdes University is offering 2 or 3 graduate credit hours for the one-week course at a special discounted rate of just \$200 per credit hour. That means you can receive two graduate credits for only \$400! Contact Carolyn Jaksetic for information at: cjaksetic@lourdes.edu

**The graduate credit fee is on top of the \$150 registration fee and can be easily arranged through Carolyn Jaksetic at Lourdes University.*

2013 Community Resource Partners



Appendix B: Faculty & Student Recognition

BGSU MyBGSU | email | directory | search
 ACADEMICS | ADMISSIONS | THE ARTS | ATHLETICS | LIBRARIES | A-Z LINKS
 BOWLING GREEN STATE UNIVERSITY



IMPROVING TEACHER QUALITY

Marketing & Communications

Marketing & Communications
 WBGU-TV
 Online Media Room
 Staff Listing
 News Releases
 BGSU Magazine
 Television Learning Services
 Zoom News
 BGSU Bulletin
 BGSU Graphic Standards Manual

Improving Teacher Quality

Improving teacher quality: BGSU faculty create pathways to change

In response to the changing landscape of education, teachers need to change the way they teach. BGSU science and mathematics faculty are creating pathways for this change by modeling best practices.

BGSU College of Education and Human Development faculty have received four Improving Teacher Quality (ITQ) state grants from the Ohio Board of Regents, totaling more than \$385,000.

Although each program is unique in its structure, they share a common goal to help teachers make better sense of the content and learn more about best practices to impact the way they are teaching.

The purpose of the ITQ grant program, funded under the No Child Left Behind Act of 2001, is to increase the academic achievement of all students by helping high-need school districts by providing high-quality professional development for elementary, middle and high school teachers of mathematics and science.

The two science and two mathematics grants funded this year are in fact continuations of programs supported last year:

Science

- Science Teaching Advancement Through Modeling Physical Science III (STAMPS III)
- Partnerships in Inquiry Resources and Research THREE (Project pi r-squared THREE)

Math

- Common Core for Reasoning and Sense Making: Elementary (CO²RES Elementary)
- Common Core for Reasoning and Sense Making: Secondary (CO²RES Secondary)

"I think it's important we provide a forum for teachers to be able to expand their pedagogy skills, expand their content knowledge and really see what's happening with best practices," said science education faculty member Dr. Tracy Huziak-Clark, principal investigator for STAMPS III. "Once you leave undergrad and maybe even when you leave your master's program, you may not see newest best practices again. So this is one way, one model, for helping interested classroom teachers learn and practice best practices."

"I think most of us are going to just change the way we teach any topic, any lesson or concept just from what we've seen and practiced."

In its third year of funding, STAMPS III is not only bringing in a new group of 24 teachers this summer, but also welcoming back a year-two cohort of 15 participants from the previous two years to design curriculum by implementing the content and pedagogy learned in year one.

Through word of mouth and proven success, STAMPS I and II received 75 applications. Other grants are experiencing a similar high level of interest, both from partner school districts as well as individuals seeking to grow.

A participant from last year's CO²RES Elementary program said, "I feel this experience has been invaluable. I think everybody should have the opportunity to take this course before they try to implement the standards because I know that the other people in my building aren't going to implement it the way I'm going to because of the benefit of this program."

The CO²RES Elementary and (CO²RES Secondary programs are offering much-needed clarification of the Common Core Standards for Mathematics (CCSSM) adopted by Ohio in 2010. Although the standards have been in existence for several years, mathematics teachers are coming into the professional development programs with a foggy understanding of expectations.

"These standards are not new names for old ways of doing business, so really there is a change here in what's happening in mathematics education. Not just math - education," said Dr. Gabriel Matney, an associate professor of mathematics education and principal investigator for CO²RES Elementary.

To clarify the standards and expectations, CO²RES Elementary and (CO²RES Secondary begin their programs with discussions about what sense-making and reasoning are and the eight standards for mathematical practices.

Gaining a better understanding of what is expected of them and their students has teachers excited to plan. Reflecting on the program, one participant remarked, "The experience has been overwhelming, favorably. There's just a lot of information. And I guess the expectation was greater than what I thought - which is good, because I came in here wanting to know more about the Common Core, and what I could do to help my students. And I knew that I needed to make changes to my teaching style and my practices. This really opened my eyes to how big this really is. The changes I will have to make are more than what I expected."

A participant in last year's (CO²RES Secondary program shared similar experiences. One teacher remarked, "I think most of us are going to just change the way we teach any topic, any lesson or concept just from what we've seen and practiced."

The modeling approach that STAMPS III takes is very different from the traditional way teachers were taught. "The modeling approach actually gives questioning and inquiry, and focuses on students designing their own investigations given certain parameters," said Huziak-Clark.

The way Huziak-Clark and Dr. John Laird, a professor of physics and astronomy and co-principal investigator of STAMPS III, define a model by asking students to provide a description of what they observe mathematically, pictorially and verbally.

"When students explain a model in three ways, it helps increase their ability to conceptually understand and addresses more of the learning styles of students so it's recognized as a best practice for teaching physical science. However, it is not how most science teachers were traditionally taught to teach physical science, so for them it's really new and eye-opening to think about the way they teach, which really makes it exciting for them and us," said Huziak-Clark.

Teachers dedicate more than 100 hours to these rigorous programs, but with big commitment come big rewards. Teachers earn a stipend, BGSU graduate credit and materials for their classroom. More importantly, they are walking away with enriching lesson plans and a new-found confidence.

"Districts who participated in last year's (CO²RES Secondary reported their teachers felt it was helpful, they felt more efficacious. They learned about the Common Core, practice standards and content standards, and so those districts, when asked about this year, immediately signed up again," said Dr. Jonathan Bostic, an assistant professor of mathematics education, principal investigator for (CO²RES Secondary and co-PI of (CO²RES).

Following the professional development programs, teachers from all four projects confidently presented at the NWO Symposium on STEM Teaching.

Members of Project pi r-squared THREE will also lead inquiry-based, hands-on activities at STEM in the Park, a community event that unites STEM (science, technology, engineering and mathematics) faculty scientists, community partners, teachers, students and their families for a day of hands-on activities to increase awareness of the importance of STEM learning in the future of Ohio.

The Project pi r-squared THREE project culminates with every teacher and their students leading a Science Expo in their school wherein students will facilitate inquiry-based STEM activities for other teachers and students in their school as well as parents and administrators.

BGSU faculty are sharing their knowledge and findings, too. In fact, Matney and Bostic presented at the Research Council on Mathematics Learning in Tulsa, Okla., over spring break.

Though each program has varying objectives and outcomes, one common result that's evident throughout the data collected is that teachers are committed to changing the way they teach - and BGSU faculty are influencing this change.

(Posted March 11, 2013)

Appendix B: Faculty and Student Recognition cont.

Monday, January 28, 2013 BGSU

Zoom news

BOWLING GREEN STATE UNIVERSITY NEWS UPDATE



BGSU
In the news

Montana Miller: our so-called digital life
- *The Blade*

Donahue on the reinvention of Vanilla Ice
- *Miami Herald*

Singers show age can't dull musical barbs of Gilbert & Sullivan
- *Sentinel-Tribune*

BGSU receives high marks for educator preparation

The University has received high marks for its educator preparation programs.

In the Educator Performance Report, released earlier this month by the Ohio Board of Regents (OBOR), BGSU's teacher education programs were recognized for their high quality. The comprehensive report, which will be released annually for OBOR-approved educator preparation programs in Ohio, provides helpful information about teacher preparation programs in the state.

The top benchmarks for BGSU were reflected in the comments from student teachers. Of the 49 measures of excellence, BGSU student teachers rated the University higher than the state averages on most of the questions. The responses put BGSU in the top three universities in Ohio for student teacher preparation, explained Dr. Dawn Shinew, director of the School of Teaching and Learning in the College of Education and Human Development.

"From our students' perspectives, we are viewed in a positive light for providing a top-quality education," Shinew said. "It is wonderful affirmation to know that our faculty and our programs are doing the right things and preparing our students to go out into classrooms ready to teach."

"BGSU has a long tradition of providing quality teacher education programs," said Dr. Brad Colwell, dean of the BGSU College of Education and Human Development. "It is nice to have the metrics from the state to validate the quality of our programs."

Also in the report, BGSU's teacher licensure completers had a 96 percent pass rate, and 98 percent of student teachers completed their programs, which both reflect among the highest rates mentioned in the report.

The report provides valuable information to prospective students, parents, education advocates and policy makers, in addition to faculty and leaders at colleges and universities," said Rebecca Watts, associate vice chancellor of P-16 initiatives at the Board of Regents.

The **summary report** and the various university and college's reports were created by legislation within Gov. John Kasich's first budget. The report links the performance of educators to the institutions of higher education that prepared them.

Events in brief

On Wednesday (Jan. 30), the University community is invited meet BGSU's real-life "Molly Pitcher" Ruth Hoffman at the Women's Center brown bag lunch presentation, and later to a screening and scholarship awards presentation on Wednesday (Jan. 30) for the Suicide Prevention Video Contest. [Get all the details in Brief.](#)

Present at the Teaching and Learning Fair

The seventh annual BGSU Teaching and Learning Fair is shaping up to be an exciting event with a wealth of new and interesting information. If you would like to share your experiences or innovations in teaching or learning, sign up by Friday (Feb. 1).

The fair will be held from 9 a.m. to 12:30 p.m. Feb. 15 in the Lenhart Grand Ballroom. Faculty, staff and graduate students can register to do a poster presentation. [Learn more.](#)

For more information, contact Karen Meyers at meyersk@bgsu.edu or 372-7874.

- [Job Postings](#)
- [Obituary](#)
- [In Brief](#)

Zoom News is provided as a service to BGSU faculty and staff

Monday, November 19, 2012 BGSU

Zoom news

BOWLING GREEN STATE UNIVERSITY NEWS UPDATE



Dr. Jerry Schnepf

New app to translate speech into sign language

"It takes a lot of data to drive a human character," according to Dr. Jerry Schnepf, visual communication technology. Schnepf is part of a team engaged in creating an app for smartphones or tablets that synthesizes spoken English into American Sign Language (ASL).

He and collaborators at DePaul University in Chicago have created an avatar, "Paula," to sign spoken language in 3-D animation. Once completed, the app will augment Deaf accessibility in short interactions, such as a hotel check-in, where an interpreter would not be hired.

A computer scientist, Schnepf is particularly interested in human-computer interaction and computer graphics, which is exactly what the "ASL Synthesizer Project at DePaul University" encompasses.

Though not deaf himself, he became involved in the digital translator project led by Dr. Rosalee Wolfe, director of the Human-Computer Interaction Program, while he was a graduate student at DePaul, and has continued working on it since joining the BGSU faculty this semester.

The group has broken down ASL into its component parts: hand shape, palm orientation, movement, location, and nonmanual signals, which include facial expression, eye gaze and posture. They are geometrically deconstructing each aspect in order to program "Paula" to form all the pieces seamlessly, utilizing existing voice-recognition software as the intermediate step between the spoken word and the signs.

"It's an iterative design," Schnepf said. "We develop components and then show them to Deaf users for continual feedback." For additional testing, the group runs a booth at the annual Deaf Nation Expo in Chicago, where they invite attendees to preview the software and give their opinions.

"ASL is a spatial language," Schnepf said. "It is usually the first language learned by Deaf people and it has a completely different grammar and word order from English, which they usually learn as a second language."

This presents a special challenge when translating spoken English into the grammatical structure of American Sign Language, Schnepf noted. He is particularly involved in the nonmanual aspect of ASL, getting the facial expressions and movements right.

