

ST. PIUS X SIXTH GRADERS GET SERIOUS ABOUT GERMS

Jen Bine – Language Arts; Judy Nachazel – Math/Social Studies; Marcia Reed – Media and Technology; Cathie Ujvagi – Science/Math

The sixth graders at St. Pius X School in Toledo have been investigating the possible causes of a high rate of illness and absenteeism. During their Germ Odyssey they have learned the differences between viruses and bacteria, experienced how easily germs can travel, collected surface contamination samples and observed their growth, as well as taken part in lessons on careers and ethics. Guest speakers Mrs. Martie Moline, school nurse, Mr. Kevin Halligan, Lucas County Health Department, Mrs. Cheryl Rice, HazCorp and Dr. Michael Bisesi, Medical College of Ohio shared information on their careers and their knowledge of germs related to illnesses.

Nine teams of students prepared presentations answering a question related to the Germ Odyssey. These presentations were shared with students in grades 4 through 8 in the afternoon and with their parents, teachers, and community members at Family Night on March 10. Each team has also produced a Take Action sign or brochure to share at school and other locations on methods to reduce the spread of germs and disease. Several of the teams will also take part in the EXCITE Colloquium at COSI on April 25. ✕



St. Pius X team (front to back, left to right) Judy Nachazel, Jen Bine, Cathie Ujvagi, and Marcia Reed.

ARCADIA STUDENTS BUZZING ABOUT MOSQUITO ODYSSEY

Pat Ramsey – Guidance Counselor; Paula Ritter – Science; Carrie Plesec – Language Arts

With each day's rising sun, Arcadia students are becoming restless with thoughts of summer vacation drawing near. However, along with the fun of summer comes the annoyance of mosquitoes. Just as many local communities take measures to combat mosquito population problems, our team conducted an in-depth investigation of the public health concerns of community mosquito control.

To begin their Odyssey, the Arcadia team posed the following question to a group of fifteen 7th graders, "Should Arcadia and the surrounding areas spray for mosquitoes?" With encouragement

from EXCITE members, the students were buzzing with enthusiasm. Their investigations focused on the chemicals found in mosquito sprays, the impacts of the chemical exposure on humans and other animals, and alternatives to existing mosquito control methods. In addition to these topics, students studied chemical dosage thresholds and toxicity, as well as blood-borne pathogens. They also learned how interpreting chemical labels can help to formulate opinions and create action projects.

Because the Odyssey focused on mosquitoes, it was only fitting that the students study the effects of chemicals on these invertebrates. Four groups of students tested various hypotheses related to the effectiveness of commercial products, such as mosquito dunks and sprays, versus non-commercial products like citric acid and temperature change on mosquito larvae. Arcadia students discovered that although chemicals can be effective, alternative products for mosquito control should be considered first.

Along with writing letters to chemical companies, the "take action" portion of our project involved students in creating several pamphlets to inform our community members of our test results, as well as their options for developing an alternative mosquito-repelling device. The creative work of our team along with the cooperation and enthusiasm of the students helped to make our mosquito project a success! We are now anxiously awaiting the colloquium in April. ✕



Arcadia team (left to right) Pat Ramsey, Paula Ritter, and Carrie Plesec.

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Website Highlight

www.grantsalert.com

GrantsAlert.com provides a variety of resources for educational funding. The site includes an extensive list of currently available grants, a grant writer directory, and a collection of links that can be used to find funding for classroom, after school, and other educational programs. Grants listed on this site can be searched according to type of funding agency or grant-specified subject area. This site is designed to be a quick and easy way to find valuable funding opportunities, making it a tremendously useful resource in today's world of education.

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Environmental health science eXplorations
through Cross-disciplinary & Investigative Team Experiences



ASSESSING STUDENT SUCCESS

By J. Haney, Ph.D., Project EXCITE Co-Director

With all the talk of educational reform today, changes in classroom assessment practices are undoubtedly at the core of the discussion. The Latin derivative of the word assess means "to sit beside." Assessment is a process we use to observe, analyze, and provide verbal or written feedback. Or said differently, assessment is a process used to assist in the development of an individual towards a goal. Authentic assessment captures this spirit of "sitting beside" our students. During authentic assessment, we observe, analyze, and provide feedback WHILE students work towards the achievement of our outlined educational goals (standards). Therefore, authentic assessment happens along with instruction and is formative, rather than summative in nature. Authentic assessment does not discount traditional end of the unit tests. However, only a portion of student learning is best measured in this traditional, end of the unit way. So what sorts of assessment tools, both traditional and authentic, are available to us as we sit beside our students to monitor progress and provide feedback?

