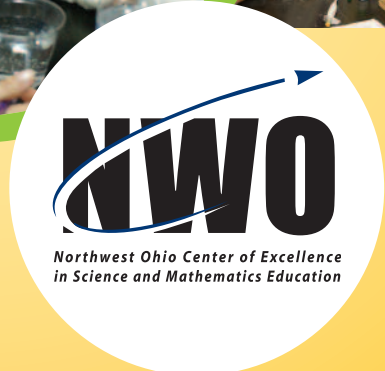


# Northwest Ohio (NWO)



## Annual Report 2010



***Fiscal Year 2010***  
***(July 1, 2009-June 30, 2010)***

**W Robert Midden, PhD**  
Director, NWO Center  
Director, COSMOS  
Bowling Green State University  
Bowling Green, OH

**[www.nwocenter.org](http://www.nwocenter.org)**

Northwest Ohio Center of Excellence in Science and Mathematics Education (NWO) is a partnership among Bowling Green State University, University of Toledo, Lourdes College, Owens Community College, University of Findlay, local school districts, educational service centers, businesses, and non-profit organizations.

**Michelle Leow Klinger**

Assistant Director, NWO/COSMOS  
Bowling Green State University  
Bowling Green, OH

**Jessica Belcher**

Assistant Director, NWO/COSMOS  
Bowling Green State University  
Bowling Green, OH

***The following COSMOS FY 10 staff contributed to this report:***

**Lisa Addis**

Graphic Designer/Marketing Director, NWO/COSMOS

**Nancy Hoose**

Secretary, NWO/COSMOS

# Table of Contents

**3** ... **NWO Mission**

**3** ... **NWO Vision**

**4** ... **NWO Goals**

**6** ... **Educator Professional Development and Outreach**

NWO STEM Education Inquiry Series

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

**8** ... **Faculty Professional Development and Collaborative Education Research**

COSMOS Research Learning Community

Faculty and Staff Research Dissemination

NWO Faculty Participants

**12** ... **Undergraduate and Graduate Student Educational Enhancement**

Ohio Junior Science and Humanities Symposium (OJSHS)

Undergraduate and Graduate Teacher Preparation Course or Program Modification

**14** ... **K-12 School and Community Partner Professional Development and Outreach**

NWO Collaborative Council (NWOCC)

NWO Executive Board

**16** ... **Other Professional Development and Outreach**

NWO/COSMOS Website

Business and Community Partnerships

NWO Regional Partner Grants

**20** ... **Affiliated Programs**

DREAMS

Project pi r<sup>2</sup>

USE-IT

GRAMS

ACTION

BOSEF

**24** ... **FY 2010 NWO & COSMOS Budget**

**26** ... **NWO Projected Goals and Activities for FY 2011**

**28** ... **NWO Resource Development and Sustainability**

**30** ... **NWO Evaluation**

*continued on page*

# Table of Contents cont.

## 32 ... Appendices

- A. 2009-10 NWO STEM Education Inquiry Series Brochure
- B. 2009 NWO Symposium Postcard
- C. 2010 OJSHS Postcard
- D. 2009 DREAMS Recruiting Postcard
- E. Community Resources Workshop - Project pi r<sup>2</sup>
- F. NWO Publications and Presentations
- G. NWO Publicity
- H. Faculty & Student Recognition
- I. 2009-10 Evaluation Report

## ***NWO Mission***

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

## ***NWO Vision***

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



## ***NWO Goals and Corresponding Activities***

***Goal 1: Develop the expertise of pre-service and in-service teachers and higher education faculty through research-based professional development framed by investigative science and mathematics teaching and learning.***

**Center Activities:**

- a. Conduct monthly regional professional development meetings [NWO Inquiry Series for K-12 STEM pre-service and in-service teachers].
- b. Host the annual one-day regional conference for pre-service and in-service teachers and higher education faculty [NWO Symposium].
- c. Co-sponsor learning communities and/or seminars for higher education faculty focused on improving science and mathematics teaching.
- d. Lead and assist with a variety of grant-funded projects providing professional development to K-12 teachers and administrators and college faculty.
- e. Support and assist with offering the Master of Arts in Teaching degree program in Biology, Physics, Mathematics, and Interdisciplinary Science.

***Goal 2: Recruit and retain students into STEM and STEM education disciplines.***

**Center Activities:**

- a. Host the annual NWO Future Teacher Conference (combined with NWO Symposium).
- b. Host the annual Ohio Junior Science and Humanities Symposium (OJSHS).
- c. Support efforts university-wide and throughout the region to recruit and retain students in STEM and STEM education disciplines by providing information and assistance.

***Goal 3: Conduct and communicate collaborative research on how people best teach and learn science and mathematics and/or on the barriers and enablers related to current reform efforts.***

**Center Activity:**

- a. Host and co-sponsor the COSMOS research learning community for higher education faculty, graduate students, and support staff.
- b. Research action teams (consisting of 3-5 members) will conduct research studies focused on how people best teach and learn science and mathematics or on the barriers and enablers related to current reform efforts. A minimum of three new collaborative research projects will be launched in fiscal year 2009 (over half of the funding needed for this activity comes from the BGSU Center for Teaching and Learning).

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

**Center Activities:**

- a. Host monthly NWO Collaborative Council (NWOCC) meetings with regional school and community partners to plan new collaborative projects and sustain on-going projects.
- b. Maintain semi-annual meetings of the Center's Executive Board of Directors to focus on building a collaborative alliance and shared decision-making body to guide and coordinate regional activities aimed at improving science and mathematics teaching and learning across the region using equitable and shared responsibility approaches.
- c. Reconstruct the current NWO/COSMOS websites to be more user-friendly and inclusive of the NWO/COSMOS activities.
- d. Develop new business and community partnerships.
- e. Develop and obtain approval from the Center's Executive Board of Directors for a long-range resource development plan.

***Goal 5: Increase the leadership capacity for science and mathematics education in northwest Ohio.***

**Center Activities:**

- a. Increase the number of teacher and faculty professional presentations of classroom best practices at the NWO Inquiry Series meetings, the NWO Symposium, and other local, regional, state, and national forums. Provide more explicit mentorship to these emerging leaders.
- b. Continue to collaborate with the Ohio Resource Center in all of our professional development programs by showing regional teachers and faculty the useful materials found at the ORC.
- c. Support and assist with offering the Master of Arts in Teaching degree program in Biology, Physics, Mathematics, and Interdisciplinary Science.
- d. Lead and support grant-funded projects such as DREAMS to improve leadership ability and disposition in K-12 teachers.



## ***Educator Professional Development and Outreach***

### ***NWO STEM Education Inquiry Series***

Sustained professional development is offered by NWO throughout the academic year in the NWO Inquiry Series. The Inquiry Series continues to be a highly popular professional development resource in the region. The Inquiry Series is also a monthly platform for the affiliated NWO projects to bring together their respective project participants for project-specific professional development (action groups) or general professional development (feature presentations). 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 seven Inquiry Series events. Tuition scholarships for graduate credit opportunities were available as cost share from the BGSU Graduate College. During the 2009-10 academic year, 9 teachers earned two hours of BGSU graduate credit.

The theme for the 2009-10 NWO Inquiry Series was “Advancing STEM Education for the 21st Century.” Again this year, Inquiry Series participants positively rated the sessions very high. Participants were asked to evaluate the Inquiry Series by rating their level of agreement (on a 4-point scale, with 1=Disagree, 2=Somewhat Disagree, 3=Somewhat Agree, and 4=Agree) with several statements pertaining to the implementation and impact of the Inquiry Series sessions. Participants felt the sessions were engaging (mean rating of 3.82), valuable (mean rating of 3.74), and included information that could be incorporated in their classrooms (mean rating of 3.73). Furthermore, the Inquiry Series participants reported feeling more confident and excited about teaching STEM (mean ratings of 3.58 and 3.73, respectively) as a result of attending the Inquiry Series. We will continue to expand this sustained professional development and adapt it to reflect emerging needs of our partners. You can find the 2009-10 brochure in Appendix A.



### **Detailed Participant Information**

<b>Participant Group</b>	<b>Total Attendance for 2009-10 (Unique Visitors)</b>	<b>Total Attendance</b>
Pre-Service Educators	73	88
K-12 Educators	209	704
K-12 Administrators	7	19
Graduate Students	2	3
Higher Ed Faculty	22	54
Community/Business Partners	19	35
Other	16	64
<b>TOTAL</b>	<b>348</b>	<b>967</b>

### ***NWO Symposium on Science, Mathematics, and Technology Teaching (NWO Symposium)***

For the last seven 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 teachers to our long-term professional development opportunities and giving all participants resources and ideas they can use immediately in their classroom or setting. The one-day conference (Saturday) saw an increase in attendance of nearly 13% from the preceding year. Participants noted the impressive variety of the sessions and vendors, were pleased with more content, and had an overall positive experience. Participants were asked to evaluate the Symposium by rating their level of agreement (on a 4-point scale, with 1=Disagree, 2=Somewhat Disagree, 3=Somewhat Agree, and 4=Agree) with several statements pertaining to the implementation and impact of the Symposium. Participants felt the sessions were engaging (mean rating of 3.80) and valuable (mean rating of 3.83). Furthermore, participants felt that the educational community would benefit from knowing the information presented during the sessions (mean rating of 3.82). Participants also reported being more confident and excited about teaching STEM (mean ratings of 3.37 and 3.58, respectively) as a result of attending the Symposium. Seventy-eight percent of the participants who completed the Symposium evaluation stated their intention to attend the Symposium in 2010. The format for the symposium included eighteen 100-minute sessions ("double session") and sixty-five 50-minute sessions offered to participants. NWO will continue to expand this event and adapt it to reflect the emerging needs of our partners. The 2009 postcard can be found in Appendix B.