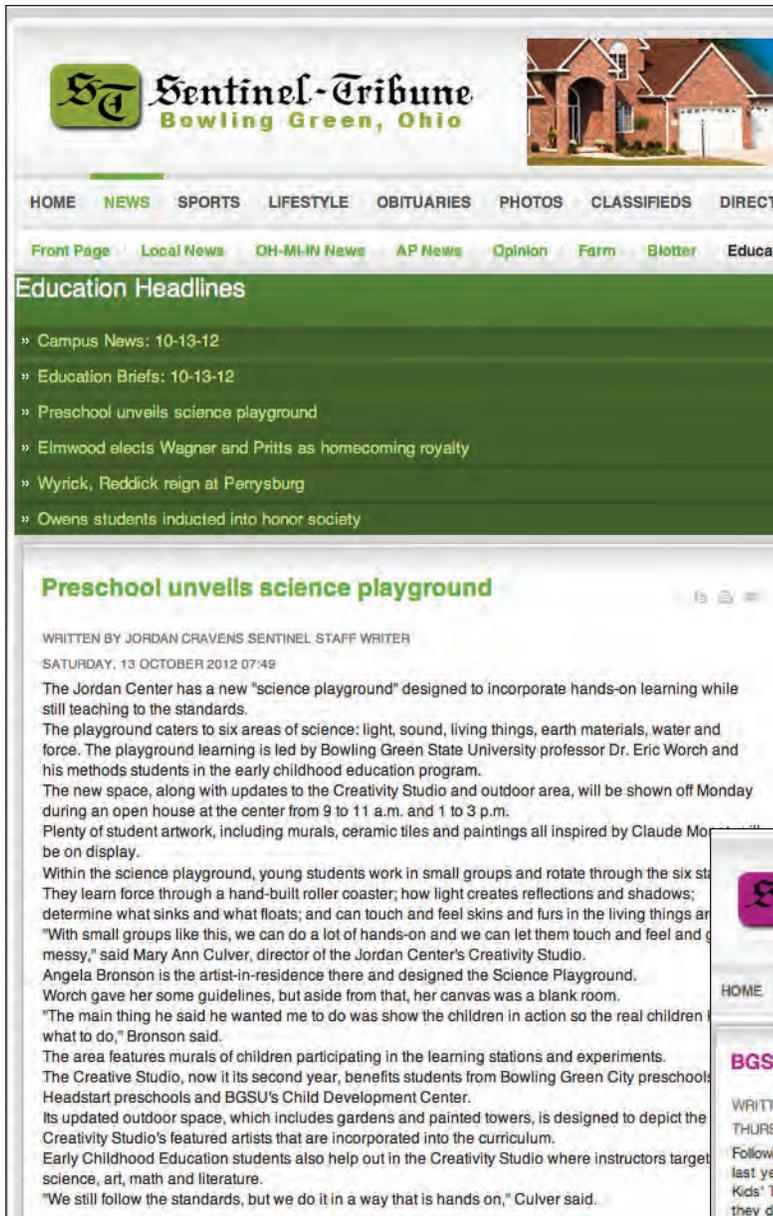
"People may ask why we need ASL when we have closed captioning and written language to communicate with the Deaf. But for them, that is like communicating in a second language that never flows as easily and expressively as their primary sign language," Schnepf said.

"I'm really excited about this new technology he is working on," said Dr. Lisa Dimling-Handyside of BGSU's deaf/hard of hearing program, who has written a book on sign language. "His new technology has great potential for both children and adults who have hearing loss for opening up the lines of communication. Communication access can really be a barrier for people with hearing loss, and this technology can open up those doors. In terms of using this with children in the classroom who are deaf or hard of hearing, I can only imagine what it can do for communicating with hearing peers and teachers!"

The project has opened a gateway for Schnepf as well, he said. In addition to studying sign language, he has become interested in Deaf culture, which is quite strong in Chicago, and has connected with BGSU's Deaf Culture Club. "There's a lot of pride in Deaf culture," he said.

Zoom News is provided as a service to BGSU faculty and staff.

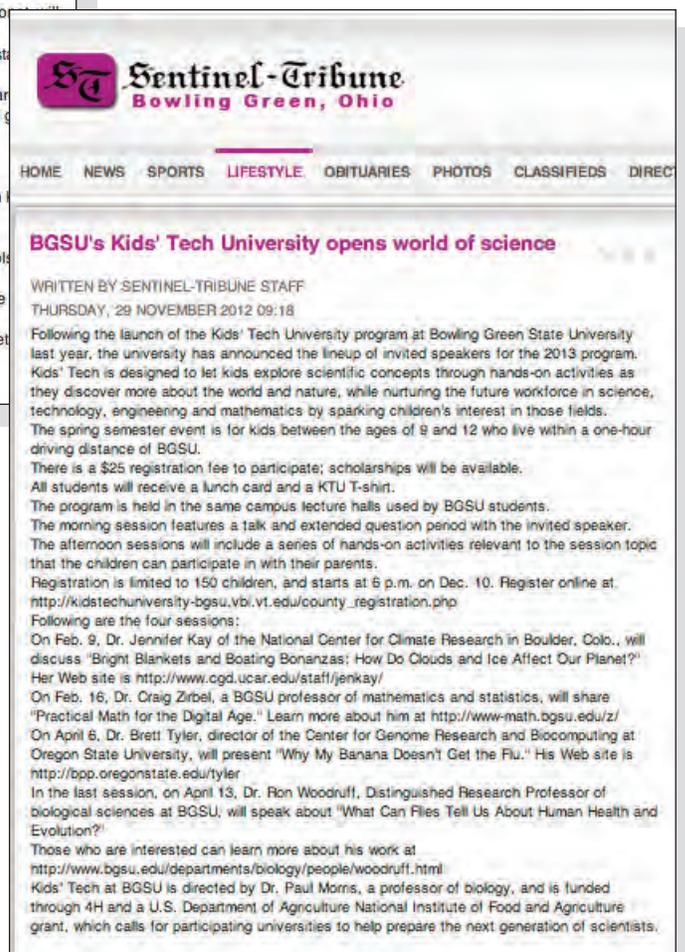
Appendix B: Faculty and Student Recognition cont.



The screenshot shows the Sentinel-Tribune website for Bowling Green, Ohio. The navigation menu includes HOME, NEWS, SPORTS, LIFESTYLE, OBITUARIES, PHOTOS, CLASSIFIEDS, and DIRECT. Below the menu, there are links for Front Page, Local News, OH-MI-IN News, AP News, Opinion, Farm, Blotter, and Education. The Education Headlines section lists several items:

- » Campus News: 10-13-12
- » Education Briefs: 10-13-12
- » Preschool unveils science playground
- » Elmwood elects Wagner and Pritts as homecoming royalty
- » Wyrick, Reddick reign at Perrysburg
- » Owens students inducted into honor society

The main article is titled "Preschool unveils science playground" and is written by Jordan Cravens, a Sentinel staff writer. It is dated Saturday, 13 October 2012 07:49. The article describes a new "science playground" at the Jordan Center, designed for hands-on learning. It features murals, ceramic tiles, and paintings inspired by Claude Monet. The playground caters to six areas of science: light, sound, living things, earth materials, water and force. The playground learning is led by Bowling Green State University professor Dr. Eric Worch and his methods students in the early childhood education program. The new space, along with updates to the Creativity Studio and outdoor area, will be shown off Monday during an open house at the center from 9 to 11 a.m. and 1 to 3 p.m. The area features murals of children participating in the learning stations and experiments. The Creative Studio, now in its second year, benefits students from Bowling Green City preschools, Headstart preschools and BGSU's Child Development Center. Its updated outdoor space, which includes gardens and painted towers, is designed to depict the Creativity Studio's featured artists that are incorporated into the curriculum. Early Childhood Education students also help out in the Creativity Studio where instructors target science, art, math and literature. "We still follow the standards, but we do it in a way that is hands on," Culver said.



The screenshot shows the Sentinel-Tribune website for Bowling Green, Ohio. The navigation menu includes HOME, NEWS, SPORTS, LIFESTYLE, OBITUARIES, PHOTOS, CLASSIFIEDS, and DIRECT. The main article is titled "BGSU's Kids' Tech University opens world of science" and is written by Sentinel-Tribune staff. It is dated Thursday, 29 November 2012 09:18. The article describes the launch of the Kids' Tech University program at Bowling Green State University. Following the launch of the Kids' Tech University program at Bowling Green State University last year, the university has announced the lineup of invited speakers for the 2013 program. Kids' Tech is designed to let kids explore scientific concepts through hands-on activities as they discover more about the world and nature, while nurturing the future workforce in science, technology, engineering and mathematics by sparking children's interest in those fields. The spring semester event is for kids between the ages of 9 and 12 who live within a one-hour driving distance of BGSU. There is a \$25 registration fee to participate; scholarships will be available. All students will receive a lunch card and a KTU T-shirt. The program is held in the same campus lecture halls used by BGSU students. The morning session features a talk and extended question period with the invited speaker. The afternoon sessions will include a series of hands-on activities relevant to the session topic that the children can participate in with their parents. Registration is limited to 150 children, and starts at 6 p.m. on Dec. 10. Register online at http://kidstechuniversity-bgsu.vbl.vt.edu/county_registration.php. Following are the four sessions:

- On Feb. 9, Dr. Jennifer Kay of the National Center for Climate Research in Boulder, Colo., will discuss "Bright Blankets and Boating Bonanzas: How Do Clouds and Ice Affect Our Planet?" Her Web site is <http://www.cgd.ucar.edu/staff/jenkay/>
- On Feb. 16, Dr. Craig Zibel, a BGSU professor of mathematics and statistics, will share "Practical Math for the Digital Age." Learn more about him at <http://www-math.bgsu.edu/z/>
- On April 6, Dr. Brett Tyler, director of the Center for Genome Research and Biocomputing at Oregon State University, will present "Why My Banana Doesn't Get the Flu." His Web site is <http://bcp.oregonstate.edu/tyler>
- In the last session, on April 13, Dr. Ron Woodruff, Distinguished Research Professor of biological sciences at BGSU, will speak about "What Can Flies Tell Us About Human Health and Evolution?" Those who are interested can learn more about his work at <http://www.bgsu.edu/departments/biology/people/woodruff.html>

Kids' Tech at BGSU is directed by Dr. Paul Morris, a professor of biology, and is funded through 4H and a U.S. Department of Agriculture National Institute of Food and Agriculture grant, which calls for participating universities to help prepare the next generation of scientists.

Appendix B: Faculty and Student Recognition cont.




HOME
NEWS
SPORTS
LIFESTYLE
OBITUARIES
PHOTOS
CLASSIFIEDS
DIRECTOR

Front Page
Local News
OH-MH-IN News
AP News
Opinion
Farm
Blotter
Educatio

Students dive into BGSU marine lab

WRITTEN BY HAROLD BROWN SENTINEL CITY EDITOR
SATURDAY, 06 OCTOBER 2012 07:39



Justin Grubb thought he had found a special place as a high school student when he visited the marine laboratory at Bowling Green State University.

"It looked cool. The students were working and getting hands-on experience," Grubb said.

Now a junior at BGSU, Grubb is one of five student assistant lab coordinators. He spent five weeks last summer on an internship in Costa Rica.

Marine Lab Coordinator and lecturer Dr. Matt Partin points to Grubb as an example of more than 150 students enrolled in the marine and aquatic biology specialization program.

"The lab helps student retention, gives the students a place to hang out, a place where they can belong to both the (biology) department and to the university," Partin said. The program has been growing quickly since the specialization degree was approved. It is the only program of its kind in Ohio, Partin said.

Dr. R. Michael McKay, Ryan Professor of Biology and director of the marine program, said the specialization gives students recognition for their work and makes it easier to track the growth in the program. He said 70 students entered the program this fall.

Partin said it isn't just biology students who take an interest in the lab. "The treasurer of the Student Marine Biology Association is a business major."