If you brainstorm all of the things we can ask students to do to show their level of understanding or competence of a given goal, these options can all be grouped into one of three categories. We can ask students to write (draw or orally explain), to do something or perform a given task, or we can ask them to create or produce a product. These options are sometimes referred simply as Type I, Type II, and Type III assessments.

Type I assessments are traditional paper/pencil assessments including multiple choice, true/false, matching, short answer, and extended responses (or essays). When Type I items are grouped together, they comprise an assessment module as depicted by the state achievement and diagnostic tests in Ohio. Type I assessments can be written at three levels of thinking (think Bloom's Taxonomy revamped). The acquiring level requires students to find, access, or memorize information.

Verbs such as measure, recall, retell, or find are typically associated with acquiring level questions. Acquiring questions assess rehearsed skills or knowledge (memory/recall). Whereas, processing questions require learners to mentally manipulate concepts during the assessment. Verbs such as compute, decide, compare, contrast, or determine are often associated with this assessment level and processing level items challenge learners to use analytic versus memory skills. Extending level Type I assessments involve more complex problem solving. These items incorporate verbs such as solve,

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4th Annual Environmental Science Colloquium Just around the Corner

Students and teachers involved with Project EXCITE will make presentations at COSI Toledo on April 25, 2005 from 5:00-8:00 pm. Sponsored by Project EXCITE, Bowling Green State University, and COSI, the poster or multimedia presentations will highlight student findings from local EHS investigations.

In the past four years, over 450 K-college students have participated and made impressive presentations of their environmental health studies. The EXCITE Colloquium is a valuable, EXCITING educational experience for all those involved. School administrators, parents, and interested community members are welcome and encouraged to attend. If you would like more information about the Colloquium, please contact EXCITE Program Manager, Jennifer Zoffel at 419.372.9132 or jzoffel@bgnet.bgsu.edu.

"to sit beside"

SPRING 2005

INTERVIEW WITH DR. KEIL

By Tyler Willson, Graduate Assistant

Chris Keil is currently a Associate Professor of Environmental Health at Bowling Green State University where he has taught for eleven years. He is a Co-director of Project EXCITE. Dr. Keil earned his undergraduate degree in Biology from Wheaton College and went on to earn his Masters of Science and Doctorate of Science in Public Health at the University of Illinois at Chicago. During his free time he enjoys exercising, woodworking, and gardening. He is also very involved with his church.



Dr. Chris Keil and friend
(Chris is on the left)

Q What prompted you to become a scientist in Environmental Health?

A I enjoy many different sciences and the interconnections between each of them. Environmental Health gives me a chance to use chemistry, physics, and biology at the same time. Another advantage of working in Environmental Health is that I am able to work with people instead of simply a laboratory. I solve practical problems that have concrete impacts on communities.

Q What are you most passionate about, within the field of Environmental Health?

A My specialty is indoor and outdoor data analysis and interpretation. Breathing is fundamental to human life and I work to ensure that the air is maintained at healthy levels. Another thing that I feel very strongly about is using scientific information to appropriately develop policy and manage risk. Data becomes much more meaningful when it is used to reform and protect health.

Q What local Environmental Health projects have you worked on recently?

A My students just finished a month-long sampling campaign analyzing particle concentration of the air in Bowling Green. I am also involved in a number of projects involving occupational health and safety.

Q Why is the field of Environmental Health useful in the classroom?

A Environmental Health provides a context and rationale for learning, particularly science. I have university students who have taken chemistry, but when they come to my class they have not retained the knowledge. I have to teach it to them again, but I can tell them why they need to know it. For example, they understand why they had to learn the ideal gas law instead of simply knowing the equation. This aids the learning process tremendously.

Q Is Environmental Health only for “environmentalists?”

A One might think so, but “environmentalists” are not always knowledgeable of environmental health. Environmentalism is a personal response to a situation and sometimes it is not grounded in fact, or good science. Some people love whales, trees or nature, but they are unaware of specifically how these things contribute to an ecosystem. Additionally, everyone involved in environmental health has a specific interest in human health. Furthermore, to make a sustainable policy we often have to consider economic and political interests that do not coincide with the interests of “environmentalists.”

Q Do you think that there are any problems with current science education?

A In my opinion, science education could be greatly improved if the scientific process were emphasized. I have worked in classrooms with Project EXCITE, TAPESTRIES, and in my children’s schools, and it seems that the teachers focus more on content. Content is, of course, very important, but the scientific process is equally important because students learn the skills of defining a problem, developing methods to address a problem, and interpreting information. For example, students are able to apply the concepts of controlled experiments, dependent variables, and independent variables to any number of scientific fields.