### **Detailed Participant Information**

<b>Participant Group</b>	<b>Total Attendance for 2009-10</b>
Pre-Service Educators	157
K-12 Educators	277
K-12 Administrators	10
Graduate Students	11
Higher Ed Faculty	66
Community/Business Partners	46
Other	21
<b>TOTAL</b>	<b>588</b>



## *Faculty Professional Development and Collaborative Education Research*

### ***COSMOS Research Learning Community***

Faculty with a common interest in the science of STEM (Science, Technology, Engineering, and Mathematics) teaching and learning critiqued and discussed research articles, participated in action research, and designed, conducted, and presented collaborative research projects related to COSMOS goals and activities. The main goal of this research learning community was to provide a foundation and support for professionals interested in pursuing research in how people best teach and learn in the STEM disciplines in K-16+ environments. The primary activity of this learning community was action research. A total of 11 faculty from the colleges of Arts and Sciences and Education were involved in the learning community during the 2009-10 academic year. Participants were asked to evaluate the Learning Community by rating their level of agreement (on a 5-point scale, with 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree) with several statements related to the implementation and impact of the Learning Community. Participants felt the Learning Community was useful for the development of teaching and learning strategies (mean rating of 4.4), student learning (mean rating of 4.2), research preparation/output (mean rating of 4.5), and collaboration/broadening professional networks (mean rating of 4.5). Furthermore, many participants reported being more engaged and reflective in their scholarship as a result of attending the Learning Community. Abstracts of the four collaborative research projects developed and implemented this year follow.

1) **Title:** Using Applied Technologies to Enhance Student Engagement in Early Childhood Science Methods

**Authors:** Worch, E. A., & Li, L.

**Abstract:** Technology integration provides new opportunities in science instruction that can increase student engagement by promoting creativity, providing access to new resources, supporting social networking, and making possible asynchronous instruction and remedial/enrichment experiences. This project will measure pre-service early childhood teachers' attitudes toward science and technology at the beginning and end of their science methods course. Three survey instruments will be administered: The Biology Attitude Scale (modified to generically address science), the Technology Attitude Instrument, and the Student Attitude, Motivation and Engagement Scale. Two sections of the course will receive different instruction. In the treatment group, the instructor will integrate technology as a teaching tool and students will practice and apply technology to their own science instruction. In the control group, the instructor will teach without technology integration as has been done in previous semesters.

2) **Title:** The Student Attitude, Motivation and Engagement Scale (SAMES)

**Authors:** Haney, J. J., Partin, M. L., Underwood, E., Li, L., Duran, E., & Midden, W. R.

**Abstract:** According to a multitude of current and previous research studies, student attitude, motivation, and engagement are constructs that have significant and large relationships with student success. Contemporary reform efforts aimed at increasing student success in the STEM disciplines should examine these dynamic relationships. A team of faculty researchers at BGSU is currently developing the Student Attitude, Motivation and Engagement Scale (SAMES) survey instrument to measure and monitor these variables in both K-12 and higher education classrooms. The instrument's three sub scales (attitude, motivation, and engagement) are all grounded in motivation theory and consist of roughly 65 Likert items and an eight-item semantic differential. The motivation scale consists of seven additional sub scales (confidence, challenge, choice, connectedness, creativity, curiosity, clarity) and the engagement scale consists of three additional sub scales (behavioral, emotional, and cognitive). After developing and establishing validity and reliability of the instrument, the SAMES will be pilot tested and refined using sample classrooms. Thereafter, targeted BGSU courses will be re-designed in hopes of increasing levels of student attitudes, motivation, and engagement as measured by the SAMES, with the ultimate goal of enhancing student success.

3) **Title:** Effectiveness of In-Class Activities on Student Learning and Motivation in Introductory Astronomy

**Authors:** Dellenbusch, K. E., & Laird, J. B.

**Abstract:** In an effort to enhance student learning, a current trend in education is to make the classroom a more active learning environment, with less emphasis on traditional lecture. In this study we examine the effectiveness of including collaborative in-class worksheets on student learning in large introductory astronomy classes. Worksheets were given to students in ASTR 2120 ("The Solar System") during the semester. These worksheets were designed to help students work through the reasoning necessary to understand some of the more difficult concepts in introductory astronomy. To study the effectiveness of the worksheets, one section of ASTR 2120 was given the worksheets, while a second section of the course, taught by the same instructor, was not. The class that did not receive the worksheet was given similar content through traditional lecture. This study will be conducted over multiple semesters. Although not statistically significant, the data from one semester suggest that students may gain a better fundamental understanding of concepts through the inclusion of collaborative in-class worksheets.

4) **Title:** Testing the Effectiveness of Exam Enhancements for Increasing Compliance with Homework Requirements

**Authors:** Burns, B., & Haubert, L.

**Abstract:** As the coordinators for Math 1120 and Math 1220, we have been experiencing unmotivated students who do not complete the necessary components of the course. This is resulting in a high failure rate for College Algebra I and College Algebra II. Our goal is to find effective ways to motivate the unmotivated students. We began with looking at what students are not doing. Beyond scoring poorly on exams, students are not completing their MyMathLab homework. This is a required online homework program that allows students to work through problems as many times as it takes to get the problem correct. The program offers help on problems and shows students how to do similar problems. We think if students take the time to complete this effectively they should be in a better position to do well on the exams. We looked into what would motivate a student to complete his/her homework assignments beyond assigning point values. We decided that every student who earned a 90% or better on every MyMathLab assignment would earn the right to use a Help Sheet on the final exam. The Help Sheet would contain useful information that was covered throughout the course, including properties, formulas, and directions for using the calculator.

We have so far been able to compare the Spring 2009 final exam scores to the Fall 2009 scores. We found that there was a 1.2% increase in scores for Math 1220. For Math 1120 the average final exam score decreased by 2.5% from Spring 2009, when the students didn't have an incentive to do homework, until Fall 2009, when the students could earn the right to use a Help Sheet on the final exam. For Math 1120 only about one third of the students completed the necessary requirements to use a Help Sheet. Our goal is to further analyze the data and compare final grades in the class to previous semesters where this policy was not in place. We want to see if being able to use the Help Sheet by completing the homework made a difference in students' exam scores. We also want to see if this has motivated students to do their homework.

Partner	Number of Participants	Disciplines
Bowling Green State University	38	Biological Sciences • Chemistry •
Lourdes College	12	Education • Environmental
Owens Community College	7	Programs • Geography • Geology
University of Findlay	4	• Human Movement •
University of Toledo	8	Mathematics • Physics &
Defiance College	4	Astronomy • Psychology •
Terra Technical Community College	1	University Administration •
Adrian College	1	Visual Comm. & Tech. Ed.

### ***Faculty and Staff Research Dissemination***

A total of 2 refereed presentations and 8 refereed publications focusing on STEM education were accomplished are reported during FY 2010 by COSMOS-affiliated faculty and staff at BGSU. See Appendix F for a list of those publications and presentations.

### ***NWO Faculty Participants***

This chart demonstrates the number of faculty associated with NWO from our five partner higher education institutions. Many faculty from BGSU, UT, OCC, UF, and LC are involved in more than one capacity, including NWO Inquiry Series, Research Learning Community, NWO Symposium, Ohio Junior Science and Humanities Symposium, NWO Executive Board, NWO Collaborative Council, and NWO affiliated grant programs.



## ***Undergraduate and Graduate Student Educational Enhancement***

### ***Ohio Junior Science and Humanities Symposium (OJSHS)***

OJSHS brings the best and brightest talents from Ohio high schools together for a competition to highlight and judge the quality of their research projects in the sciences and humanities. We believe this event is an excellent opportunity for the recruitment of the next generation of scientists, mathematicians, engineers, and teachers. We will continue to expand the organizations involved in this event and use it to recruit students into the fields of STEM and STEM education. This event is co-sponsored by NWO and a grant from the Academy of Applied Science. Oral 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. For the last two years, the winner of the Ohio competition has gone on to win the top award at the National level, demonstrating the extraordinary talent and achievement of these students. The 2010 postcard can be found in Appendix C.

#### ***Detailed Participant Information***

<b>Participant Group</b>	<b>Total Attendance for 2009-10</b>
High School and Middle School Students	84
K-12 Educators	11
Higher Ed Faculty	19
Other	40
<b>TOTAL</b>	<b>154</b>

### ***Undergraduate and Graduate Teacher Preparation Course or Program Modification***

A critical component of pre-service and in-service teachers' professional development is their content and pedagogy coursework. Developing Regional Excellence for Achievement in Mathematics and Science Education (DREAMS) program partnered with BGSU faculty in developing new university specializations and courses. We will continue to infuse research regarding best practices into these courses so that teachers do not face a mismatch between the teaching advocated in STEM education literature and the teaching methods employed in their teacher preparation programs and courses. The titles of the new courses and programs are BIOL 6820 - Forensics Science for Teachers, ENVS 6010 - Fundamentals of Environmental Sustainability, PHYS 6500 - Physics for Inservice Teachers, and BIOL 6820 - Biology Action Research. Developed syllabi and supporting documents for these new courses are available upon request.



## *K-12 School and Community Partner Professional Development and Outreach*

### ***NWO Collaborative Council (NWOCC)***

To increase the involvement of key stakeholders, NWO/COSMOS developed a forum for STEM regional support and collaboration. The NWOCC is composed of K–12 administrators, local teachers, community partners, higher education faculty, and NWO/COSMOS staff who meet monthly to communicate needs, share opportunities and research, and determine mutual goals, objectives, and strategies to advance STEM education for people of all ages. Minutes of the NWOCC meetings are available upon request to [nwo@bgsu.edu](mailto:nwo@bgsu.edu).