Partin holds three degrees from BGSU and worked at an aquarium before returning to BGSU in 1999 to oversee the marine lab.

"Students like to show off their tanks to friends and family. They spend a lot of heir time with the animals," Partin said.

Many of the animals come from breeders but the lab also collects some animals during field trips and accepts some donations. "We only take what will do well in an aquarium," Partin said.

To help with student recruitment, Partin uses a showcase display outside the lab featuring a digital picture frame of photos from field trips and boards filled with business cards of alumni.

Grubb started volunteering in the marine lab as a freshman, taking care of a coral tank. He's now responsible for four 100-gallon tanks, along with assistant coordinator duties making sure others are taking care of their responsibilities.

He has started a tank based on a Mangrove tree system, which has a sting ray as its primary resident. In Costa Rica, Grubb lived with a host family that spoke only Spanish. He set up a reef tank from scratch there and showed students there how care for the tank. He also set up a display at a Costa Rica street to educate tourists about the illegal exotic animal market. Grubb said it is illegal to take shells from the country. "The shells in the exhibit had been taken from tourists by customs," Grubb said.

The trip also allowed Grubb to travel to a rain forest.

Partin said some student internships are done at BGSU but most are off campus. Some are as close as the Toledo Zoo, while others might be as far away as South Africa. Alumni play a key role in helping with internships.

Partin said students also help with tours of the BGSU herpatarium, the greenhouse and the marine lab, which are given on Thursday mornings. All are located in the Life Sciences Building. A highlight is a "touch tank" that allows visitors to handle marine creatures. Public tours are usually conducted Thursday mornings. Groups should make prior arrangements.

McKay said young people interested in all biology need to "take more than the minimum requirements in math and science classes. The biggest challenge with low math skills is the amount of college course work that will be required."

He said instructors are being added to help handle the growing enrollment and to expand areas of expertise, including larger animals such as sea otters and dolphins.

Started in 1963 by faculty member Cynthia Stong and a group of students who put five 10-gallon tanks together with animals from a field trip, the lab now has more than 50 tanks with more than 3,000 gallons of water.

"She has been a real rallying force for the program. She has kept track of her students. It has been important to help keep older alumni interested," Partin said. Stong received an honorary doctorate of science education from BGSU a few years ago.

A 50th anniversary event is being planned for 2013 Homecoming weekend.

<http://www.bgsu.edu/departments/biology/facilities/marine/mainpage.html>

Thursday, June 13, 2013
BGSU

Zoom news

BOWLING GREEN STATE UNIVERSITY NEWS UPDATE



"All Hands on Deck" presents family-friendly entertainment.

"All Hands on Deck" part of Independence Day festivities

It's "All Hands on Deck" at BGSU for a memorable Independence Day this year. The University is calling all community members to the lively, patriotic musical revue.

"All Hands on Deck" is part of the city of Bowling Green's Independence Day celebration. The performance begins at 6 p.m. July 3 in Koberger Hall at the Moore Musical Arts Center, before the community fireworks display at Doyt Perry Stadium.

The family-friendly, 1940s-style program transports the audience back to July 4, 1942, and a real 'war-bond drive and live radio show. On-air antics, classic commercials, timeless songs and impromptu comedy skits power the radio show until the performance comes full circle with a big patriotic finish that pays tribute to both active duty and veteran members of U.S. armed forces. Featuring over 40 classic Big Band hits in original arrangements, "All Hands on Deck" is reminiscent of Bob Hope's famed USO shows.

On hand will be the show's co-creator Jody Madaras, who has appeared on and off Broadway and on TV,

BGSU
in the news

- Midden says proving chemical caused cluster could be difficult
- [Port Clinton News Herald](#)
- Kingston introduced as Athletics Director
- [Sentinel-Tribune](#), [The Blade](#), [TV coverage from the event](#)
- Torero, BGSU, others continue south-end murals
- [La Prensa](#)

Volunteers sought for Falcon BEST robotics competition

Much like the African proverb that "It takes a village to raise a child," it takes involvement by many to host the [Falcon BEST robotics competition](#).

Appendix B: Faculty and Student Recognition cont.

Proving chemical caused cluster could prove difficult

Jun. 7, 2013 | 0 Comments

Recommend Sign Up to see what your friends recommend.

Recommend 0 Tweet 1 +1 0 Pin it



Steve Keller chokes up as he talks about his grandson, Kole Keller, who died of brain cancer in 2007. Keller spoke at a news conference on Wednesday, May 15, 2013, in Toledo. / Kristina Smith/News Messenger

Written by Kristina Smith Watchdog/enterprise reporter

FILED UNDER

News
Local News

CLYDE — Scientists said that it could be difficult to prove a commonly found chemical caused the local childhood cancer cluster that sickened more than 30 children.

Attorneys for families of those affected by the eastern Sandusky County cancer cluster are trying to prove benzaldehyde, a liquid that evaporates when exposed to air and is used as a food flavoring, in cosmetics and as a solvent, is the cause of the cluster. The attorneys are pursuing a class-action lawsuit against Whirlpool Corp.

Benzaldehyde is the only common denominator that has been found among some of the cancer victims, said Alan Mortensen, a Salt Lake City, Utah, attorney representing them. The chemical was found in dust in the attics of five Clyde homes, and cancer victims had lived in four of them.

Mortensen has said elevated levels of benzaldehyde were found in the attics. But Bob Midden, Bowling Green State University associate professor of chemistry who reviewed the report of dust sampling, said the levels were much lower than standards

that would trigger a U.S. Environmental Protection Agency investigation.

Mortensen alleges Whirlpool released benzaldehyde and caused the cluster. Whirlpool's top spokesman, Jeff Noel, said benzaldehyde is not a core part of its manufacturing at the Clyde plant — where it makes washing machines — but Whirlpool is looking at its supply chain to determine if benzaldehyde is used there.

Determining the cause of any cancer cluster is extremely difficult, said Dr. Scott Masten of the National Toxicology Program at the National Institute of Environmental Health Sciences.

"It almost never happens," he said. "It's very frustrating to all the parties involved."

An agent can take 20 years to cause cancer in a person, making it difficult to pinpoint an exact cause, Midden said.

In this case, proving benzaldehyde was the culprit adds additional challenges, because it is generally recognized as safe, Midden said.

Benzaldehyde occurs naturally in the environment and is found in fruits and plants, he said.

Benzaldehyde is used in a variety of products, including soap and perfume.

At the levels found in cosmetics, benzaldehyde is not considered a carcinogen in people, according to the National Institutes of Health.

"Because it's such a safe chemical, you can have college students make it in the lab," Midden said.

Mortensen has cited a New Jersey Department of Health and Human Services fact sheet that said benzaldehyde can cause genetic mutations and that determining whether it is a cancer hazard needs further study.

He also said cancer had been found in a study of lab animals.

"The available evidence is so weak that benzaldehyde is a carcinogen," Midden said. "There is no evidence that indicates it's a human carcinogen."

The National Toxicology Program found no evidence that benzaldehyde caused cancer in rats, but did see some cases of cancer among mice, Masten said.

"We only saw a relatively small number of tumors in mice," he said.

In very high levels, benzaldehyde — which has an almond odor — can be an irritant, Masten said.

"You would definitely smell it," he said.

"It might make your eyes water."

The levels of benzaldehyde found in the attics are lower than the standard that would cause the U.S. EPA to investigate and perhaps do a cleanup, Midden said.

The report done on the attic testing, which took place in March, lacks a comparison to attics in areas with normal rates of cancer, he said.

Because benzaldehyde is so common, it might not be unusual for it to be found in attic dust, he said.

"You would call it control data," Midden said. "To satisfy a scientist, you would need a lot more data than what's here. The biggest weakness is the small number of samples."

The report was prepared by Vanilla Environmental Partners of Pleasant Grove, Utah. Mortensen was not available for comment.

Midden spoke to The News-Messenger in order to help explain the report results.

For disclosure purposes, he said his wife works at the Sandusky County Health Department, which has investigated the cancer cluster.

"I have nothing at stake in this one way or another," he said. "If anything, I sympathize with the families. Ultimately I'm a scientist, and my loyalty lies with science."

mksmith@gannett.com

419-334-1044 or 419-734-7521

Twitter: @kristinasmithNM

Appendix B: Faculty and Student Recognition cont.




HOME
NEWS
SPORTS
LIFESTYLE
OBITUARIES
PHOTOS
CLASSIFIEDS
DIRECTORY

Front Page
Local News
OH-MH-N News
AP News
Opinion
Farm
Blotter
Education

Local Headlines

- » Local Briefs: 09-21-12
- » Area Events: 09-21-12
- » Obama likely in BG Wednesday
- » Two held after two-state pursuit
- » Local Briefs: 09-20-12
- » Perrysburg couple ordered to reimburse feds \$55,280
- » Perrysburg buys three new SUVs for police use

Mazey reveals record grant in BGSU State of University speech

WRITTEN BY BY HAROLD BROWN/SENTINEL CITY EDITOR
WEDNESDAY, 19 SEPTEMBER 2012 17:24



A record \$7 million external grant, a commitment to market salaries for faculty and enrollment growth to 25,000 by 2020 were among the highlights of Bowling Green State University President Dr. Mary Ellen Mazey's State of the University address Wednesday afternoon.

"We were very excited to learn this week that the Northwest Ohio Center for Excellence in STEM Education at BGSU has been awarded more than \$7 million from the National Science Foundation," Mazey revealed during her 30-minute speech in Donnell Theatre of Wolfe Center for the Arts.

STEM stands for science, technology engineering and math, fields which national leaders say the United States must excel if it is to remain competitive in the world.

Mazey singled out Dr. Robert Midden, an associate professor of chemistry and director of the center, for his leadership on the grant. The university will receive the money over a period of five years. The grant is one of five awarded nationally.

After the address, Midden said the center will work with Sandusky Perkins and Sandusky City Schools, building on an existing program at Perkins that Sandusky schools have begun collaborating with and emulating because of its success. The program is based in the lower grades to encourage students to build their interest and skills in the STEM classes.

Midden said the university was a good candidate for the funds because of its previous work with National Science Foundation grants. "We have had a good indication that we were going to get the grant since June. Experience has taught us that if they call and start asking questions it is a good sign. They called asking questions."

About 30 faculty are directly involved and many others involved in various partnerships. Mazey said the grant is an example of how the university plans to double its outside grants and funding to \$30 million a year.

Dr. Michael Ogawa, vice president for research and economic development, said the goal will be a challenge because BGSU does not have a medical or engineering component, which tend to receive larger grants.

09/24/2012 - Member Login | Become a Member | Today's Front Page

toledoBlade.com

NEWS
SPORTS
A&E
BUSINESS
OPINION
OUR

Local
State
Nation
World
Politics
Police & Fire
Religion
Education
Technology
Courts
Deaths

SAVE BIG!
THE BLADE
CLICK HERE

brother Pre-Novi
SALE 30-50% OFF
All brother® Quilting, Embroidery & Sewing Machines

BUY 10
FREE EXT
WARRIA
LESSO

Home » News » Education
Published: 9/20/2012 - Updated: 4 days ago

BGSU

President unveils plan to improve university

BY JENNIFER FEEHAN
BLADE STAFF WRITER

Facebook
Twitter
Reddit
Digg
E-mail
Print
Rss



BOWLING GREEN — After her first full year as president of Bowling Green State University, Mary Ellen Mazey raised the bar Wednesday, announcing ambitious goals for increasing enrollment, retention, and outside funding sources.

"Like our peers in higher education in Ohio and throughout the world, we do face significant challenges, but I'm confident that together we can make this great university even stronger," Ms. Mazey told faculty, staff, and students during her annual State of the University address in Donnell Theatre at the new Wolfe Center for the Arts.