Q Why do you think that Project EXCITE is so effective?

A Project EXCITE is valuable because it is applied learning about a subject that makes a difference to the students, be it school health, power plant construction, or household cleaners. Project EXCITE focuses on the students, so the issues that they explore matter to them. They also get to explore them through the lens of different disciplines, enabling them to use their own perceived strengths.

Q What was one of your most enjoyable moments working with Project EXCITE?

A I thoroughly enjoy going to a school and working with the kids face to face. It is always a memorable experience to see students actively carrying out scientific investigation, and getting excited about science. It might not always work out exactly as planned, but there are always lessons to be learned.

Q What future plans do you have for Project EXCITE?

A I look forward to improving our program based on the lessons that we have learned in the past four years. The first cohort was a little like a guinea pig because there were a number of unexpected obstacles. Now we are refining what we know and how we can effectively accomplish our task. I want to see just how smooth and successful we can make our projects in the future. ✕

ASSESSING STUDENT SUCCESS CONT.

develop a procedure/plan or create and devise; they require learners to synthesize multiple ideas and generate a solution or proposal. Project EXCITE Odyssey student sheets provide a multitude of Type I assessment options. Another example of a Type I assessment set related to the topic of drinking water quality follows:

Given a figure showing the process of treating drinking water at a water treatment plant:

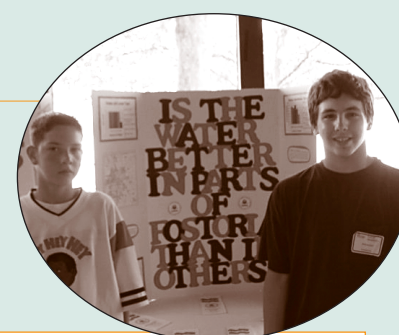
- Identify possible sources of water contamination (acquiring);
- Compare and contrast threats to the quality of drinking water coming from a water treatment plant and drinking water coming from ground water wells (processing); and
- Propose a plan to improve the drinking water quality for a ground well system that was found to be sub-standard (extending).

Type II assessments can be described as performance tasks. During a Type II assessment, learners are asked to “do or perform” to demonstrate knowledge or skills. During Project EXCITE Odysseys, students plan and conduct controlled experiments, make oral presentations of their findings, make posters or multimedia presentations, and debate the appropriate actions or best-fit solutions to the problem at hand. All of these opportunities represent Type II assessment options.

The final assessment type, Type III, involves long term events (or extended student projects). Learners are asked to create or produce artifacts to demonstrate their knowledge, skills, or dispositions (attitudes). They involve student investigation of topics over extended periods of time, encourage student creativity and offers students some choice and decision-making about the content and process related to their project. During Project EXCITE Odysseys, students develop an Odyssey Portfolio to document their individual contributions to the examination of the problem over the course of the entire Odyssey. Moreover, EXCITE students plan and implement a Take Action Project (service learning) to apply what they have learned to help solve the problem (thus serving the community).

Checklists and scoring rubrics are matrices or guidelines that help define quality performances for Type II and Type III assessments.

Fostoria students presenting their research on water quality distribution in their community at the Project EXCITE Student Research Colloquium held during Spring 2004.



They enhance the objectivity of scoring and often help improve student performance since task expectations are specified and communicated in advance. Therefore learners can self evaluate and modify their work prior to submission. Project EXCITE has developed a series of rubrics to score the assessments used throughout the Odyssey. The EXCITE Odyssey assessments and rubrics can be found at <http://www.bgsu.edu/colleges/edhd/programs/excite/>. Sample Type I, II, and III assessments and scoring rubrics are also found via the Ohio Resource Center at: <http://www.ohiorc.org>. When searching for the ORC assessments, conduct an advanced search by grade level, topic, and assessment resource.