### ***Detailed Participant Information***

<b>Participant Group</b>	<b>Total Attendance for 2009-10 (Unique Visitors)</b>	<b>Total Attendance</b>
Educational Service Centers & State Support Teams	4	7
School Districts	8	17
Institutions of Higher Education	4	5
Community/Business Partners	13	22
NWO Center Staff	5	17
<b>TOTAL</b>	<b>34</b>	<b>71</b>



## ***NWO Executive Board***

The NWO Executive Board met in September 2009 and May 2010 as outlined in the NWO approved bylaws. Minutes for both meetings and the bylaws are available upon request. The composition of the board is as follows:

<b>Anne Bullerjahn</b> , Professor, Life and Natural Sciences	Owens Community College
<b>Julie Campbell</b> , Science Support Teacher	Toledo Public Schools
<b>Anjali D. Gray</b> , Assoc. Professor & Chair, Biology and Health Science	Lourdes College
<b>Lori Hauser</b> , Director of Operations	Imagination Station
<b>Kathleen Herrmann</b> , Executive Director	Lucas County Educational Service Center
<b>Andy Jorgensen</b> , Assoc. Professor, Chemistry	The University of Toledo
<b>Linda Lower</b> , Customer Service Manager	Perstorp Polyols, Inc.
<b>Mitch Magdich</b> , Curator of Education	Toledo Zoo
<b>Jane McCleary</b> , Curriculum Director	Hancock County Educational Service Center
<b>Julie McIntosh</b> , Asst. Dean & Assoc. Professor, College of Education	The University of Findlay
<b>Bob Midden</b> , Director, NWO and COSMOS	Bowling Green State University
<b>Eileen Underwood</b> , Assoc. Professor, Biological Sciences	Bowling Green State University
<b>Vacant</b> , Director, CATALyST and Co-Director, NWO	The University of Toledo

### ***NWO Executive Board Composition by Partner Group***

IHE Partners – 7

K-12 School Partners – 3

Community and Business Partners – 3



## *Other Professional Development and Outreach*

### ***NWO/COSMOS Website***

The NWO website is currently housed with the COSMOS website at <http://www.nwocenter.org>. The website includes information about NWO (vision, mission, goals, and activities), partners, contacts, membership (and how to become a member and/or sponsor the Center's work), calendar (interactive, so that all members can add events to the calendar), resources (including links to the ORC, other professional organizations, lesson plans, and other related websites of interest), grants (all grants offered by NWO and others available to our NWO region), communities (pages dedicated for our working groups including the Executive Board, NWOCC, Research Community, etc.), and careers. The website undergoes regular revision to continue to meet the growing needs of our region.

### ***Business and Community Partnerships***

NWO impacts and works with collaborative partners all over northwest Ohio. Many institutions have become formal partners. The application to become an NWO partner is available at [www.nwocenter.org/partners/](http://www.nwocenter.org/partners/). The NWO partnership listing, comprised of higher education institutions, K-12 schools, and business and community partners is summarized below.

Partner	Profession
<p><b>School Districts</b></p> <p><i>These are the main district collaborations, as cited in our current grant projects; however, we recruit/disseminate to 19 counties</i></p> <ul style="list-style-type: none"> <li>• Toledo Public Schools</li> <li>• Lima City Schools</li> <li>• Bowling Green City Schools</li> <li>• Eastwood Local Schools</li> <li>• Fostoria Community Schools</li> <li>• Findlay City Schools</li> <li>• Penta Career Center</li> <li>• Perrysburg Exempted School District</li> <li>• Rossford Exempted Village School District</li> <li>• Springfield Local Schools</li> <li>• Sylvania Local Schools</li> <li>• Washington Local Schools</li> </ul>	<p><b>Professional Fields</b></p> <p>pK-12 Educators and Administration</p>
<p><b>Business</b></p> <ul style="list-style-type: none"> <li>• American Rent-All</li> <li>• Ball Corporation</li> <li>• British Petroleum</li> <li>• Carolina Biological Supply</li> <li>• Delta Education</li> <li>• Mother Hubbard's Reading Cupboard</li> <li>• Perstorp Polyols, Inc.</li> <li>• Reading Railroad</li> <li>• Sheridan Worldwide</li> <li>• Texas Instruments</li> <li>• Tractor Supply Company</li> </ul>	<p><b>Positions</b></p> <p>Marketing Director  Owner  Regional Sales Representatives  Vice President in Charge of Sales</p>
<p><b>Community</b></p> <ul style="list-style-type: none"> <li>• Armstrong Air and Space Museum</li> <li>• Toledo Museum of Art</li> <li>• Toledo Blade</li> <li>• Imagination Station</li> <li>• Ohio Historical Society</li> <li>• Stranahan Arboretum</li> <li>• Toledo Zoo</li> <li>• WGTE</li> <li>• Lucas County Metroparks</li> <li>• Sauder Historical Village</li> <li>• Toledo Botanical Garden</li> <li>• Challenger Learning Center</li> <li>• Seven Eagles Historical Center</li> <li>• Wolcott House Museum Complex (Maumee Historical Society)</li> </ul>	<p><b>Positions</b></p> <p>Administrators  Educational Consultants  Educational Coordinators</p>
<p><b>Others</b></p> <p><b>Educational Service Centers</b>  Hancock County • Lucas County • North Central Ohio • Northwest Ohio • Putnam County • Wood County</p> <p><b>State Support Teams</b>  Region 1 • Region 6 • Region 7</p>	

## ***NWO Regional Partner Grants***

During FY 2010 NWO continued the successful Regional Partner Grants program. Our goal was to increase accountability and engagement among all NWO partners. The following three peer-reviewed (via subcommittee of the NWO Executive Board) proposals were awarded during FY 2010:

1) **Pod-sibilities** – Lucas County ESC

**Summary of Proposed Project:** \$4,000 partial funding

The proposed collaborative project, Pod-sibilities for STEM Education are Endless, will strive to meet the NWO goals by training educators to develop and utilize podcasting as a way to improve student learning and to develop twenty-first century skills (e.g., creativity, communication, responsibility, information/media/technology literacy, etc.) in themselves and their students. Podcasting, the process of making digital audio or video broadcasts available for anytime learning, is a generic term that was derived from combining “iPod” and “broadcasting,” but the technology is not vendor specific.

Through the professional development series, participants will receive hands-on instruction on how to use podcasts in their own learning process as well as creating and publishing podcasts using a variety of tools with a focus on Audacity™ and Movie Maker™ software. Chad Rex, Lucas County Educational Service Center (LCESC) School Improvement Technology Consultant, Lisa Morse, LCESC School Improvement Consultant, and Carol Schwartz, Educational Technologist at Northwest Ohio Computer Association (NWOCA), will have integral roles in this project, from organizing the equipment to leading the participating in-services and subsequent evaluation efforts. While the lead NWO Project Participating Partners will be Rossford Exempted Village Schools and NWOCA other LCESC member districts, which include Anthony Wayne Local, Maumee City, Ottawa Hills Local, Perrysburg Exempted Village Schools, Springfield Local, Sylvania City, and Washington Local Schools, will also be engaged in this project.

2) **Community Resources Workshop** – Toledo Zoo

**Summary of Proposed Project:** \$2,400 partial funding

The Community Resources workshop is a week-long summer workshop for approximately 50 K-12 teachers to introduce educators to the standards-aligned, inquiry-based resources available from organizations across the region in order to strengthen student math, science, technology, language arts and social studies achievement in northwest Ohio. The Community Resources Workshop is an active consortium of area resource specialists and education directors of informal and formal educational institutions. Educators visit each of the major partner institutions for engaging half-day, hands-on, minds-on sessions during the week to experience the plethora of educational resources teachers and students have available to them to meet their curricular needs.

This year's theme is "21st Century Skills" and will feature ways science and technology are used at each regional partner institution to increase awareness of the importance of STEM education to the future of our region. Major partners in this endeavor are: Debby Geyer, Newspapers in Education Director from The Blade; Michelle Klinger, Co-Asst. Director of COSMOS from Bowling Green State University; Reed Steele, Director of Challenger Learning Center of Lucas County; Jule Horn, Director of Theater Vision at the Franciscan Center of Lourdes College; Heather Norris, Director of Environmental Education of Toledo Area Metroparks; Nancy Eames, Youth Services Manager Librarian, Toledo-Lucas Co. Public Library; Thomas Townley, Publicity and School Outreach for Toledo Mudhens; Rachel Biel, Museum Education Coordinator of Toledo Museum of Art; Linda Calcamuggio, Asst. Director of Education of Toledo Zoo; and Betsy Hood, Director of the Educational Resource Center of WGTE Public Media. The workshop is now in its 12th year serving NW Ohio educators and has served over 500 teachers.

3) **Tech21** – WGTE & Toledo Public Schools

**Summary of Proposed Project:** \$3,300 partial funding

WGTE Public Media, in partnership with Toledo Public Schools, proposes to initiate Tech21, a teacher professional development program for 6th-8th grade science educators (22 total) focusing on the infusion of 21st century learning skills and technology within existing TPS professional development efforts and district curricula. Tech21 will build upon the success of a WGTE/TPS NWO Regional Partner Project grant award in 2007, *SMart Tech* (Science, Math and Technology), to further TPS efforts to assist educators in using technology to meet learning objectives and promote the adoption of 21st century themes within instruction. Program content and resources will align with the Ohio Academic Content Standards in Technology and Science and will allow for the development of technology-rich lessons to be shared district-wide via a Project Website, development of student learning activities, and infusion within existing district professional development efforts.