Among the goals she laid out were:

- Increase enrollment to 25,000 students by 2020 at the main and Firelands campuses and online. Currently, BGSU has just under 20,000 total students.
- Increase the average ACT score of incoming freshmen from 22 to 24 and the average grade point average from 3.27 to 3.4 by 2020.
- Expand online and distance learning.
- Intensify efforts to recruit international students.
- Add an average of 50 additional graduate students a year so that by 2020, BGSU has 400 more graduate students.
- Have every student complete an internship or co-op before graduation.
- Increase outside grants and funding to \$30 million by 2020.

Toward that goal, Ms. Mazey announced that the Northwest Ohio Center for Excellence in STEM Education at BGSU learned Monday that it landed a five-year, \$7 million grant from the National Science Foundation — the largest federal grant ever to come to BGSU.

Bob Midden, an associate professor of chemistry and director of the center, said the funds would pay for a learning project for students in grades 3-8 at Sandusky city and Perkins Local school districts in Erie County in which they would take part in research projects that would overlap into all subject areas — math, science, social sciences, art, and language arts.

Under the program, teachers from different schools and school districts would share ideas that work and overcome challenges together.

"Our goal is to create a strategic plan for advancing science, technology, engineering, and math education for the northwest quadrant of Ohio — the 29-county area we serve," Mr. Midden said.

Also during her address, Ms. Mazey said she was "committed to investing in our faculty" and considers it a top priority to finalize a contract with the BGSU Faculty Association that provides "market salaries."

Appendix B: Faculty and Student Recognition cont.

The screenshot shows a news article on the 13abc.com website. The article is titled "BGSU President delivers state of the university address" and is dated September 19, 2012. The author is identified as Joshua Love. The article text includes a quote from President Dr. Mary Ellen Mazey, a BGSU logo, and several paragraphs discussing university enrollment, challenges, and goals. A yellow callout box highlights a specific paragraph about a STEM education project.

BGSU President delivers state of the university address

Posted: Sep 19, 2012 5:23 PM EDT
Updated: Sep 19, 2012 5:41 PM EDT
13abc.com Joshua Love - email

Bowling Green State University president Dr. Mary Ellen Mazey delivered here state of the university address Wednesday afternoon:

"We have had a good beginning to the 2012-13 academic year and today we are here to celebrate our successes and outline our priorities and goals moving forward and update you on plans for BGSU's future.

In short, the state of the University is very strong and its future is in our hands. We continue to be ranked as a first tier public university by US News and World Report and our first year programs have been recognized in that publication as well.

Enrollment, while down modestly this year, is solid. And our students, faculty and staff continue to be recognized for their work and achievements both in and out of the classroom. The completion of the first phase of our campus master plan has begun to create a vibrant atmosphere on campus.

Like our peers in higher education in Ohio and throughout the world, we do face significant challenges. But I'm confident that together, we can make this great University even stronger. On April 15, 2013, we will have the Higher Learning Commission, our accrediting body, on campus, and it is very important to all of us that the visit be a successful one for BGSU.

Enrollment

First, let's talk about the lifeblood of any University – enrollment. We've done well over the last several years, with several large freshman classes. But I believe we still have tremendous growth potential. And our state needs us to do more.

Ohio's numbers may surprise you -- In that less than one quarter of our residents – 24 percent – hold a bachelor's degree or higher degree compared to 30 percent nationally. Even more startling is that means Ohio ranks as the 39th state in nation in the percentage of citizens with a bachelor's degree or higher.

Educating more Ohioans is a daunting challenge and the Governor and Ohio Board of Regents have called upon BGSU and our peer universities and community colleges to do more.

Last week I had an opportunity to meet with other presidents from colleges and Universities throughout the state to hear the Governor's goals for higher education in Ohio as we approach a new biennium budget.

Let's review the goals:

1. Increase participation rates in higher education among Ohio high school graduates
1. Encourage the brightest school graduates to continue their education here in Ohio and encourage the brightest throughout the country to Ohio for their higher education experience.

And we were very excited to learn this week that the Northwest Ohio Center for Excellence in STEM Education at BGSU has been awarded more than \$7 million from the National Science Foundation to fund a five-year project titled "Evolve with STEM." Students in two school districts in grades three through eight will participate in research projects that will become the context for learning in all of their subjects ... not just in the sciences, but also in the social sciences, language arts, and the fine arts, as well as mathematics. This is an outstanding effort led by Dr. Bob Midden and demonstrates internal university collaboration as well as a partnership with the public school systems.

Big Data Day on Sept. 7 was a resounding success. More than two hundred faculty attended over the course of the afternoon to hear from national experts and faculty colleagues about the research potential presented by the enormous amount of digital information being produced every day in all fields. We must position ourselves to be a leader in business analytics, science, social sciences, humanities, and health information systems.

Appendix B: Faculty and Student Recognition cont.



Bob Midden (left) discusses iEvolve with superintendents Eugene Sanders, Sandusky City Schools (center), and James Gunner, Perkins Local Schools (hidden is Paul Daugherty, also of Perkins).

Science becomes nexus for learning through iEvolve

An ambitious project led by BGSU aims for no less than transforming the educational lives of children and teachers by training them to be true "citizen scientists," able, as poet William Blake said, "to see a world in a grain of sand."

Funded by a \$7.28 million grant from the National Science Foundation, the five-year project titled "iEvolve with STEM" will work with two K-12 school districts as core partners. Perkins Local Schools and Sandusky City Schools students in grades 3-8 and their teachers will collaborate with scientists at BGSU and other partnering colleges and universities and nonprofit agencies in a groundbreaking new curriculum.

Project leader Dr. Bob Midden, a BGSU chemistry faculty member and director of the Northwest Ohio Center for Excellence in STEM Education, said, "We want to improve science education by allowing even the younger children to participate in real research that addresses real scientific issues that have a bearing on the health and welfare of people in their communities and elsewhere. The goal is to give them a focus and a context for their learning that helps them make the connections that deepen their understanding."

The basis of iEvolve (Inquiry and Engagement to Invigorate and Optimize Learning for Everyone with Science, Technology, Engineering and Mathematics) is that science becomes the nexus for the study of everything, from language arts and reading, mathematics and social sciences to the arts, Midden said.

Dr. Eugene Sanders, superintendent and CEO of Sandusky City Schools, said he is excited about the idea of "merging theory and practice, in which our students can learn science and apply it in a very practical way."

The program comes just in time for schools to address the higher core standards the state has adopted, said Perkins Superintendent James Gunner. "The new standards are much more rigorous and will be in place by 2015. They call for more higher-order thinking skills and are really asking kids to think more, analyze more, synthesize more information and produce results."

iEvolve with STEM will start with students and teachers in grades 3-5 and then add students in grades 6-8, starting in 2015. Teachers will participate in three years of professional development that will involve a workshop each summer and monthly meetings during the academic year.

Among the numerous other external partners are Ohio State University Stone Lab, the University of Toledo, Lourdes University, Owens Community College, the Toledo Zoo and Metroparks of the Toledo Area.

In addition to Midden, co-principal investigators for the grant include superintendents Gunner and Sanders, Dr. Emilio Duran, School of Teaching and Learning, and Mitch Magditch, curator of education for the Toledo Zoo. A number of other BGSU faculty will play major roles in the project as well.

Zoom News is provided as a service to BGSU faculty and staff.

BGSU in the news

Messer-Kruse on Wikipedia policies
- [NPR](#)

Miller on the enduring ritual of political rallies
- [New York Times](#)

The art of disco dancing features BGSU Libraries video
- [Daily Mail UK](#)

Matt Donahue, a heavy metal scholar
- [Calgary Herald Swerve](#)

Silent Witnesses changed, Valicenti visits

The location for Monday's Silent Witness urn has changed, the related documentary "Silent Witness" will be shown, and BGSU welcomes internationally recognized graphic design artist Rick Valicenti for a show and talk. [Read more](#)

- [Job Postings](#)
- [Obituary](#)
- [In Brief](#)

BOWLING GREEN STATE UNIVERSITY

MAZEY@BG

A MESSAGE FROM THE PRESIDENT

Share This! [f](#) [t](#)

Dear Alumni and Friends:

I hope you were able to join us for homecoming over the weekend. We capped our weeklong celebration with a 48-8 win over Rhode Island and welcomed back the classes of 1962 and 1972 for reunions.

One of the highlights of homecoming was the ceremony honoring the inductees into our Academy of Distinguished Alumni: [Joseph Philport '75](#), president and CEO of Traffic Audit Bureau for Media Management, Inc.; [Ed Reiter '62](#), retired senior chairman of Sky Financial Group; [Linda Watters '75](#), vice president for government relations at John Hancock Insurance Company; and [Jack Williams '79](#), partner with the law firm of Womble, Carlyle Sandridge & Rice. Follow the links above to view the compelling videos recognizing each inductee.

In mid-September I gave my [State of the University Address](#). We celebrated the accomplishments of the last year and outlined our goals for the future – including plans to reach an enrollment of 25,000 students by the year 2020. At the same time, we're committed to improving quality and have set aggressive but achievable goals for raising the academic profile of our student body.

I was very excited to learn that the Northwest Ohio Center for Excellence in STEM (Science, Technology, Engineering and Mathematics) Education at BGSU has been awarded more than \$7 million from the National Science Foundation to fund a five-year project titled "iEvolve with STEM." I believe this is the largest grant of its kind in BGSU history.

BGSU

Bowling Green State University

Appendix B: Faculty and Student Recognition cont.

"We think iEvolves will bring good things to us and, with all the professional development built into the grant, it will help teachers create differentiated instruction so every child can learn in a project-based environment."

iEvolves with STEM will start with students and teachers in grades 3-5 in the first period and then add students in grades 6-8 in the second period, starting in 2015. Teachers will participate in three years of professional development that will involve a workshop each summer and monthly meetings during the academic year.

Having the science teachers share their professional development with other faculty in the district will be an added benefit, Sanders said.

Students and teachers will meet with their collaborating scientists at the beginning and end of each year and will communicate periodically by video conferencing throughout the year as their project progresses.

The research projects will culminate each year with an annual Research Symposium at which students will present the results of their research to the community and collaborating scientists.

Among the numerous other external partners who will also be involved in the project are Ohio State University Stone Lab, the University of Toledo, Lourdes University, Owens Community College, the Toledo Zoo and Metroparks of the Toledo Area.

In addition to Midden, co-principal investigators for the grant include superintendents Gunner and Sanders, Dr. Emilio Duran, a faculty member in BGSU's School of Teaching and Learning; and Mitch Magditch, curator of education for the Toledo Zoo. A number of other BGSU faculty from the College of Education and Human Development and College of Arts and Sciences will play major roles in the project.

The mission of NWO is to advance STEM (Science, Technology, Engineering, and Mathematics) education for people of all ages. NWO serves the 29 counties of northwest Ohio in partnership with most of the higher education institutions, many K-12 school districts, and numerous nonprofit organizations and businesses that are devoted to excellence in STEM education.

iEvolves is one of several grant projects NWO is involved with and is part of the strategic plan for improving STEM education throughout the region so that all students are able to realize their full potential in their careers and in their lives.

###

(Posted October 04, 2012)

- Online Media Room
- About BGSU
- Archived News Releases
- Media Relations Staff
- Marketing and Communications

Science becomes nexus for learning through iEvolves



BOWLING GREEN, O.—An ambitious project led by Bowling Green State University aims for no less than transforming the educational lives of children and teachers by training them to be true "citizen scientists," able, as poet William Blake said, "to see a world in a grain of sand."

Funded by a \$7.28 million grant from the National Science Foundation, the five-year project titled "iEvolves with STEM" will work with two K-12 school districts as core partners. Perkins Local Schools and Sandusky City Schools students in grades 3-8 and their teachers will collaborate with scientists at BGSU and other partnering colleges and universities and nonprofit agencies in a groundbreaking new curriculum.