In order for EXCITE to make a significant impact on the teaching and learning in our local schools, as educators we must focus our efforts on research-based best practices, such as contextualizing learning through problem-based strategies and infusing environmental health science as a way to integrate the curriculum. We can then examine the effectiveness of our efforts on student learning by employing Type I, II, and III assessment strategies. We are making steadfast progress in paving the way for long lasting improvements in teaching and learning. It is an EXCITE-ing challenge that can only be realized through the continued involvement of our schools’ most valuable resources.... YOU! ✕

WEBSITE GETS AN EXCITE-ING NEW LOOK

New pictures, new information, and a completely new layout, that’s what you’ll find at EXCITE’s revamped and updated website. Visit www.bgsu.edu/colleges/edhd/programs/excite and explore EXCITE online. This site includes explanations of EXCITE’s Environmental Health System and its Problem-based Learning Model. You’ll also find in-depth descriptions and examples of EHS and PBL and their uses in the classroom. The easy-to-use format of the site will guide you through the details of our program and the resources available to participants. It even includes an online version of ZoOdyssey, complete with student worksheets and sound and video clips. So what are you waiting for? Hop online and find out what EXCITE is all about! ✕



THREE

www.bgsu.edu/colleges/edhd/programs/excite

NIEHS AND EHSIC MAKE IT ALL POSSIBLE

by Jennifer Zoffel

Portions adapted from the NIEHS and EHSIC websites.

Project EXCITE aims to enhance student awareness of Environmental Health Science issues; increase the range of Problem-based Learning techniques in the classroom; and generate a sense of social responsibility among participants. This important and educational program would not be possible, however, without the support of our main funding source, the National Institute of Environmental Health Science (NIEHS).

NIEHS is one of 27 ‘Institutes and Centers’ of the National Institutes of Health (NIH), which is a component of the federal Department of Health and Human Services (DHHS). The mission of the NIEHS is to reduce the burden of human illness and dysfunction from environmental causes. They do so by examining environmental factors, individual susceptibility, and age, and by exploring how these factors interrelate.

Because of the public’s increasing interest in understanding the effects and risks to human health from exposure to physical and chemical agents, NIEHS is playing an important role in numerous public health programs. These programs help the public to better understand the risks and benefits associated with the environmental health decisions made by communities and individuals. In particular, NIEHS has recently implemented several environmental education initiatives.

The most current K-12 Environmental Health Science Education program is NIEHS’ **Environmental Health Science as an Integrating Context for Learning** (EHSIC) initiative. It was under this initiative that BGSU developed its vision for Project EXCITE. The purpose of this initiative is to utilize environmental health science as a theme to be implemented in K-12 curricula to improve overall academic performance, as well as enhance students’ awareness and knowledge of environmental health science.

Key features of this program include:

1. Projects must have active collaboration among an educator, a state department of education, and an environmental health scientist.
2. Subjects included for study must be relevant, contemporary, and encourage interdisciplinary integration of environmental health sciences. An environmental health concept or theme must be identified and studied in at least three different subject areas, e.g., biology, health, civics, social studies, math, chemistry, language arts, etc. At least one of these subjects should be non-science.
3. Curricula must be standard based.

This April BGSU will host the Annual EHSIC Grantee Meeting at the Lake Erie Center at Maumee Bay State Park. In addition to BGSU, nine other universities/institutions, representing eight other EHSIC programs, will come together

to discuss the status of each program and future plans and efforts. The common themes to be discussed include Evaluation Strategies; Publishing and Dissemination; Working with State Departments of Education; and Monograph Development. As a highlight of the meeting, participants will attend EXCITE’s Environmental Health Colloquium (see front page for details). EHSIC members will have an opportunity to hear presentations given by EXCITE students and to ask questions about the students’ investigations.

For more details on the EHSIC initiative or on NIEHS in general, please visit their websites – <http://www.niehs.nih.gov/translat/k12/k12educa.htm> and <http://www.niehs.nih.gov/external/intro.htm>



The other grant-funded participants of EHSIC include:

- University of Washington and University of New Mexico – INTEGRATED ENVIRONMENTAL HEALTH MIDDLE SCHOOL PROJECT
- University of Medicine and Dentistry of New Jersey – STUDENTS UNDERSTANDING CRITICAL CONNECTIONS BETWEEN THE ENVIRONMENT, SOCIETY AND SELF (SUC₂ES₂)
- Texas A & M University – INTEGRATING ENVIRONMENTAL HEALTH SCIENCE IN RURAL SCHOOLS
- Oregon State University – LEARNING THROUGH ENVIRONMENTAL HEALTH SCIENCE SCENARIOS
- Maryland Public Television – A COLLABORATIVE EXPLORATION OF THE ENVIRONMENT & HUMAN HEALTH
- University of Rochester – PROBLEM-BASED LEARNING FOR ENVIRONMENTAL HEALTH
- Baylor College of Medicine – THE ENVIRONMENT AS A CONTEXT FOR OPPORTUNITIES IN SCHOOLS (ECOS)
- University of Miami – ATMOSPHERIC AND MARINE-BASED INTERDISCIPLINARY ENVIRONMENTAL HEALTH TRAINING (AMBIENT) PROJECT ✕