## ***Affiliated Programs***

### ***DREAMS (Developing Regional Excellence for Achievement in Mathematics and Science Education)***

The DREAMS program represents a collaborative partnership among Bowling Green State University (BGSU) and 5 school district partners including Lima City, Washington Local, and Fostoria Local. This Math and Science Partnership (MSP) grant aimed to increase PK–12 teacher content knowledge and leadership skills in mathematics and science by providing teachers with the opportunity and skills to become leaders in mathematics and/or science for their school district. Participants had the option to complete a Master of Arts in Teaching (MAT) in one of four areas (biology, mathematics, physics, or a specialization in interdisciplinary sciences within the Biology MAT) or a Specialist Endorsement in mathematics or science. DREAMS served 38 teachers by funding tuition for 8 graduate credit hours per year. Dr. Eileen Underwood, BGSU Biological Sciences, was the principal investigator for the DREAMS program for fiscal years 2008 and 2009. The program provided a total number of 135 contact hours/year. In 2009-10 DREAMS received \$464,794 from the Ohio Department of Education. Appendix D is the 2009-10 recruiting postcard.

#### **NWO Role in DREAMS:**

- Funding and staffing support provided at NWO Inquiry Series
- Advertisement/recruitment via Constant Contact to ~ 4,300 regional K-12 contacts
- Advertisement/recruitment at NWO Inquiry Series (7 events with a total of 348 unique attendees)
- Office space provided for Program Manager, Evaluator, Secretary, Marketing Director, and Student Assistant

### ***Project pi r<sup>2</sup>: (Partners in Inquiry Resources and Research)***

Project pi r<sup>2</sup>, funded by a \$130,027 Ohio Board of Regents Improving Teacher Quality grant, united 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 Lucas County, Sauder Village, The Toledo Zoo, Lucas County Educational Service Center, and North Central Ohio Educational Service Center for a new model in professional development. This project provided 28 K-8 teachers with 100 hours of thorough and sustained professional development and reached over 1,200 students in high-need schools with state-of-the-art inquiry science education. The program's overall objectives were to (a) help retain and support teachers in science and technology; (b) expose teachers to effective models in science instruction; (c) integrate educational resources in the region's classrooms to model inquiry and increase class time spent on STEM subject areas; (d) improve student inquiry science process skills and science achievement; and (e) promote the use of research-based best practices in science teaching in Northwest Ohio classrooms consistent with local, state, and national standards. The flyer for the Community Resources Workshop for pi r<sup>2</sup> teachers is available in Appendix E.

#### **NWO Role in Project pi r<sup>2</sup>:**

- Funding and staffing support provided at NWO Inquiry Series
- Advertisement/recruitment via Constant Contact to ~ 4,300 regional K-12 contacts
- Advertisement/recruitment at NWO Inquiry Series (7 events with a total of 348 unique attendees)
- Office space provided for Program Manager, Evaluator, Secretary, Marketing Director, and Student Assistant

### ***USE-IT (Uniting Science, Education, Inquiry, and Technology)***

Project USE-IT, funded by a grant from the Martha Holden Jennings Foundation in the amount of \$21,360, was part of our school-year professional development program, the NWO Inquiry Series. Through Project USE-IT 24 grades K-8 public school teachers learned practical applications of inquiry teaching and learning, gained confidence and proficiency in teaching science content using technology, gained new tools to use with already existing classroom technology, and increased their comfort level with science teaching and using technology to meet the diverse needs of their students. Their students benefited through the availability of (a) new technology tools in the classrooms that allow students to utilize technology to its fullest potential; (b) hands-on, minds-on science lessons and activities; and (c) proficient teachers who encourage critical thinking, as well as instill enthusiasm for the study of science and technology in the 21st century classroom. Each of the 24 participating teachers received 33 hours of hands-on professional development with facilitators from WGTE Public Media and area mentor teachers, which included equipment such as a digital video camera and resources like Google Sites to implement technology into the teaching of science directly into their classrooms.

#### **NWO Role in USE-IT:**

- Funding and staffing support provided at NWO Inquiry Series
- Advertisement/recruitment via Constant Contact to ~ 4,300 regional K-12 contacts
- Advertisement/recruitment at NWO Inquiry Series (7 events with a total of 348 unique attendees)
- Office space provided for Program Manager, Evaluator, Secretary, and Student Assistant

## ***GRAMS: Granting Access to Math and Science***

Bowling Green State University is collaborating with two regional community colleges, Owens and Terra, with a \$599,864 5-year grant from the National Science Foundation to increase the number of highly qualified and capable students who are able to attend college by providing approximately 20 need-based 4-year scholarships to students selected by class rank, performance in college-prep math courses, successful participation in science and math activities, leadership experiences, and community service. 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.

### **NWO Role in GRAMS:**

- Advertisement/recruitment via Constant Contact to ~ 4,300 regional K-12 contacts
- Advertisement/recruitment at NWO Inquiry Series (7 events with a total of 348 unique attendees)
- Administration of the grant
- Administration of scholarships
- Advising and support of student scholarship recipients
- Oversight of the community college partnerships

## ***ACTION: Science and Mathematics Education in ACTION***

BGSU received \$3,000,000 funding from the Ohio Board of Regents and is collaborating with three regional community colleges and the University of Findlay to use innovative strategies for preparing highly effective science and mathematics teachers for grades 5-12. These strategies include:

- 1) A 5-week summer bridge program preceding the first regular semester of college to launch students' college careers under ideal circumstances and give them all of the skills they need to excel.
- 2) Participating in a collaborative science or math research team that addresses a real community problem or concern. This gives students first hand experience in real research that enhances their understanding of science or math and their ability to practice it and teach it.
- 3) Participation in a co-op or internship work experience in a regional science or math related business or industry. This "real world" experience gives future teachers insights into how science and math are applied and provides examples that they can draw on to enrich their students' learning.
- 4) Early teaching experiences in a regional school, assisting a teacher and working with students to get first hand experience in what teaching is really like and what they need to learn to be an effective teacher.
- 5) Creating a capstone project that involves applying research techniques to determining the best teaching practices that advance the students' learning.

### **NWO Role in ACTION:**

- Advertisement/recruitment via Constant Contact to ~ 4,300 regional K-12 contacts



- Advertisement/recruitment at NWO Inquiry Series (7 events with a total of 348 unique attendees)
- Provides consultation on project implementation
- Leads one of the research projects for Action students

### ***BOSEF (Building Ohio's Sustainable Energy Future)***

The BOSEF project 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, NW Ohio has major research and development strengths in environmental analysis and remediation technologies. For this Choose Ohio First Scholarship (COFSP) grant, The University of Toledo (UT), Bowling Green State University (BGSU), and the Community Colleges of Owens, Terra, and Northwest State will 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 will be 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 will prepare students for scientific and technical careers by providing internships with business, industry, agencies, and non-profits in renewable energy and environmental sustainability fields. Recruiting and retaining minority and women scientists is a goal of this program, and our students will benefit from the active collaboration of the existing AIMS (BGSU) and WISE (UT) programs. New undergraduate minor degree programs in Renewable Energy also will introduce students to the broader natural and social science connections of energy and sustainability. 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.

Through this grant, the participating institutions will have a comprehensive and vertically integrated approach to STEM education that will maximize student success and provide skilled professionals in these crucial STEM areas. The principal components of this program are:

- Scholarships for undergraduate students pursuing a relevant degree program.
- Stipends for summer research projects for undergraduate students pursuing a relevant degree program.
- Stipends for first year BOSEF students to attend the AIMS summer bridge program.
- Faculty Interest Group seminar series on a Sustainable Energy Future (FIG:SEF).
- Mentoring to enhance student success and retention.
- Graduate student and K-12 teacher participation.

#### **NWO Role in BOSEF:**

- Advertisement/recruitment via Constant Contact to ~ 4,300 regional K-12 contacts
- Advertisement/recruitment at NWO Inquiry Series (7 events with a total of 348 unique attendees)
- Administration of the grant
- Administration of scholarships
- Advising and support of student scholarship recipients



## FY 2010 NWO & COSMOS Budget

Category	OBOR Funds	COSMOS Funds	Other NWO Grant-Related Funds <sup>2</sup>	TOTAL
Personnel	\$84,053	\$224,184	\$139,089	\$447,326
Supplies and Services <sup>1</sup>	-\$1,563	\$8,858	\$60,185	\$67,480
Travel	\$272	\$0	\$0	\$272
Equipment	\$0	\$67	\$0	\$67
Communication	\$3,150	\$2,031	\$0	\$5,181
Consultants (Inq. Series & Symposium)	\$0	\$0	\$12,775	\$12,775
Participant Support	\$0	\$0	\$0	\$0
Tuition	\$0	\$0	\$0	\$0
Subcontracts – UT	\$20,185	\$0	\$0	\$20,185
Other – Regional & Mini Grants	\$8,278	\$0	\$0	\$8,278
Administration (Indirect Costs)	\$9,150	\$0	\$12,653	\$21,803
<b>TOTAL</b>	<b>\$123,525</b>	<b>\$235,140</b>	<b>\$224,702</b>	<b>\$583,367</b>
Undesignated Carryover to FY11	\$89,727			

<sup>1</sup>Includes expenses for Inquiry Series, Symposium, OJSHS, NWO Meetings, Office Supplies, etc.

<sup>2</sup>Includes DREAMS, GRAMS, OJSHS, Project pi r2, USE-IT, Foundation Grants

The table below shows funding sources that supported FY 2010 NWO activities (total = \$2,087,445).