Project leader Dr. Bob Midden, a BGSU chemistry professor and director of the Northwest Ohio Center for Excellence in STEM Education (NWO), said, "We want to improve science education by allowing even the younger children to participate in real research that addresses real scientific issues that have a bearing on the health and welfare of people in their communities and elsewhere. The goal is to give them a focus and a context for their learning that helps them make the connections that deepen their understanding."

The basis of iEvolves is that science becomes the nexus for the study of everything, from language arts and reading, mathematics and social sciences to the arts, Midden said. "With the Monarch Watch project, for example (one of the curriculum modules), students can also study the social, political, economic and geographical factors surrounding the butterflies' existence. They can improve their language skills by reading and by writing about their research findings. These projects add meaning and enhance the development of knowledge students will need to solve complex problems."

Dr. Eugene Sanders, superintendent and CEO of Sandusky City Schools, said he is "delighted to be a part of the National Science Foundation-funded grant focusing on citizen scientists," and is excited about the idea of "merging theory and practice, in which our students can learn science and apply it in a very practical way. Extending learning beyond the classroom into the community will be a great opportunity, and having one of the Great Lakes in our backyard presents a unique educational experience for our students."

Three of the research projects are national and international in scope: GLOBE, a large-scale, international environmental research project comprising students in more than 110 countries; Monarch Watch, and FrogWatch USA. Some of the projects also have state or local connections. For instance, the Monarch project will also connect with the Ohio Lepidopterists Long Term Monitoring of Butterflies, and a rain garden project will connect with the Erie County Soil and Water Conversation District's ongoing rain garden initiative. All of the research projects relate to the local environment in some way and will be aimed at benefitting the local community.

iEvolves (Inquiry and Engagement to Invigorate and Optimize Learning for Everyone with Science, Technology, Engineering and Mathematics) will help students and teachers learn how to fully participate in these real science research projects and help the schools integrate these research projects across the curriculum throughout the other areas of study. Citizen science research projects are specifically designed for participation of nonprofessional scientists such as grade school and high school students and teachers.

The timing and nature of iEvolves with STEM were a perfect fit for Perkins, said Superintendent James Gunner. Perkins has focused aggressively on boosting STEM education for several years and has implemented educational technology in the classroom "to halt the diminishing number of kids interested in the STEM fields and approach universal success in math and science," he said. "The beauty of the iEvolves grant for us is it will allow us to migrate that down to the lower grades."

This comes just in time for schools to address the higher core standards the state has adopted, he added. "The new standards are much more rigorous and will be in place by 2015. They call for more higher-order thinking skills and are really asking kids to think more, analyze more, synthesize more information and produce results."

Appendix B: Faculty and Student Recognition cont.

BGSU MyBGSU | email | directory | search
 ACADEMICS | ADMISSIONS | THE ARTS | ATHLETICS | LIBRARIES | A-Z LINKS
 B O W L I N G G R E E N S T A T E U N I V E R S I T Y

Zoom news
 B O W L I N G G R E E N S T A T E U N I V E R S I T Y N E W S U P D A T E
August 30, 2012

Sink your hands into science at STEM in the Park
 What do you get when you cross a giant bubble, a snake and a mechanical engineer?

You get STEM in the Park, a family day of hands-on fun at the University featuring a free lunch, take-home science, technology, engineering and mathematics (STEM) activities, and everything from sea creatures to pop rockets. Activities will take place from 10 a.m. to 1:30 p.m. on Sept. 8 in front of the Bowen-Thompson Student Union (rain or shine).

Parking is free in Lots A and G on Wooster Street and in Lots 4, 4A and E off Thurstin Avenue. In the event of inclement weather, STEM in the Park will be held inside Perry Field House, with free parking available there. Visit <http://nwocenter.org/STEMinPark> for updates and more information.

The first STEM in the Park was the brainchild of Drs. Emilio and Lena Duran, College of Education and Human Development. Inspired by Literacy in the Park, a spring on-campus event that brings families in for a variety of literacy-boosting activities, STEM in the Park seeks to increase public engagement in science, technology, engineering, and mathematics.

The day features interactive displays and activities created by community partners and area universities to engage children of all ages with STEM. More than 50 exhibitors will host hands-on activity stations with over 80 tables of activities. STEM in the Park visitors can set off rockets, pet lizards, play with bubbles, dabble in robotics and make ice cream.

NWO, the Northwest Ohio Center for Excellence in STEM Education at BGSU, organizes the free event on campus for the entire northwest Ohio and southeast Michigan community. NWO is a partnership among a number of area universities, K-12 schools and community partners who come together to showcase innovation and educational opportunities and promote positive attitudes toward STEM teaching and learning.

Activity station hosts include BGSU's Marine Lab, Challenger Learning Center of Lake Erie West Imagination Station, PNC Bank, PVS Nollywood Chemicals, Ohio Northern University, and the University of Toledo.

Last year's event attracted over 1,700 people from northwest Ohio and southeast Michigan.

Sponsors for the 2012 STEM in the Park event include Kroger, BP-Husky, LLC; Connect a Million Minds - A Time Warner Cable Initiative; The BGSU Foundation; Wal-Mart; Ohio STEM Learning Network; Batelle, the Bowling Green Community Foundation and Carolina Biological, as well as variety of BGSU colleges and departments, with additional help from The Andersons and Coca-Cola.

THE STEM CLASSROOM

July 2012

The STEM Classroom

SHARE THIS CONTENT | MORE...

Recent news reports point out that minorities and women are underrepresented in the STEM fields:

- [STEM Gender Gap Pronounced in U.S.](#) (*Education Week*)
- [Higgs Discovery: Giants of Physics Overlooked](#) (*NewScientist*)
- [Data Show Disparities in Access to High-Level STEM Courses](#) (*Education Week*)

Don't Miss Out

The **Third Annual STEM in the Park** day sponsored by Bowling Green State University in Bowling Green, OH, September 8, 2012.

Campus Update September 5
 campusupdate@bgsu.edu [campusupdate@bgsu.edu]

To help protect your privacy, some content in this message has been blocked. If you are sure that this message is from a trusted sender and you want to re-enable the blocked features, [click here](#).

Sent: Wednesday, September 05, 2012 10:35 AM

1. In memoriam: Aaron Mentkowski
2. President's forum on Sept. 10
3. VP for Advancement candidate forum today
4. Third annual STEM in the Park
5. BG24 News training weekend
6. First general body meeting for the Black Student Union
7. Donate blood and win \$100 Walmart Gift Card!
8. Meet the Zetas
9. Research Talk in Biology Seminar Series
10. Carnival Games
11. Organization presidents training
12. Do you enjoy community service?
13. Free self-defense workshop tonight!

4. Third annual STEM in the Park

What do you get when you cross a giant bubble, a snake and a mechanical engineer? You get... STEM in the Park. Join us for a family day of hands-on fun at Bowling Green State University (rain or shine) featuring a free lunch, take-home STEM activities and everything from sea creatures to pop rockets. You won't want to miss it!

STEM in the Park will feature interactive displays and activities created by community partners and area universities to engage children of all ages in science, technology, engineering and mathematics. Hope to see you and your family at STEM in the Park on Saturday, Sept. 8, from 10 a.m. - 1:30 p.m.

Appendix C: History Lab Recruitment Email



A new teacher professional development opportunity...

HISTORY LAB: A Hands-on Exploration of Local History, Culture and Science at Fort Meigs

Summer 2012
June 27, 28, and 29 at Fort Meigs in Perrysburg, OH
from 8:00 am-4:00pm

Northwest Ohio Center for Excellence in STEM Education (NWO), Bowling Green State University (BGSU) and Ft. Meigs present a new opportunity for educators.

This exciting FREE program provides Ohio teachers of grades 3 and 4 with 31 hours of thorough and sustained professional development designed to promote cross-curricular inquiry-rich education to enrich the teaching and professional understanding of local history. This project will ease the transition to the revised standards in social studies, science and is infused with **problem-based learning**. Teams of grades 3 and 4 teachers are encouraged to apply.



This Ohio Humanities Summer Institute for Teachers grant funded program which provides contact hours opportunities for graduate credit in Education and Humanities, science and social studies resources a wealth of information to help teachers improve student achievement. All workshop content is aligned with the newly revised Ohio Content Standards. This program is endorsed by Toledo Public, Perrysburg Exempted Village and Maumee City schools.

*Teachers must attend three summer sessions and two fall sessions to earn 31 contact hours.

What will I gain from History Lab?

- Convenient and fun summer professional development using inquiry-based teaching strategies and formative assessment to improve content knowledge in social studies and science at **no cost to you or your school district**.
- A broader understanding of this region's history and culture through visits to Ft. Meigs and other historical sites in the area and experiences with history scholars and experts.
- 24 Contact Hours (at no cost) or 1 hour of graduate credit from BGSU (for an additional fee)
- Humanities and science materials and resources to use in your classroom including problem-based learning activities taught by history, science and education faculty and informal educators.
- Two follow up workshops in the Fall of 2012 NWO Inquiry Series with additional materials and resources and contact hours (Fall schedule will be announced at the summer workshop).
- Activities to help teach about the Bicentennial of the War of 1812.

The workshop is FREE to educators. Food, materials and contact hours will be provided. Graduate credit is available for an extra fee (TBD).

Questions? Please contact: Rick Finch, Site Director at Ft. Meigs in Perrysburg, Ohio (rfinch@ohiohistory.org) or Michelle Klingler, Asst. Director NWO at BGSU (mklinge@bgsu.edu)

Space is limited!
Please register online today at:
<https://www.surveymonkey.com/s/77MDBLZ>

History Lab is a partnership project between Bowling Green State University and Fort Meigs - Ohio's War of 1812 Battlefield

Funding is provided by Ohio Humanities Council

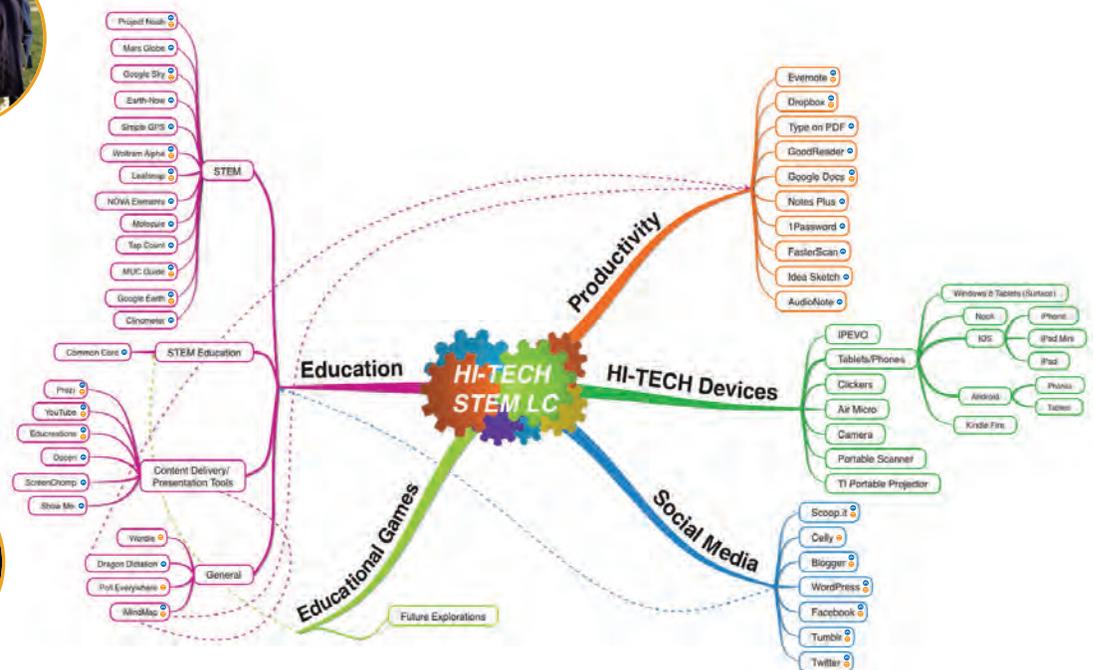


Fort Meigs is a partner of NWO

Appendix D: Learning Community Poster

HiTech STEM Learning Community: Highly Engaging Learning Environments by Design!