Agency - Program	Title	Award Amount
Bowling Green State University Fiscal Support for COSMOS <i>Note: All affiliated grant projects have additional matching funds.</i>	<ul style="list-style-type: none"> <li>• Director</li> <li>• Secretary</li> <li>• Fringes</li> <li>• Tuition Waivers</li> <li>• Assistant Directors</li> <li>• Faculty Associates</li> <li>• Operating Budget</li> </ul>	\$274,720
Rossford Schools	Host Monthly Inquiry Series	In-Kind
Penta Career Center	Host of NWO Symposium	In-Kind
BP-Husky	Toledo Blade Advertising (Gift in Kind)	\$4,125
BP-Husky	NWO Symposium sponsor	\$5,000
Carolina Biological	NWO Symposium sponsor	\$500
Delta Education	NWO Symposium sponsor	\$400
Ohio Board of Regents	Project pi r2: Partners in Inquiry Resources & Research	\$130,027
Square One Education Network	Professional Development & STEM in the Park materials	\$11,200
Martha Holden Jennings	USE-IT: Uniting Science Education, Inquiry and Technology	\$21,360
Academy of Applied Science	OJSHS: Ohio Junior Science & Humanities Symposium	\$20,000
Perstorp Polyols	OJSHS award sponsor	\$500
ODE - MSP	DREAMS: Developing Regional Excellence for Achievement in Mathematics and Science Education	\$464,794
NSF - S-STEM	GRAMS: Granting Access to Mathematics and Science (5-year grant: 7/09-6/14)	\$599,864
OBOR - Choose Ohio First	Building Ohio's Sustainable Energy Future (BOSEF) - BGSU portion (5-year grant: 7/09-6/14)	\$554,955
<b>Previous Multiple-Year Grants:</b> OBOR - Choose Ohio First	Science & Mathematics Education in Action (5-year grant: 8/08-8/13)	\$3,000,000
<b>Grants Submitted:</b> BG Community Foundation	STEM in the Park (Approved FY 11)	\$2,500
Toledo Community Foundation	Let's Grow Together (Pending)	\$23,670
Ohio STEM Initiative	PARTNERS (Approved)	\$50,000
IMLS	Ft. Meigs ALIVE (Pending)	\$898,824
IMLS	Project pi r2 (Pending)	\$886,239
Martha Holden Jennings Foundation	USE-IT II (Uniting Science Education, Inquiry, and Technology) (Approved FY 11)	\$21,200
NSF - Informal Science	GECKOS (5 years) (Denied/To be resubmitted)	\$2,998,904
NSF - ITEST	ZooTeens, ZooTech, ZooTeach (3 years) (Denied/To be resubmitted)	\$1,138,092
NSF - S-STEM	GRAMS II (Approved FY 11)	\$598,693
NSF - MSP/Targeted Awards	iEvolve (5 years) (Denied/To be resubmitted)	\$11,041,946
ODE - MSP	ASSETS (Denied)	\$300,776
OBOR - ITQ	RISE (Denied)	\$111,414
OBOR - ITQ	Project pi r2 (renewal) (Denied)	\$130,293



## ***NWO Projected Goals and Activities for FY 2011***

**Goal 1: Develop the expertise of pre-service and in-service teachers and higher education faculty through research-based professional development framed by investigative STEM teaching and learning.**

- NWO Inquiry Series
- NWO Symposium on Science, Mathematics, and Technology Teaching
- Undergraduate and graduate teacher preparation courses or program modification
- Affiliated activities from NWO grants

**Goal 2: Recruit and retain students into STEM and STEM education disciplines.**

- Ohio Junior Science and Humanities Symposium (OJSHS)
- Affiliated activities from NWO grants
- STEM in the Park
- Support and assist with other University recruiting activities

**Goal 3: Conduct and communicate collaborative research on how people best teach and learn STEM and/or on the barriers and enablers related to current reform efforts.**

- COSMOS Research Learning Community
- Affiliated activities (faculty/staff research and participation, and NWO grant projects)

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

- NWO Collaborative Council (NWOCC)
- NWO Advisory Board
- NWO website
- Business and community partnerships
- STEM in the Park
- New partnership development through the Ohio STEM Learning Network

**Goal 5: Increase the leadership capacity for STEM education in northwest Ohio.**

- NWO Inquiry Series, Symposium, and Summit presentations (and others)
- Affiliated activities from NWO grants
- Continued support of the MAT degree program



## ***NWO Resource Development and Sustainability***

The NWO Center Resource Development Plan includes four approaches for identifying and securing funding and additional non-fiscal resources needed to sustain the Center. These approaches include, but are not limited to, the following strategies: Federal Funding, Business Partnerships, University Partnerships, and Enhancing the IHE (Institution of Higher Education) Infrastructure within the region.

**I. Federal Funding:** We aim to develop multiple proposals to the National Science Foundation and other federal grant agencies. We will invite partner IHEs in the region to collaborate in addition to targeted high needs and other schools and business and community partners to participate in project development and implementation. We recently applied for the NSF MSP **Targeted Partnerships** award. While not awarded, the reviews were very favorable and we plan to re-submit in fall 2010. We relied on our past experience and success with the NSF Local Systemic Change Project: TAPESTRIES, the National Institute of Environmental Health Science Project: EXCITE, and our current Ohio MSP Project: DREAMS and our Ohio Board of Regents Project: Project pi r2. This year we also submitted an NSF ITEST proposal and two proposals to the Institute for Museum and Library Services. Multiple other major proposals are pending and additional proposals are planned until the financial future of NWO is secure.

**II. Business Partnerships:** COSMOS has developed a brochure and is working on developing a procedure for identifying new business partners to sponsor general NWO/COSMOS goals or specific NWO/COSMOS activities. We have obtained sponsorships from British Petroleum, Carolina Biological, and Delta Education. We will continue to discuss a more collaborative and regional approach for seeking business partnerships and sponsorships.

**III. University Partnerships:** COSMOS is partnering with other offices and agencies in the Institution to expand its resources and to achieve greater impact. In particular COSMOS has partnered with the BGSU Center for Teaching and Learning (CTL). This partnership involves COSMOS leading a faculty learning community on research in STEM teaching and learning and, in return, CTL provides professional development stipends to learning community members for their active participation in the group (\$5,000 total sponsorship). COSMOS is also planning to develop a partnership with the Center for Online and Blended Learning (COBL) to enhance its ability to serve K-12 agencies in distant parts of the region and to partner with the Office of Admissions for recruiting activities. A partnership has recently been developed with the Firelands campus that promises to expand capabilities for offering professional development, particularly in that region. We will continue to identify and develop these sorts of partnerships within and across partner IHEs in the region.

**IV. IHE Infrastructure:** We will continue to promote partnerships with IHEs throughout all of Northwest Ohio. We have established strong partnerships with Lourdes College, the University of Findlay, and Owens Community College. We continue to have a partnership with the University of Toledo and we expect to strengthen that partnership in the near future to realize common goals and to optimize use of resources. We have an ongoing partnership with Terra Community College in two grant projects and are likely to expand that partnership further. We have recently made contact with and established tentative partnerships for the Ohio STEM Initiative grant proposal with Ohio Northern University, Rhodes State College, and Sinclair Community College. We have also within the last few months established promising relationships with the seven K-12 systems that have been designated as STEM Programs of Excellence or STEM Schools in Northwest Ohio by the Ohio STEM Learning Network. We are working earnestly to establish NWO as the premier resource for STEM education in the region and were awarded a planning grant along with the University of Toledo and TRECA for creation of a new STEM hub for Northwest Ohio. This is the first step towards restoring crucial funding of infrastructure for NWO by the State that was lost in the elimination of nearly all line-item funding in the most recent State biennium budget.

**V. Foundations:** Foundations in Ohio distribute \$300 million annually. We are continuing to seek these sources and determine which ones may provide support for our efforts. Recently NWO received funding from the Martha Holden Jennings Foundation in the amount of \$21,360 to fund technology sessions at the NWO Inquiry Series during the 2009-10 academic year. NWO was also awarded \$11,200 from the Square One Education Foundation to fund engineering sessions at the NWO Inquiry Series and the upcoming STEM in the Park event scheduled for fall 2010. While these amounts are small, they are a start and may help to create new and greater opportunities for funding from foundations in the future.



## NWO Evaluation

NWO activities and affiliated projects were evaluated in 2009-10 with several quantitative and qualitative measures that provided evidence regarding the implementation and impact of the activities and projects on NWO teachers and students.

The Teacher Beliefs Instrument (TBI) was used to quantitatively measure teachers' beliefs and behaviors regarding science and mathematics teaching. The TBI was completed at the beginning and end of the 2009-2010 school year by teachers enrolled in NWO projects (i.e., DREAMS, pi  $r^2$ , and USE-IT), teachers attending the Inquiry Series, and teachers in a control group who did not attend or participate in any NWO activities or projects. The results of the TBI demonstrated that teachers who participated in NWO activities and projects significantly increased their positive beliefs and behaviors about science and mathematics teaching, while the control group teachers did not.

Many of the NWO activities and projects included qualitative evaluation components. For example, the monthly Inquiry Series Evaluation surveys included a qualitative component where teachers could comment about several aspects of the Inquiry Series sessions, including how engaging and valuable the sessions were, as well as the sessions' impact on the teachers' confidence and excitement regarding STEM teaching. Also, the DREAMS and pi  $r^2$  project evaluations both included end-of-project reflections on which the teachers could write about their project experiences and their perceptions regarding the project's impact on the teachers and students. Examples of teachers' comments about the 2009-10 NWO activities and projects are:



I am very excited to continue to explore the resources shared at this session so that I can use them in my lesson planning.

– *January 2010 Inquiry Series Evaluation survey*

I always come back to school more excited to teach what I learned in each session.

– *March 2010 Inquiry Series Evaluation survey*

It truly was one of the best conferences that I have attended in recent years. The information was timely and certainly relevant. I applaud the planning committee for their outstanding work of putting together an educator's dream of a day.

– *NWO Symposium Evaluation survey*

Not only are my students noticing how much more interesting my science classroom is than other classes they have taken, but teachers as well. This is my first year on the seventh grade team and next year I will take the role of “team leader”. My efficacy has improved and I know that I am ready to be more assertive and more involved in the school environment.

– *DREAMS End-of-project reflection*

This experience has really changed the way I do science. I have always loved science, but bringing the field trips right into my room. WOW! Thank you so much ... What a great year!!!!

– *Pi r<sup>2</sup> End-of-project reflection*

You can find the 2009-10 NWO Evaluation Report in Appendix I.



## *Appendices*

- A. 2009-10 NWO STEM Education Inquiry Series Brochure
- B. 2009 NWO Symposium Postcard
- C. 2010 OJSHS Postcard
- D. 2009 DREAMS Recruiting Postcard
- E. Community Resources Workshop - Project pi r<sup>2</sup>
- F. NWO Publications and Presentations
- G. NWO Publicity
- H. Faculty & Student Recognition
- I. 2009-10 Evaluation Report

# Appendix A: 2009-10 NWO STEM Education Inquiry Series Brochure

## Monthly Mathematics Opportunities

09 ~ 10

### Exploring Elementary Math Topics (Grades K-6)

*Facilitator: Amy Boros, Frank Elementary School, Perrysburg.*  
Join us for lively discussions, hands-on, ready-to-use activities, and new ideas that can quickly and easily be incorporated into your elementary classroom. The sessions will focus on early elementary mathematics, but will include topics and discussions for all levels of elementary math teachers.

### What is a Number? (Grades 9-12)

*Facilitator: Dr. David Meel, Mathematics & Statistics Dept., BGSU*  
These sessions will look at numbers and number sense from the natural to the complex and beyond. Be prepared to consider the infinite and to work through ideas that have perplexed mathematicians for years. Bring a graphing calculator and an open mind to these sessions.

## Monthly Engineering Opportunities

### Experiencing Engineering is Elementary (EIE) (Grades K-6)

*Facilitators: Cherie Piatowski and Julie Campbell, Toledo Public Schools Support Specialists*  
Learn more by doing with the research-based, standards-driven, and classroom-tested curriculum from Engineering is Elementary (EIE). These investigations will help elementary school educators enhance their understanding of engineering while fostering engineering and technological literacy among children.



## Blast-Off Keynote Speaker

### 21st Century Learning...It's More Than Just Technology!

*Betsy Hood, Director of the Educational Resource Center at WGTE Public Media*

How do these much talked about 21st century skills apply to your classroom? This informal presentation will explore current trends in tech integration as well as student outcomes and support systems that produce a framework for classroom learning in the 21st century.

Thanks to our sponsors and funding agents.



BP - Husky Refining LLC



MARTHA HOLDEN JENNINGS FOUNDATION



Ohio Board of Regents  
The State of Ohio  
Department of Education



BGSU

## Advancing STEM Education for the 21<sup>st</sup> Century

# IDEAS

NWO STEM Education Inquiry Series 2009~10



Advancing STEM education for people of all ages

09 ~ 10

## Monthly Technology Opportunities

### USE-IT (Uniting Science Education, Inquiry and Technology) (Grades 3-8)

*Facilitators: Betsy Hood and Charlene Patten, WGTE Public Media*

Gain strategies and classroom-ready resources that model effective applications of 21st century skills. Interact with new technology and/or sharpen your skills with the technology you already have. Walk away with learning tools (and technology!) designed for immediate adoption in the classroom and engage in best practice discussions to identify 21st century methodologies that promote active, process-oriented student learning. USE-IT is funded by the Martha Holden Jennings Foundation. This program is limited to 24 participants; please contact NWO at [nwo@bgsu.edu](mailto:nwo@bgsu.edu) to register.

### Technology Integration in STEM Education (Grades K-12)

*Facilitator: Carrie Rathbuck, Integrations Specialist, Rossford Public Schools*

These sessions will focus on a number of topics in 21st century technology education. STEM integration and the latest tools and resources will be discussed to help teachers effectively meet the needs of all students.

October/December – Internet Tools for Teaching STEM

January/February – SMART Board for Elementary Math

March – Integrating 21st Century Skills and Tools into the Secondary Science Classroom



## Monthly Interdisciplinary Opportunities

### Using Community Resources (Grades K-12)

*Facilitators: October - Toledo Zoo; December - Toledo Museum of Art; January - Lucas County Soil and Water Conservation; February - Lourdes College Theater Vision & Light Lab; March - The Blade Newspapers in Education*

Discover new resources, meet education specialists, and experience new ideas to energize your classroom science, mathematics, and technology lessons.

*Because each monthly session is unique, this course is an excellent choice for teachers and pre-service teachers who cannot regularly attend.*

## Monthly Project pi r<sup>2</sup> Opportunities

### Project pi r<sup>2</sup> (Grades K-8) (This session is currently filled)

*Facilitators: Aimee Mendelsohn, Summit Academy School for Alternative Learning; Dr. Rick Worch, School of Teaching & Learning, BGSU; Robyne Kramp, Bowling Green City Schools; Deb Wickerham, Findlay City Schools; and Berry Cobb, Professor Emeritus, BGSU*

Project pi r<sup>2</sup>, Partners in Inquiry Resources and Research, is an exciting program offering 100 contact hours of high-quality teacher professional development for teachers in grades K-8 which brings science outreach into the classroom. Please email [nklinge@bgsu.edu](mailto:nklinge@bgsu.edu) for information on future opportunities.

2009~10

## Monthly Science Opportunities

### Physical Sciences Modeling (Grades 9-12)

*Facilitators: Nate Ash, Perrysburg High School, and Mary Kate Hafemann, Ottawa Hills High School*

Physics, chemistry, and physical science teachers will learn how the modeling method gives students the opportunity to confront their misconceptions about physical science head on, analyze their data in an in-depth, consistent way in order to construct appropriate models, and develop the skills and confidence needed to interpret results in a scientifically critical way. (This section can be taken for credit.)

### Exploring Inquiry in High School Biology (Grades 9-12)

*Facilitator: Dr. Eileen Underwood, Biological Sciences Dept., BGSU*

Expand your professional network and join area biology teachers as they explore topics of interest and investigate current knowledge about the best ways to instruct students in the life sciences. (This section can be taken for credit.)

## 2009-10 Inquiry Series

# DATES

DATE		TIME	PLACE
Sept. 26 (Sat)	<b>Blast-Off</b> - Betsy Hood,	8:30-12:30	BGSU Student Union (Lenhart Grand Ballroom)
	WGTE Public Media		
Oct. 22 (Thurs)	Monthly Evening Session	5:00-8:00	Rossford High School (701 Superior St., Rossford, OH)
Nov. 7 (Sat)	<b>NWO Symposium</b>	7:45-4:00	Penta Career Center (9301 Buck Road Perrysburg, OH)
Dec. 3 (Thurs)	Monthly Evening Session	5:00-8:00	Rossford High School (701 Superior St., Rossford, OH)
Jan. 21 (Thurs)	Monthly Evening Session	5:00-8:00	Rossford High School (701 Superior St., Rossford, OH)
Feb. 18 (Thurs)	Monthly Evening Session	5:00-8:00	Rossford High School (701 Superior St., Rossford, OH)
Mar. 25 (Thurs)	Monthly Evening Session	5:00-8:00	Rossford High School (701 Superior St., Rossford, OH)
Apr. 22 (Thurs)	<b>Summit</b>	4:30-8:30	Rossford High School (701 Superior St., Rossford, OH)

The Inquiry Series is free to all educators and school administrators. Meals are provided free of charge.

Partial scholarships available for graduate credit. For more information contact [nwo@bgsu.edu](mailto:nwo@bgsu.edu).

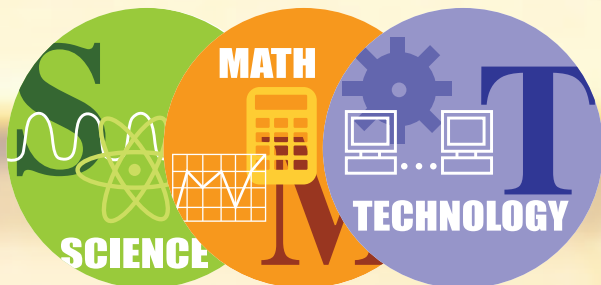
Register online at: <http://nwocenter.org/inquiryseries>

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



# Appendix B: 2009 NWO Symposium Postcard

**2009 NWO Symposium**  
**Saturday, November 7, 2009**  
**at Penta Career Center**



Northwest Ohio Symposium on Science,  
Mathematics, and Technology Teaching



[www.nwohiosymposium.org](http://www.nwohiosymposium.org)

Presenting sponsor:



BP • Husky Refining LLC

**Saturday, November 7, 2009 (7:45am-4:00pm)**  
**at Penta Career Center**

**Engage in innovative activities, share teaching ideas and tools, and grow as an educator!**

Northwest Ohio's premier professional development symposium on Science, Mathematics, and Technology Teaching.

**Keynote Speaker:**

**Dr. Andy Jorgensen**, Associate Professor of Chemistry & Director of General Chemistry, University of Toledo

**Global Climate Change:**

**What Is It? How Will It Affect Us?**

**Can We Reduce the Impact By Our Actions?**

**Certificate of Contact Hours Available for Teachers**

- No charge for registration and food
- Breakfast buffet & lunch catered by Tony Packo's
- Complimentary bag and gifts



The 2009 NWO Symposium on Science, Mathematics, and Technology Teaching is sponsored by the Northwest Ohio Center of Excellence. Additional sponsorship provided by BP-Husky Refining LLC. Supporting grant sponsors include Martha Holden Jennings Foundation, Ohio Board of Regents, and Ohio Department of Education.

The Northwest Ohio Center of Excellence in Science and Mathematics Education is a partnership between Bowling Green State University, University of Toledo, Lourdes College, Owens Community College, University of Findlay, local school districts, educational service centers, businesses, and non-profit organizations.



Northwest Ohio Center of Excellence  
in Science and Mathematics Education

241 Math Science Bldg., BGSU  
Bowling Green, OH 43403-0212

**Register today at** (online pre-registration closes Nov. 4,  
on-site registration available)  
[www.nwohiosymposium.org](http://www.nwohiosymposium.org)

Funding provided by the Ohio Board of Regents.