Co-Facilitators: Jodi Haney (STL & DES) & Matthew Partin (BIOL); Participants: Lisa Addis (NWO/COSMOS), Jessica Belcher (NWO/COSMOS), Peter Blass (CHEM), Kate Dellenbusch (PHYS), Emilio Duran (STL & BIOL), Shannon Finerty (BIOL), Bob Midden (NWO/COSMOS & CHEM), Holly Myers (DES), & Eileen Underwood (BIOL)



HiTech STEM Learning Community Road Map

BGSU faculty and administrative staff with a common interest in STEM (Science, Technology, Engineering, and Mathematics) teaching and learning collaboratively examine and design high tech and highly engaging environments to enhance student attitudes, motivation, engagement, and ultimately success! This learning community is affiliated with COSMOS (BGSU's Center of Excellence in Science and Mathematics Education), supporting the overriding goal of enhancing STEM education for people of all ages.

Notes: *Dashed lines represent illustrative connections between ideas, but there are obviously many more!
 *This concept map was made using iMindMap!
 ● Mobile Apps
 ● Web 2.0 tools

BGSU

Appendix E: "NWO STEM Connection" Print and E-Newsletters

VOL 2

ISSUE 1

2012

IN THIS ISSUE

STEMx: Educate. Engage. Exchange... p2

You Be The Chemist Challenge... p3

STEM Speaks!... p3

NWO Symposium... p4

STEM News in Brief... p4

STEM in the Park... p5

Hands-On STEM Activity... p7-8



The Northwest Ohio STEM Connection

Creating New Learning Platforms to Advance STEM Learning for All Students

Perkins Local Schools Pilots the Literacy Design Collaborative College Ready Tools



Literacy Design Collaborative College Ready Tools (LDC - CRT) are being adopted in Perkins Local Schools to provide inspiration and support for adoption in other schools throughout Northwest Ohio. CRT is a system of learning for all of the core academic disciplines including English language arts, social sciences, natural sciences, and mathematics. CRT focuses on development of literacy skills within each of these primary domains with the aim of improving student mastery of the common core standards.

CRT instruction is based on teaching modules. At the core of a teaching module is a specific teaching task, which is a writing assignment with a given purpose: narrative, argumentation, or informational/explanatory. These are usually oriented around a big question of some significance. In addition to the teaching task or overall assignment, the module includes mini-tasks that are designed to develop students' ability to successfully complete the teaching task. Modules also include

well-defined rubrics that guide student completion of the assignment and are used by teachers to assess student mastery.

continued on page 2



www.nwocenter.org

Print Newsletter

E

Appendix E: "NWO STEM Connection" Print and E-Newsletters cont.

E-Newsletter Sample

January 2013

in This Issue

- K-16 STEM in the NEWS**
- Community STEM in the NEWS**
- STEM Opportunities**
- Community STEM in the NEWS**
- Findlay Schools hold Family Science Night**
- STEM Opportunities**

K-16 STEM in the NEWS

BGSU chapter of AAUW earns distinction of "Tech Trek" site

Because equity is still an ISSUE

AAUW

STEM Opportunities

Community STEM in the NEWS

Findlay Schools hold Family Science Night

STEM Opportunities

STEM Opportunities

National Engineers Week

February 12-18, 2013

ENGINEER IT!

National Engineers Week

February 12-18, 2013

ENGINEER IT!

STEM Speaks! 2012-13 NWO STEM Education Inquiry Series continues

February 12, 2013 - Karl Klimek

Generative STEM Teaching Through a Brain/Mind Lens!

The STEM education "wave" is building but far from cresting in this country and it represents incredible opportunity to tap the natural learning characteristics of those great kids we serve every day! Bringing generative practices to our schools and classrooms involves environments rich with creativity, innovation and a deep exploration of how we all really learn. Our interactive and fun time together will target core elements of great learning spaces, classroom culture and authentic research that supports teaching as a non-worksheet/textbook driven endeavor. You will have a chance to validate the excellent teaching practices you already utilize, and also visit new ideas that will justify the need to further develop your capacities as an incredible teacher. Our collective discoveries will support your STEM efforts, and also let others that we professionally commit to each and every day! Let's get intriguing!

Please join us for this engaging event! [Click here to register](#) for the Feb. 12 Inquiry Series.

For more information please visit: <http://stemson.bgsu.edu/inquiryseries/index.htm>

As always, if you are interested in getting contact hours for watching the video and reflecting on the ideas presented, please contact me@bgsu.edu for more information.

Ohio JSHS

March 20-22, 2013

The 50th Annual Ohio Junior Science and Humanities Symposium

Attention Junior High and High School Students and Teachers: Call for Research Papers and Posters!

The Ohio Junior Science and Humanities Symposium is an annual event held on the campus of BGSU in which Ohio students in grades 7 to 12 compete for scholarships and recognition by presenting the results of their original research efforts before a panel of judges and an audience of their peers. The OJSHS is part of the national Junior Science and Humanities Symposium Program, which is jointly sponsored by the United States Departments of the Army, Navy, and Air Force, in cooperation with leading research universities throughout the nation, and is celebrating its 50th anniversary.

More information can be found at www.ojshs.org

Science Education Council of Ohio

Ohio's State Science Conference

February 7 & 8, 2013

Dayton Convention Center

Check Out All Of The Great Programs at: www.secoinc.org

Winter Weekends at the Toledo Zoo

- **Winter Science in Nature's Neighborhood:** Check out a range of activities including animal demos, dry ice and the science of COLD, winter camouflage, Snow Central, static electricity, pendulum art, electric robots & circuit boards, and Solar Kites
- **Challenge Learning Center and Bounce House - Great Hall:** 11am-4pm
- **Imagination Station activities - Great Hall:** 12-4pm
- **Ice-Carving Demo by the African Lodge:** 11am to 2pm

Check the Toledo zoo website for more info: <http://www.toledozoo.org/site/programs441>

SAVE THE DATES! Community Resources Workshop

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

Dates: June 17-21, 2013

Website: <http://stemson.bgsu.edu/CRW/CRWHome.htm>

Upcoming STEM IS ELEMENTARY events:

- The paper engineering contest deadline is fast approaching (Feb 1). All children from pre-school to 8th grade may enter the contest. Winning entries will receive autographed books by world famous paper engineering author David Carter. See <http://www.stemstemstem.org/contests/2013> for details.
- The Children's Council of the International Technology and Engineering Educators Association (www.iteea.org) is hosting a FREE pre-conference session on integrating STEM into the elementary language arts and social studies curriculum. Dr. Susan Holland, retired gifted and tech ed teacher of the Westerville (OH) schools will be the presenter. It will be held on March 8, 2013 from 3 to 6:00 PM at the Hyatt Regency Hotel at the Columbus Convention Center. To learn more about the session or to register (it is free but limited in number), go to the CC webpage (www.iteea.org) or (www.stemstemstem.org).
- ITEEA international conference will be held at Columbus, OH this year from March 7-8 at the Columbus Convention Center. **Early bird registration ends Feb 1, 2013.** Visit <http://www.iteea.org/ConferenceRegistration.htm> for a preliminary conference guide and to register. There will be many sessions dedicated exclusively to elementary STEM.
- If registered for the ITEEA conference, attendance to Engineering by Design sessions is free if you contact Leslie Yenkin at ODE. These sessions will present STEM curriculum materials developed by the ITEEA for grades K-12. The curriculum materials are FREE to Ohio educators! If you are interested in attending the EoD Lab and taking advantage of this offer, please contact Leslie Yenkin at leslie.yenkin@education.ohio.gov by **January 28th**. Please include the name of your school in this e-mail. For more information on EoD and the sessions, go to www.iteea.org and download the preliminary conference guide. The sessions are on p. 13 of the guide.

New! Inquiry Workshops for Educators at The Toledo Zoo

The Toledo Zoo is partnering with NWO to offer a series of inquiry workshops for grades K-12 teachers. Participants will learn basic principles for doing a life science inquiry with their students using the QUEST model. Working in groups, teachers will learn inquiry techniques by participating in guided inquiry lessons on days one and two. The series will culminate with teachers working in teams to perform an open inquiry utilizing animal exhibits at the zoo.

***When you register, you will be signing up for all three sessions in the series.

- **When -** Thursday February 21, March 7, and March 14
- **Time -** 4:30 - 6:15PM
- **Where -** The Toledo Zoo, 2 Hippo Way, Toledo, OH
- **What -** Applying life science inquiry lessons in the classroom
- **Who -** Elementary teachers; **Secondary Audience -** middle and high school life science/biology teachers
- **Cost -** \$75/person - includes light dinner, refreshments, instruction, and handouts for each of the 3 sessions and an outreach inquiry program for each participant's classroom (new zoo education program)
- **Contact Hours -** 6 contact hours will be awarded at the conclusion of the series.
- **Of special note -** The maximum number of registrants is 20, so register soon!

To Register: Please visit the following link: <http://toledozoo.org/CommunityProducts.php?cat=689>

Questions? Email Mitch Magdich, Curator of Education at The Toledo Zoo, mitchell.magdich@toledozoo.org

NWO Hands-On STEM Activity

Better Lesson (<http://betterlesson.com>) is an online social network which allows teachers to share classroom resources, and was founded by a group of teachers from Atlanta and Boston public schools to connect educators and help them create, organize, and share their curricula. They are focused on aggregating and scaling the most innovative content and practices from high-performing teachers across the country.

Marshmallow Catapults

Recommended for middle school grades 6-8!

Apply the technological design steps to build a marshmallow catapult that uses the slotted materials to launch a marshmallow at least 3 meters in the air and within a 1/2 meter wide area.

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@bgsu.edu. We are always looking for great STEM education stories to feature in upcoming newsletters.

Join NWO on [Facebook](#)

Find Even More Ohio STEM Education Resources

Visit our STEM clearinghouse: stemstemstem.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 F: NWO STEM Education Inquiry Series Advertising

STEM Speaks!

NWO STEM Education Inquiry Series 2012-13

STEM Professional Development for preK-12 Teachers & Administrators

Each event runs from 5:00 - 8:00 pm at WGTE Public Media, Toledo, OH

Registration Fee: \$20/night (includes dinner)

October 2, 2012 ~ Ms. Page Keeley (Registration open: Aug. 6 - Sept. 24)

Supporting Science Inquiry Through Formative Assessment

November 27, 2012 ~ Ms. Emily Morgan & Ms. Karen Ansberry (Registration open: Oct. 3 - Nov. 19)

Picture-Perfect Science: Using Picture Books to Guide Inquiry

(this event is supported in part by Carolina Biological Supply)

January 8, 2013 ~ Dr. Susan Everett (Registration open: Nov. 28 - Dec. 31)

Everyday Engineering: Integrating the STEM Disciplines

February 12, 2013 ~ Mr. Karl Klimek (Registration open: Jan. 9 - Feb. 4)

Generative STEM Teaching Practice Through a Brain-Mind Lens!

March 12, 2013 ~ Dr. Daniel Brahier (Registration open: Feb. 13 - March 4)

Rethinking Mathematics as a Verb



Information, directions, & registration available at: www.nwocenter.org/inquiryseries

Contact Hour Certificates available for ALL events



Supported by Battelle/OSLN

Appendix F: NWO STEM Education Inquiry Series Advertising cont.

Recruitment Email Samples

SAVE THE DATES!

NWO Inquiry Series 2012-13

STEM Speaks!

October 2, 2012
~ Page Keeley, author of the *Uncovering Student Ideas in Science* series

November 27, 2012
~ Karen Ansberry & Emily Morgan, authors of *Picture-Perfect Science Lessons and More Picture-Perfect Science Lessons*

January 8, 2013
~ Susan Everett, co-author of *Everyday Engineering*

February 12, 2013
~ Karl Klimek, author of *Generative Leadership: Shaping New Futures for Today's Schools* and co-author of *12 Brain-Mind Learning Principles in Action: Developing Executive Functions of the Human Brain*

March 12, 2013
~ Dan Brahier, BGSU Faculty and author of *Panning for Gold: 15 Investigations to Enrich Middle School Mathematics*



For more information visit: www.nwocenter.org/inquiryseries



This event is supported by Battelle/OSLN

STEM Speaks!

NWO STEM Education Inquiry Series

2012-2013



Dr. Daniel Brahier

March 12, 2013

(Registration open: Feb. 13 - March 4)

5:00 - 8:00 pm at WGTE Public Media, Toledo, OH
Registration Fee: \$20 (includes dinner)

Dr. Dan Brahier

BGSU Faculty and author of *Panning for Gold: 15 Investigations to Enrich Middle School Mathematics*

Registration fee includes:

- Dinner
- Contact Hours Certificate
- Teaching resources and hands-on materials

Note: School funds may be used to pay for sessions. Check with your administrator.

[Click here](#) to register online!

For more information visit: www.nwocenter.org/inquiryseries



This event is supported by Battelle/OSLN

Appendix G: NWO Publications and Presentations

Publications

- Bostic, J. (December 2012/January 2013). Model-eliciting activities for teaching mathematics. *Mathematics Teaching in the Middle School*, 18, 262 – 266.
- Bostic, J. & Matney, G. (2013). Preparing K-10 teachers through common core for reasoning and sense making. *Proceedings of the 40th Annual meeting of the Research Council on Mathematics Learning*. Tulsa, OK.
- Bostic, J. & Matney, G. (in press). Overcoming a common storm: Designing PD for teachers implementing the Common Core. *Ohio Journal of School Mathematics*.
- Brahier, D. J. (2013). *Teaching secondary and middle school mathematics, fourth edition*. Boston, MA: Allyn & Bacon Publishing.
- Brahier, D. J. & Gallagher, D. (2012). Reasoning, sense making, and professional development. *In Proceedings of the Research Council on Mathematics Learning*, 173-180. Charlotte, NC: RCML.
- Buchhave, L., Latham, D., Johansen, A., Bizzarro, M., Torres, G., Rowe, J., Batalha, N., Borucki, W., Brugamy, E., Caldwell, C., Bryson, S., Ciardi, D., Cochran, W., Endl, M., Esquerdo, G., Ford, E., Geary, J., Gilliland, R., Hansen, T., Isaacson, H., Laird, J., Lucas, P., Marcy, G., Morse, J., Robertson, P., Shporer, A., Stefanik, R., Still, M., Quinn, S. (2012). Small planets do not require a metal-rich environment. *Nature*, 486, 375-377.
- Kerzendorf, W.E., Schmidt, B. P., Laird, J. B., Podsiadlowski, P., & Bessell, M. S. (2012). Hunting for the progenitor of SN 1006: High-resolution spectroscopic search with the FLAMES instrument. *Astrophysical Journal*, 759 (article 7), 1-6.
- Matney, G. (2012). Generating a peer mentoring culture through mathematics camps. In Van Zoest, L. R., Lo, J.-J., & Kratky, J. L. (Eds.). *Proceedings of the 34th annual meeting of the North American chapter of the International Group for the Psychology of Mathematics Education*. Kalamazoo, MI: Western Michigan University.
- Matney, G. (in press). Deepening teacher' understandings of mathematical and pedagogical connectedness. *Journal of Mathematics Education Leadership*.
- Matney, G. (in press). Early mathematics fluency with the CCSSM. *Teaching Children Mathematics*.
- Matney, G., Bostic, J., & Brahier, D. J. (2012). Overcoming a common storm: Designing the PD teachers need for successful common core implementation. *In Proceedings of the Research Council on Mathematics Learning*, 162-172. Charlotte, NC: RCML.
- Matney, G., & Daugherty, B. (in press). We're seeing spots: Visions of multiplicative sense making. *Mathematics Teaching in the Middle School*. Reston, VA: National Council of Teachers of Mathematics.
- Matney, G., Jackson, J., & Bostic, J. (in press). Connecting instruction, minute contextual experiences, and a realistic assessment of proportional reasoning. *Investigations in Mathematics Learning*.

Appendix G: NWO Publications and Presentations cont.

- Matney, G., Jackson, J., & Bostic, J. (in press). Effects of minute contextual experience on realistic assessment of proportional reasoning. *Investigations in Mathematics Learning*.
- Matney, G. & Matney, T. (2013). Leaping without bridges: Implementing the common core with students not previously instructed within its expectations. *Oklahoma Journal of School Mathematics*.
- Matney, G., Panarach, Y. & Jackson, J. (2013). Translating mathematics efficacy. *Proceedings of the 6th East Asia Regional Conference on Mathematics Education*. Phuket, Thailand.
- Matney, G., Panarach, Y., & Matney, T. (2012). Improving attitude and problem solving through mathematics camps. *Proceedings of the 12th International Congress on Mathematical Education*. Seoul, Korea.
- Panarach, Y. & Matney, G. (2013). Development of the 5T model for the enjoyment of learning together. *Proceedings of the 6th East Asia Regional Conference on Mathematics Education*. Phuket, Thailand.
- Partin, M. L., Worch, E. A., & Underwood, E. M. (2013). Factors related to college students' understanding of the nature of science. *Journal of College Science Teaching*, 42(6).
- Schnepf, J., Wolfe, R., McDonald, J., & Toro, J. (2012). Combining emotion and facial nonmanual signals in synthesized American Sign Language. *In Proceedings of the 14th international ACM SIGACCESS conference on Computers and accessibility*, Boulder, CO.
- Schnepf, J., Wolfe, R., McDonald, J., & Toro, J. (2013). Generating co-occurring facial nonmanual signals in synthesized American Sign Language. In S. Coquillart, C. Andújar, R. S. Laramée, A. Kerren, & J. Braz (Eds.), *Proceedings of the International Conference on Computer Graphics Theory and Applications and International Conference on Information Visualization Theory and Applications* (407-416). Barcelona, Spain: SciTePress.
- Snyder, J., & Bostic, J. (in press). Quilting through area and perimeter. *Teaching Children Mathematics*.
- Worch, E. A. (2012). Play solicitation in red colobus monkeys. *American Journal of Play*, 5(1), 104-119.
- Worch, E. A., Li, L., & Herman, T. L. (2012). Preservice early childhood teachers' self-efficacy and outcome expectancy for ICT integration in science instruction. *Education Research and Perspectives*, 39, 90-103.

Presentations

- Bostic, J. (2012, November). Proving operations with numbers using manipulatives. National Council of Teachers of Mathematics regional conference, Chicago, IL.
- Bostic, J. (2013, January). Middle grades preservice teachers' experiences with proof and reasoning focused instruction. Association of Mathematics Teacher Educators conference. Orlando, FL.
- Bostic, J. & Matney, G. (2012, October). Divergent perceptions of the Standards for Mathematical Practice among K- 10 teachers. Ohio Mathematics Education Leadership Council conference, Columbus, OH.

Appendix G: NWO Publications and Presentations cont.

- Bostic, J. & Matney, G. (2012, October). Modern standards: Teaching with and for the Common Core State Standards. Ohio Council of Teachers of Mathematics conference, Columbus, OH.
- Bostic, J., & Matney, G. (2013, January). An overview of Common Core for Reasoning and Sensemaking: Secondary. Poster presented at Association of Mathematics Teacher Educators conference. Orlando, FL.
- Bostic, J., Matney, J., Brahier, D., Gojak, L., & Speer, W. (2013, March). Preparing teachers for the CCSS: Looking towards the future. Paper presented at the 40th Annual Meeting of the Research Council on Mathematics Learning. Tulsa, OK.
- Brahier, D. J. (2013, April). Anchors Away: Problems to Engage Your Students. National Council of Teachers of Mathematics, Denver, Colorado.
- Matney, G. (2012, November). Improving Mathematics Preservice Teacher Efficacy through Field Based Research. School Science and Mathematics Association annual meeting, Birmingham, AL.
- Matney, G. (2012, November). Generating a Peer Mentoring Culture through Mathematics Camps. North American Chapter of the International Group for the Psychology of Mathematics Education, Kalamazoo, MI.
- Matney, G., Bostic, J. (2012, October). Divergent Perceptions of the SfMP among K- 10 Teachers. Ohio Mathematics Education Leadership Conference, Columbus OH.
- Matney, G. & Bostic, J. (2012, October) The Big Core Theory: Teaching and Learning the Common Core. Ohio Council of Teachers of Mathematics, Columbus, OH.
- Matney, G., & Daugherty, B. (2012). We're seeing spots: Visions of multiplicative sense making. Regional meeting of the National Council of Teachers of Mathematics. Chicago, IL.
- Worch, E. A. (2012). Play solicitation in red colobus monkeys. The Association for the Study of Play, Albuquerque, NM.
- Worch, E. A. (2013). Play in black-and-white colobus monkeys. The Association for the Study of Play, Newark, DE.
- Worch, E. A., Duran, E., & Friel, L. (2012). The impact of a professional development program to enable elementary teachers to implement inquiry science instruction on their self-efficacy beliefs. National Science Teachers Association, Indianapolis, IN.

Appendix H: NWO Symposium Advertising

2012 NWO Symposium

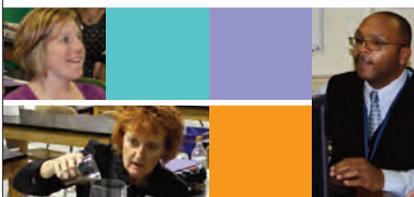


Northwest Ohio Symposium on Science, Technology, Engineering, and Mathematics Teaching



Kelly Croy, inspirational speaker & chalk artist

Saturday, October 27, 2012 8:30 am - 4:00 pm
Olscamp Hall @ Bowling Green State University



Content Strands Featured at the 2012 Symposium

- Integrating Technology in the Classroom
- Putting Creativity to Work: Teaching STEM With Innovation
- STEM in the Community: Thinking Outside the Classroom
- Teaching and Learning in ENGINEERING
- Teaching and Learning in MATHEMATICS
- Teaching and Learning in SCIENCE

Full program available at: <http://nwocenter.org/nwoSymposium>

Registration Fee Includes:

- 7 hours of high quality professional development
- Keynote address by inspirational speaker and chalk artist, Kelly Croy
- Personal sized print of the art Kelly will create during his presentation. (*Kelly is available after his presentation to autograph the print art and take pictures with the large chalk art piece.*)
- Conference bag and digital inquiry starter kit
- Light breakfast and full lunch



Saturday, October 27, 2012
8:30 am - 4:00 pm

Olscamp Hall @ Bowling Green State University

\$35 (deadline Oct. 19); \$45 Onsite

Multiple Participant Discount (\$30/person) for 5 or more participants from the same school

Note: You can use Title I Part A Funds, Title III Funds or School Improvement Funds.

4 x 6 Postcard

This event is supported by Battelle/OSLN

Contact Hour Certificate Available

Appendix H: NWO Symposium Advertising cont.

Recruitment Email - Attendee

Online Registration Closes October 15!