# Appendix C: 2010 OJSHS Postcard



**imagine.design.create**

**March 24-26, 2010**

**The 47th Annual Ohio Junior Science & Humanities Symposium**  
hosted by Bowling Green State University



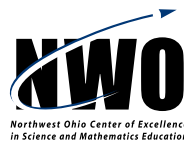
## Call for High School Research Papers & Posters

Sponsored by the Northwest Ohio Center of Excellence in Science and Mathematics 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 17, 2010

- Online registration is required for all participants including Paper Presenters, Poster Presenters, Teachers, Student Delegates, Parents, and Guests.
- **Poster Presenters** must submit an **Abstract**.
- **Paper Presenters** must submit an **Abstract** and a copy of the **Research Paper**.



**Dr. Emilio Duran**  
Bowling Green State University  
School of Teaching and Learning  
126 Life Sciences Building  
Bowling Green, OH 43403

NONPROFIT ORG  
US POSTAGE PAID  
PERMIT #1  
BOWLING GREEN OH



**imagine.design.create**

The National Association of Secondary School Principals has placed this program on the NASSP National Advisory List of Student Contests and Activities for 2009-2010

Visit our web site for more information  
[www.ojshs.org](http://www.ojshs.org)

# Appendix D: 2009 DREAMS Recruiting Postcard



Earn my master's or specialist endorsement



Increase my content knowledge



Expand my education

## DO YOU WANT TO BECOME A **LEADER** IN SCIENCE AND/OR MATHEMATICS EDUCATION?

[http://cosmos.bgsu.edu/affiliated\\_projects/dreams](http://cosmos.bgsu.edu/affiliated_projects/dreams)



## DREAMS:

A scholarship program for mathematics and science with a leadership focus

**Tuition scholarships for coursework towards a Master of Arts in Teaching (MAT) in Mathematics, Physics, Biology, or Biology with a specialization in Interdisciplinary Science OR a Specialist Endorsement in Science and/or Mathematics.**

**Features:**

- Tuition for 8 graduate credit hours paid by the program (Participant is required to pay first credit hour and all general and registration fees.)
- Rigorous content coursework
- Leadership development
- Career enhancement

**Requirements:**

- STEM Leadership Academy I (August 2009) and II (June 2010)
- NWO/COSMOS Inquiry Series (once a month from September through April)

**Open to K-12 teachers wishing to pursue or take coursework towards a:**

- MAT in Mathematics, Physics, or Biology (targets grades 9-12 teachers)
- MAT in Biology with a specialization in Interdisciplinary Science (targets grades 4-9 teachers)
- Specialist Endorsement in Science (K-9) and/or Mathematics (K-6)

**For more information visit us at:**

[http://cosmos.bgsu.edu/affiliated\\_projects/dreams](http://cosmos.bgsu.edu/affiliated_projects/dreams)

**Or contact: Jessica Belcher, Program Manager**

**E-mail: [jbelche@bgsu.edu](mailto:jbelche@bgsu.edu) or Ph: 419.372.5571**



241 Math Science Bldg.  
Bowling Green State University  
Bowling Green, OH 43403-0212

**Applications being accepted now.  
Space is limited!**

[http://cosmos.bgsu.edu/affiliated\\_projects/dreams](http://cosmos.bgsu.edu/affiliated_projects/dreams)

*Funding provided by the Ohio Department of Education, MSP grant.*

*DREAMS is a project affiliated with COSMOS.  
COSMOS is a partner of the Northwest Ohio Center  
of Excellence in Science and Mathematics Education (NWO).*

**BGSU.**

# Appendix E: Community Resources Workshop - Project pi r<sup>2</sup>

## Using Community Resources Workshop Project pi r<sup>2</sup>



# Appendix F: NWO Publications and Presentations

## Faculty Refereed Publications

- Duran, E., Ballone-Duran, L., Haney, J. J., & Beltyukova, S. (2009). Project ASTER III: The impact of a professional development program integrating informal science education on early childhood teachers' self-efficacy and beliefs about inquiry-based science teaching. *The Journal of Elementary Science Teacher Education*, 21(4), 53-70.
- Duran, E., Ballone-Duran, L., & Worch, E. A. (2009). Papier-mâché: An integrating theme for elementary classrooms. *Science Education Review*, 8(1), 19-29.
- Keil, C. P., Haney, J. J., & Zoffel, J. (2009). Improvements in science process skills using environmental health science problem-based learning curricula. *The Electronic Journal of Science Education*, 13(1).
- Partin, M. L., & Haney, J. J. (n.d.). The CLEM model: Path analysis of the mediating effects of attitudes and motivational beliefs on the relationship between perceived learning environment and course performance in an undergraduate non-major biology course. *Learning Environments Research*. Manuscript submitted for publication.
- Partin, M. L., Haney, J. J., Worch, E. A., Underwood, E., Nurnberger-Haag, J., Scheuermann, A., & Midden, W. R. (in press). Yes I can: The contributions of motivation and attitudes on course performance among biology non-majors. *Journal of College Science Teaching*.
- Partin, M. L., & Worch, E. A. (in press). The virtual tour and implications for synchronous distance education. *International Journal of Instructional Media*.
- Worch, E. A. (2009). The great top challenge. *Science Scope*, 33(4), 32-37.
- Worch, E. A., Scheuermann, A. M., & Haney, J. J. (2009). Role-play in the science classroom: A wildlife game teaches K-2 students about the basic needs of animals. *Science & Children*, 47(1), 54-59.

## Presentations

- Worch, E. A., Partin, M. L., Haney, J. J., Underwood, E., Nurnberger-Haag, J., Scheuermann, A. M., & Midden, W. R. (2010, January 16). Yes I can: *The contributions of motivation on course performance among biology non-majors*. Paper presented at the annual meeting of the Association for Science Teacher Education, Sacramento, CA.
- Shipman, J., & Underwood, E. M. (2010, April 8). *Incubation temperature effects in Rhacodactylus ciliatus*. Paper presented at the annual meeting of the Association of Southeastern Biologist, Asheville, NC.



# Appendix G: NWO Publicity



**BGSU. NWO**  
Northwest Ohio Center of Excellence  
in Science and Mathematics Education

Northwest Ohio Symposium on Science,  
Mathematics, and Technology Teaching

Announcing:  
**2009 NWO Symposium on Science,  
Mathematics, and Technology Teaching**

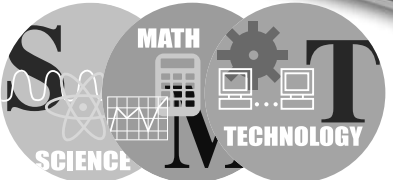
Presented by  
   
BP - Husky Refining LLC

**FREE** Annual Conference for K-12 educators,  
pre-service teachers, and higher education faculty  
Engage in innovative activities, share teaching ideas  
and tools, and grow as an educator

Register online today at: <http://nwohiosymposium.org>

The 2009 NWO Symposium on Science, Mathematics, and Technology Teaching is sponsored by the Northwest Ohio Center of Excellence in Science and Mathematics Education (NWO). Additional sponsorship provided by Ohio Board of Regents, Ohio Department of Education, and Martha Holden Jennings Foundation.  
NWO is a partnership among Bowling Green State University, University of Toledo, Lourdes College, Owens Community College, University of Findlay, local school districts, educational service centers, businesses, and non-profit organizations.



The Blade, Toledo, OH, October 2009



**BGSU. NWO**  
Northwest Ohio Center of Excellence  
in Science and Mathematics Education

Northwest Ohio Symposium on Science,  
Mathematics, and Technology Teaching

Announcing:  
**2009 NWO Symposium on Science,  
Mathematics, and Technology Teaching**

Presented by  
   
BP - Husky Refining LLC


**FREE** Annual Conference for K-12 educators,  
pre-service teachers, and higher education faculty  
Engage in innovative activities, share teaching ideas  
and tools, and grow as an educator

Register online today at: <http://nwohiosymposium.org>

The 2009 NWO Symposium on Science, Mathematics, and Technology Teaching is sponsored by the Northwest Ohio Center of Excellence in Science and Mathematics Education (NWO). Additional sponsorship provided by Ohio Board of Regents, Ohio Department of Education, and Martha Holden Jennings Foundation.  
NWO is a partnership among Bowling Green State University, University of Toledo, Lourdes College, Owens Community College, University of Findlay, local school districts, educational service centers, businesses, and non-profit organizations.

The Blade, Toledo, OH, October 2009

## Appendix G: NWO Publicity cont.



**NWO invites to you to attend the NWO STEM Education Inquiry Series 2009-2010**

**FREE** Professional Development for K-12 educators, school administrators, and college faculty

**IDEAS**

Register online at <http://nwocenter.org/inquiryseries>

**The Inquiry Series provides exciting, hands-on ideas for teaching science, technology, engineering, and mathematics and offers:**

- Contact hours (CEUs) and options for 4 graduate credits
- Dinner at no charge
- A variety of resources and materials to enhance STEM teaching and learning

**BGSU**  
bp Husky  
BP - Husky Refining LLC

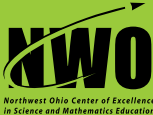
**2009-2010 Dates**

- Oct. 22** [Thurs] 5pm - 8pm (Rossford H.S.)
- Nov. 7** [Sat] 7:45am - 4:00pm (Penta Career Center)
- Dec. 3** [Thurs] 5pm - 8pm (Rossford H.S.)
- Jan. 21** [Thurs] 5pm - 8pm (Rossford H.S.)
- Feb. 18** [Thurs] 5pm - 8pm (Rossford H.S.)
- Mar. 25** [Thurs] 5pm - 8pm (Rossford H.S.)
- Apr. 22** [Thurs] 4:30pm - 8:30pm (Rossford H.S.)

The Northwest Ohio Center of Excellence in Science and Mathematics Education is a partnership among Bowling Green State University, University of Toledo, Lourdes College, Owens Community College, University of Findlay, local school districts, educational service centers, businesses, and non-profit organizations. NWO has been providing high quality professional development for 7 years and is funded by supporting grant sponsors: Ohio Board of Regents, Ohio Department of Education, and Martha Holden Jennings Foundation.

The Blade, Toledo, OH, September 2009

**NWO invites you to attend the 2009-2010 Annual NWO Symposium on Science, Mathematics, and Technology Teaching – Sat., Nov. 7, 2009 at Penta Career Center**



**Engage in innovative activities, share teaching ideas and tools, and grow as an educator**



**FREE** professional development for K-12 educators!

Contact hours (CEUs) available through BGSU

**BGSU**  
bp Husky  
BP - Husky Refining LLC

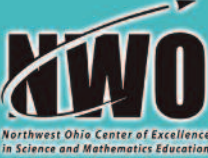
Register online at <http://nwohiosymposium.org>

The 2009 NWO Symposium on Science, Mathematics, and Technology Teaching is sponsored by the Northwest Ohio Center of Excellence in Science and Mathematics Education (NWO). Additional sponsorship provided by BP-Husky Refining LLC. Supporting grant sponsors include Martha Holden Jennings Foundation, Ohio Board of Regents, and Ohio Department of Education.

NWO is a partnership among Bowling Green State University, University of Toledo, Lourdes College, Owens Community College, University of Findlay, local school districts, educational service centers, businesses, and non-profit organizations.

Presenting sponsor: BP - Husky Refining LLC

The Blade, Toledo, OH, October 2009



**FREE** Professional Development for K-12 educators, school administrators, and college faculty

Events sponsored by the Northwest Ohio Center of Excellence in Science and Mathematics Education (NWO) and hosted at Rossford H.S.

**IDEAS**

Register online at <http://nwocenter.org/inquiryseries> ~ **March 25, [Thurs] 5-8pm (Rossford H.S.)**

**The Inquiry Series provides exciting, hands-on ideas for teaching science, technology, engineering, and mathematics and offers:**

- Contact hours (CEUs)
- Dinner at no charge
- A variety of resources and materials to enhance STEM teaching and learning

**Mark your calendar for our Inquiry Summit, April 22, 2010**  
[Thurs] 4:30pm - 8:30pm (Rossford H.S.)

**Special Guest Speaker** – Jennifer Fong, Director of Center for Professional Studies, Lourdes College

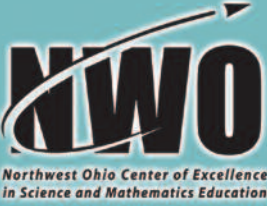
**BGSU**  
bp Husky  
BP - Husky Refining LLC

**For more information or questions please contact [NWO@bgsu.edu](mailto:NWO@bgsu.edu)**


The Northwest Ohio Center of Excellence in Science and Mathematics Education is a partnership among Bowling Green State University, University of Toledo, Lourdes College, Owens Community College, University of Findlay, local school districts, educational service centers, businesses, and non-profit organizations. NWO has been providing high quality professional development for 7 years and is funded by supporting grant sponsors: Ohio Board of Regents, Ohio Department of Education, Martha Holden Jennings Foundation, Square One Education Network and the National Science Foundation.

The Blade, Toledo, OH, March 2010

## Appendix G: NWO Publicity cont.



**FREE**  
Professional  
Development for  
K-12 educators,  
school administrators,  
and college faculty



Register online at <http://nwocenter.org/inquiryseries>

**The Inquiry Series provides exciting, hands-on ideas for teaching science, technology, engineering, and mathematics and offers the following sessions:**




- **Using Community Resources** (Grades K-12)
- **Physical Sciences Modeling** (Grades 9-12)
- **Exploring Inquiry in High School Biology** (Grades 9-12)
- **Technology Integration in STEM Education** (Grades K-12)
- **Experiencing Engineering is Elementary (EiE)** (Grades K-6)
- **Exploring Elementary Math Topics** (Grades K-6)
- **What Is a Number?** (Grades 9-12)

**Upcoming Dates**

**March 25, 2010**  
[Thurs] 5pm - 8pm (Rossford H.S.)

**April 22, 2010**  
[Thurs] 4:30pm - 8:30pm (Rossford H.S.)

Contact hours (CEUs) & Dinner at no charge



BP - Husky Refining LLC

The Northwest Ohio Center of Excellence in Science and Mathematics Education is a partnership among Bowling Green State University, University of Toledo, Lourdes College, Owens Community College, University of Findlay, local school districts, educational service centers, businesses, and non-profit organizations. NWO has been providing high quality professional development for 7 years and is funded by supporting grant sponsors: Ohio Board of Regents, Ohio Department of Education, Martha Holden Jennings Foundation, Square One Education Network and the National Science Foundation.

NWOET, June 2010

# Appendix H: Faculty & Student Recognition

**BGSU** | MyBGSU | BGSU Email | Search

ACADEMICS | ADMISSIONS | THE ARTS | ATHLETICS | LIBRARIES | A-Z LINKS

BOWLING GREEN STATE UNIVERSITY

**BGSU Monitor**

A WEEKLY PUBLICATION FOR THE BGSU COMMUNITY

December 21, 2009

Front Page  
In Brief  
Calendar  
Job Postings  
Obituary  
Print Text Of This Issue

Current Issue  
Past Issues  
About Monitor  
Marketing & Communications



**Achievement, zeal earn Moses state award**

**Question:** If one math educator works for 30 years at a steady rate of speed to improve the teaching of mathematics, touching innumerable students and teachers each year, what is the result?

**Answer:** Dr. Barbara Moses wins the 2009 Kenneth Cummins Award, presented by the Ohio Council of Teachers of Mathematics to the top college-level math teacher in Ohio.

Like the Kent State University math professor for whom the award is named, Moses is known for her deep love of mathematics—a love she has felt since she was in middle school and that has inspired her to help students learn, and teachers teach, math better.

[\[MORE\]](#)

**Podcast features discussion on Humanitarian Bowl**

This week's "BGSU Take5," the podcast for faculty and staff, features a discussion with Greg Christopher, assistant vice president for student affairs and athletic director, on the Falcon's upcoming trip to the Rody's Humanitarian Bowl. To listen, go to: <http://blogs.bgsu.edu/bgsutake5/>.

The Office of Marketing and Communications appreciates your feedback on our internal communications. If you have comments on Take5, Zoom News, the Monitor or Campus Update, or ideas for future episodes or stories, please share them with us at [davidk@bgsu.edu](mailto:davidk@bgsu.edu).

**BGSU IN THE NEWS**

- Jim Bissland named to state panel planning Civil War observance - The Blade
- Brett Holden on assisting veterans in college - Findlay Courier
- Charles Coletta on cartoons - The Blade
- Commencement - Sentinel-Tribune
- Sophomore Spencer Bechstein volunteers for BGSU Hockey - Sentinel-Tribune
- BGSU bids farewell to Hess, Kipie and Knox

[\[MORE\]](#)

**Zoom News Recap Dec. 15-18**

**Dec. 15**

- University marks centennial
- Strategic enrollment group starts work on plan
- Attend 'Print Responsibly' forum tomorrow [\[READ\]](#)

**Dec. 16**

- CUE to enter phase two
- Bowl ticket donation program helps BGSU, needy youth
- Last chance for spring cleaning in December! [\[READ\]](#)

**Dec. 17**

- Gift to 'Bring Back the Glory' campaign honors Scott Hamilton
- Enrollment update from the Career Center [\[READ\]](#)

**Dec. 18**

- Author, speaker getting BGSU degree 35 years after she started
- Alumna Jennifer Higdon gets second Grammy nomination
- Enrollment update [\[READ\]](#)

Bowling Green State University | Bowling Green, OH 43403-3931 | Contact Us | Campus Map | Accessibility Policy

# Appendix H: Faculty and Student Recognition cont.

**BGSU** | MyBGSU | BGSU\_email | 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

**BGSU Monitor**

A WEEKLY PUBLICATION FOR THE BGSU COMMUNITY

July 19, 2010

Front Page  
In Brief  
Calendar  
Job Postings  
Obituary  
Print Text Of This Issue

---

Current Issue  
Past Issues  
About Monitor  
Marketing & Communications



**SETGO students learn valuable research lessons**

Heather Allamon learned the hard way that scientific research is all about making mistakes. The junior biology major from Crestline is studying the effects of light intensity and water clarity on the foraging rates of larval fish through the Science, Engineering and Technology Gateway Ohio (SETGO) program.

"When I first started the lights were too hot," Allamon said. "They warmed up the water and killed all the fish. When you're doing your own research project sometimes you have to think on your feet and redesign what you're doing."

[\[MORE\]](#)



**'The Curious Savage' next at the Huron Playhouse**

The adventures of Mrs. Ethel Savage are at the center of a charming and heartwarming comedy taking the stage at the Huron Playhouse.

[\[MORE\]](#)

**BGSU IN THE NEWS**

- Kanwischer's work on display in Cleveland – The Plain Dealer

[\[MORE\]](#)

**Zoom News Recap**

July 14

- BGSU dominates Toledo Area Artists show
- Willard Drive widening effecting Lot 1 entrance

[\[READ\]](#)

Bowling Green State University | Bowling Green, OH 43403-0001 | Contact Us | Campus Map | Accessibility Policy

# Appendix I: 2009-10 Evaluation Report



***Northwest Ohio Center of Excellence  
in Science and Mathematics Education***

## Annual Evaluation Report 2009-2010

August 2010

Prepared by:

Jacob Burgoon, NWO Project Evaluator