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

Saturday, October 27, 2012
Time: 8:30 AM - 4:00 PM

Location:
Oiscamp Hall, Bowling Green State University
Bowling Green, OH 43403

Registration Fee: \$35 (online by Oct. 15)
\$15 for undergraduate students (online by Oct. 15)

Registration Information available at:
www.nwocenter.org

For more information contact nwo@bgsu.edu, (419) 372-2718



Featuring a keynote presentation by inspirational speaker and chalk artist, **Kelly Croy**. Kelly has been featured on CNN, USA Today, MSNBC, The Armed Forces Network, Countdown with Keith Olbermann, and more. Come and experience Kelly's inspirational message and watch as he creates a beautiful piece of art right before your eyes. Learn more at www.KellyCroy.com.

This event is supported by Battelle/OSLN.

Appendix H: NWO Symposium Advertising cont.

Recruitment Email - Presenter

Deadline: August 31, 2012



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

The Northwest Ohio Center for Excellence in STEM Education

brings you the 2012 NWO Symposium on Science, Technology, Engineering, and Mathematics Teaching

Saturday, October 27, 2012
8:30 AM - 4:00 PM
Olscamp Hall, Bowling Green State University
Bowling Green, OH 43403

Presentation Proposal Information

Thank you for your interest in presenting at the 2012 NWO Symposium on Saturday, October 27th 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 not be charged a registration fee.

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

Questions? Contact nwo@bgsu.edu.

2012 NWO Symposium Strands

Special Strands for the 2012 Symposium

- 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.*
- Citizen Science: Thinking Outside the Classroom**
Making STEM concepts relevant for students serves an essential instrumental purpose in improving motivation and STEM learning. Conducting research around important community STEM issues, such as water quality and animal conservation, engages students in real STEM problems, and allows them to experience STEM in a whole new way. *Sessions in this strand will demonstrate what citizen science is, and how it can be integrated into the classroom.*
- What Works in STEM: Applying Research in the Classroom**
There is often a wide gulf between STEM educational research and classroom practice. One major problem is the recommendations of STEM educational researchers are often difficult to apply in real classroom settings. While educators like Robert Marzano have attempted to bridge this gap between theory and practice, there is much more to be done to make research relevant to STEM classrooms. *Sessions in this strand will explore some prominent research in STEM education, and demonstrate how it can be applied in the classroom.*
- 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.*

General Strands for the 2012 Symposium

- 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.
- Teaching and Learning in SCIENCE**
This is the general SCIENCE strand. *Sessions in this strand will focus on deepening science content and/or exploring interesting and effective ways to teach science.*
- Teaching and Learning in MATHEMATICS**
This is the general MATHEMATICS strand. *Sessions in this strand will focus on deepening mathematics content and/or exploring interesting and effective ways to teach mathematics.*
- Teaching and Learning in ENGINEERING**
This is the general ENGINEERING strand. *Sessions in this strand will focus on deepening engineering content and/or exploring interesting and effective ways to teach engineering.*

This event is supported by Battelle/OSLN.

Recruitment Email - Vendor

Deadline: August 31, 2012



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

The Northwest Ohio Center for Excellence in STEM Education

brings you the 2012 NWO Symposium on Science, Technology, Engineering, and Mathematics Teaching

We are seeking vendors for the upcoming 2012 event

Saturday, October 27, 2012
8:30 AM - 4:00 PM
(Vendor Area Open All Day)
Olscamp Hall, Bowling Green State University
Bowling Green, OH 43403

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

This event is supported by funds from Battelle/OSLN.

Appendix I: OJSHS Recruitment Email



imagine.design.create

March 20-22, 2013

The 50th Annual Ohio Junior Science & Humanities Symposium
hosted by Bowling Green State University

Call for High School Research Papers and Posters

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, 2013

- 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.

The National Association of Secondary School Principals has placed this program on the NASSP National Advisory List of Student Contests and Activities for 2012-2013.

Registration Dates: December 21 - February 20, 2013
Register Online at: www.ojshs.org

Appendix J: Project pi r² THREE Recruitment Materials






Project pi r² Three

Partners in Inquiry Resources and Research

What is pi r² Three?

Project pi r² Three, Partners in Inquiry Resources and Research, is an exciting **free** program offering 105 contact hours of high-quality, research-based teacher professional development for Ohio teachers in grades 2-5 on inquiry science and STEM-related curricula. Project pi r² Three is a grant-funded program offering no-cost, Ohio Revised Academic Content Standards-based sessions, classroom outreach programs, science and cross-curricular materials, and a \$300 stipend to graduate teachers who participate.



Register Today!

Please complete the registration form at <http://www.surveymonkey.com/s/RX2ZRRY>

Project pi r² Three is open to Ohio grades 2-5 teachers of all subject areas who would like additional professional development.

Why Project pi r² Three?

PHASE I: Engaging Summer Institute

Summer Session 2013 will provide exciting opportunities for second through fifth grade teachers to participate in hands-on content sessions relevant to the revised science standards at each grade level. Experienced science educators along with scientists will deliver high quality investigative sessions in a '5E lesson' format along with assistance of community resource partners. Teachers will come away with ready-to-go units to implement in their classrooms.

PHASE II: Academic Year Activities

Teachers will participate in the highly popular STEM in the Park and NWO Symposium events. Participants will also engage in four cohort meetings (Oct., Dec., Feb., April) which will be facilitated in a 'lesson study' format as participants reflect and report on the 5-E investigative units in which they are integrating in their classrooms. Community resource partners will also be collaborating in classroom lessons.

PHASE III: Dissemination and Reflection

A final phase of professional development will focus on teacher reflective practices. This phase will also include teachers hosting a 'Science Expo' in their school where students will work collaboratively to highlight the design process of an investigation completed in the classroom.

Community Resource Partners

Regional partners which include local STEM-related businesses and informal educators will collaborate with participants to bring a variety of hands-on, inquiry based explorations to their classrooms and interact with students.

Professional Development

Academic Year 2013-2014

Summer 2013

- Eight days (July 8-11 & July 15-18, 2013 from 8:30 am-3:30 pm)

School Year Sessions – 2013-2014

- Two Saturdays (Sept. 7 and Oct./Nov. - NWO Symposium)
- Four evening sessions (Oct., Dec., Feb., April from 5-8 pm)

Community Resource Outreach

- Community Resource Partners will be available to visit classrooms to increase the rigor of science lessons (scheduled with teachers between October and May)
- Online wiki sharing teacher reflections, lessons, and science content questions

Incentives:

- **105 contact hours (10 CEUS)** from BGSU for the summer and academic year workshops
- **\$300 stipend** (\$150 during the academic year and \$150 for the summer workshop).
- A wealth of standards-aligned, high-quality cross-curricular and classroom science materials.
- **3+ hours of free outreach programming** in your classroom via scientists, informal educators, and/or local STEM related businesses
- Optional BGSU graduate credit (summer and academic year – 2 hours each) - at an additional cost.

Questions

Please contact:

Jenna Pollock, M.Ed.
Project Manager of pi r² Three
241 Math Science, BGSU
Bowling Green, OH 43403
jpolloc@bgsu.edu
www.nwocenter.org

Support for the development/production of this material was provided by a grant under the federally funded Improving Teacher Quality State Grants Program, administered by the Ohio Board of Regents.

8.5x11 Tri-fold Brochure

Appendix K: STEM in the Park Advertising

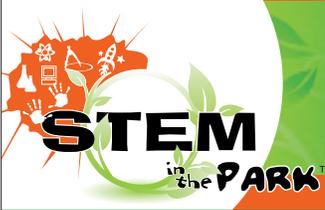
Free Family Event

Saturday, Sept. 8, 2012

10 am – 1:30 pm at BGSU

On lawn by Student Union • FREE Lunch

FREE parking in lots A & G on Wooster or 4, 4A, & E on Thurstin



STEM
in the **PARK**TM

Science, Technology, Engineering, and Mathematics






What do you get when you cross a giant bubble, a snake, and a mechanical engineer? You get... STEM in the Park

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

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

While at STEM in the Park 2012 enjoy activities and information provided by:

Bowling Green State University	Nature's Nursery	SETGO Program
BOSEF Program	New York Life Insurance Company	Seven Eagles Historical Education Center
Bowling Green Early Childhood Learning Center	NWOET	The Lathrop Company
Bowling Green Fire Division	Ohio Northern University	The Toledo Zoo
Challenger Learning Center of Lake Erie West	PNC Bank	Toledo Technology Academy
Connect A Million Minds, an initiative of Time Warner Cable	PVS Nolwood Chemicals, Inc	University of Findlay
Davis-Besse Nuclear Power Station (of First Energy)	Rain Garden Initiative	University of Toledo Student American Chemical Society
Educaching/SDG Creations Ltd.	Rainbow Cooperative Preschool	West Side Montessori School
E.S. Wagner	Risa's Music Circle	Wood County District Public Library
Girl Scouts of Western Ohio	Sauder Village	Wood County Historical Center & Museum
Imagination Station	Scrap4Art	Wood County Hospital
Lourdes University	SECO (Science Education Council of Ohio)	Wood County Park District
Metroparks of the Toledo Area		

presented by




with support from



FREE Lunch from 11:30 am - 1:00 pm (while supplies last) • (Rain site: Perry Field House)

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

8.5 x 11 Flyer
11 x 17 Poster

4 x 6 Postcard

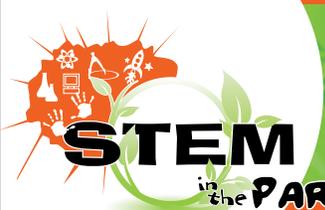
Free Family Event

Saturday, Sept. 8, 2012

10 am – 1:30 pm at BGSU

On lawn by Student Union • FREE Lunch

Science, Technology, Engineering, and Mathematics








FREE parking in lots A & G on Wooster or 4, 4A, & E on Thurstin • (Rain site: Perry Field House)

Visit the website for more info at www.nwoцентer.org/STEMinPark

K

2013 NWO Center for Excellence • Appendix

Appendix K: STEM in the Park Advertising cont.

Recruitment Email



We are excited to invite you to participate with NWO/COSMOS at our fourth annual **STEM in the Park** event! This event will be Saturday, September 7, 2013 from 10AM-2PM on the campus of Bowling Green State University. Last year's event drew close to 2,700 people! This is almost 1,000 more than the previous year! This family day of exciting hands-on STEM activities is growing thanks to your participation!



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

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 activity or interactive display to bring to the event. In 2012, close to 2,700 people including some 1,200+ children attended **STEM in the Park** with their parents/grandparents. **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 northwest Ohio.

NWO's STEM in the Park provides:

- An eight foot table
- Free printing of **STEM in the Park** Take Home Activity cards for your table
- Tablecloth
- Two chairs
- Free lunch for all of your station staff & volunteers
- Additional space or table for large displays/activities is available
- Your company, college, department, or campus organization name will be featured on our website and in some larger marketing materials for this event

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

Information regarding the previous years' STEM in the Park events can be found at nwocenter.org/STEMinPark



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** 2013.

Appendix L: You Be The Chemist Challenge Recruitment Email



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

FUN & INNOVATIVE academic competition engaging students in learning about important chemistry concepts, discoveries, and chemical safety **CHALLENGE COMPETITIONS** across the country, encouraging the collaboration of community organizations, schools, and the chemical industry

FREE ONLINE study materials!

TOP STUDENTS PARTICIPATE in the State Challenge
WINNER QUALIFIES for an all expenses paid trip to the National Competition in Philadelphia, PA in June!

Participating is easy - please email **Bob Mendenhall** (Toledo Public Schools) at rmendenh@tps.org or call 419-671-8320 for more information. In the email include the following information: (**RETURN BY DECEMBER 7, 2012**)

Teacher Name:
Principal Name:
School Address (include County):
Number of Students Who Might Participate:

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

This event is supported by

