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Exploring Science Through Media: The Omaha Science Media Project 2009-2010

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The Omaha Science Media Project 2009-2010



EXPLORING SCIENCE THROUGH MEDIA

The Omaha Science Media Project 2009-2010

By Judy Diamond, Dan Gilbert, Adam Wagler,
Amy Spiegel, and Chris Schaben

Designed by the College of Journalism and Mass Communications
at the University of Nebraska-Lincoln

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Nebraska
Lincoln

OMAHA
PUBLIC
SCHOOLS

SEPA SCIENCE EDUCATION
PARTNERSHIP AWARD
Supported by the National Center for Research Resources, a part of the National Institutes of Health

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www.omahasciencemedia.org
www.worldofviruses.unl.edu

ACKNOWLEDGMENTS

The Omaha Science Media Project represents the efforts of more than a hundred people across eight organizations. Working together, these individuals explored innovations in teaching and learning science that challenged and contributed to Omaha's learning community.

This program owes tremendous gratitude to Katie Weitz White and the Sherwood Foundation for their vision, support, and enthusiasm. The Sherwood Foundation's work has been critical to inspiring students, energizing teachers, and building strong programs for all. We also thank the Omaha Schools Foundation for its guidance and support.

The project's principal investigator is Judy Diamond, Ph.D., Professor and Curator of Informal Science Education at the University of Nebraska State Museum. The project's co-director is Dan Gilbert, who served as Omaha Public Schools Coordinator and principal liaison between the management team and Omaha Public Schools.

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FOREWORD



“Around the world, educators are challenged to inspire young people to connect the elegance and complexity of science to their everyday lives. With the Omaha Science Media Project, the Omaha Public Schools has sought to build partnerships, processes, and projects that empower students to transform this challenge into an opportunity.

Students today are more than just consumers of media. More and more they are creators of digital content and the context that gives their work meaning. As educators, we have an opportunity to create departure points and frameworks that enable students to create their own science journeys that are rigorous and relevant.

We are interested in developing student and teacher leaders at the intersection of learning and innovation; the Omaha Science Media Project is an important part of that vision. Young people are capable of demonstrating their understanding of sophisticated concepts in a variety of ways – we are excited to see what they do next.”

Dr. John Mackiel
Superintendent
Omaha Public Schools

Chris Schaben
Science Supervisor
Omaha Public Schools

INTRODUCTION

This short guide is the result of the Omaha Science Media Project, an innovative process for using the storytelling and media technology skills of journalism to help teachers make science relevant and accessible. Over the course of 2009 and 2010, Omaha Public Schools teachers explored how media could enhance science teaching.

In the first year, teachers immersed themselves for two weeks in virology research projects at a medical school and research center. With students as peers and professional journalists as mentors, teachers produced media stories about virology research. In the second year, these teachers mentored others on applying media production and journalism techniques to teaching science. Throughout the course of the project, teachers invented their own powerful and dynamic methods for bringing media processes into science classrooms.

This project changed the lives of teachers, students, journalists and scientists. Participating teachers defined innovative and effective methods for strengthening and enhancing their students' learning experience. The Omaha Public Schools district recognized the value of infusing media production within science learning and took remarkable steps to construct new programs and design curricula with media production at the core of science learning experiences. During the

Omaha Science Media Project a new, ongoing educational partnership formed between the public school district and the University of Nebraska Medical Center to support science teaching and learning during students' last two years of high school.

Underpinning the project was the hypothesis that science teachers could enhance their pedagogy by participating in intensive professional development where they learned to produce media about biomedical research. And the team expected that, once teachers introduced their new knowledge into the classroom, students' learning and interest in science and health careers would flourish.

The following eight institutions collaborated to develop the Omaha Science Media Project:

- Omaha Public Schools
- University of Nebraska Medical Center
- Nebraska Center for Virology
- University of Nebraska State Museum
- NET Nebraska Educational Telecommunications
- Soundprint Media Center, Inc.
- College of Journalism and Mass Communications at the University of Nebraska-Lincoln
- Department of Psychology and Multidisciplinary Program in Education Sciences at Northwestern University



SCIENCE MEDIA

immersion

IN VIROLOGY RESEARCH



IMMERSION



Workshop Goals:

- To produce high-quality, classroom-ready media products about virus topics relevant to students in middle and high school
- To improve the pedagogy of science and journalism teachers through an experiential professional development program
- To establish the foundation for long-term partnerships between Omaha Public Schools and Nebraska's biomedical institutions
- To explore media creation as a strategy for making science relevant for students

For two weeks in 2009, teams of teachers, 9th grade students, and media professionals created short documentaries about viruses and infectious disease research. Teachers and students learned to be science journalists by building connections that put science in meaningful contexts relevant to their lives. The teachers took the technologies and their own newly-acquired skills back to their classrooms to pursue their own science media activities.



Immersion in Virology Research

At a district-wide curriculum day in September 2008, science and journalism teachers throughout the Omaha Public Schools District were invited to apply for the Omaha Science Media Project. During the school year, middle school principals recommended a few students to the project who were talented, but whose academic background indicated that intervention before high school could make a significant positive impact. The workshop group was divided into teams generally comprised of two teachers from different schools, two rising 9th grade students, a professional journalist, and a science mentor. A total of 16 teachers and 15 students participated.

Teams immersed themselves in a specific virus research project. They worked intensively for two weeks at the University of Nebraska Medical Center and the Nebraska Center for Virology with projects on HIV, herpes, coxsackievirus, influenza and human papillomavirus.

During the workshop, team members used prosumer-level hardware and editing software to create brief documentaries. Each team had a Sony HD DVCAM videocamera, wireless microphone, wired microphone, Zoom H4 audio recorder, tripod, and lights. Each teacher had a Macbook Pro laptop with Final Cut Express editing software, iMovie, Garage Band and Quicktime Pro.



IMMERSION



Each team was given science learning outcomes and media learning outcomes.

SCIENCE LEARNING OUTCOMES

Youth develop an understanding of...

1. What is a virus?
2. How do viruses reproduce inside a cell?
3. How do viruses spread from one individual to another?
4. How do viruses evade host defenses?

MEDIA LEARNING OUTCOMES

Youth develop an understanding of...

1. How do you plan and research to tell a science media story?
2. How do you record a science media story using a variety of devices?
3. How do you gather material and edit that material into a science media story?
4. How do you share a science media story with peers, teachers, and parents?

The science learning outcomes were tied to the Omaha Public Schools science standards and the National Science Education Standards (National Research Council 1996).

OMAHA PUBLIC SCHOOLS SCIENCE STANDARDS

Grade 9 Biology

- Standard B-01: Examine problems using scientific inquiry.
- Standard B-02: Integrate unifying concepts and processes in science experiences.
- Standard B-03: Investigate and describe the importance of cell structure and function to life.
- Standard B-04: Investigate the molecular basis of genetics and the influence of genetics on health.
- Standard B-05: Investigate the origins and evolution of Earth and its life.

Grades 7 and 8

- Standard 7-05: Develop an understanding of the structure and function of the human body.
- Standard 8-05: Explore reproduction and the transfer of genetic material in living things.

NATIONAL SCIENCE EDUCATION STANDARDS (NATIONAL RESEARCH COUNCIL 1996)

Content Standards for Grades 9-12

- Understandings about Scientific Inquiry.
- Identify Questions and Concepts that Guide Scientific Investigations.
- Communicate and Defend a Scientific Argument.
- Personal and Community Health.
- The Cell.
- The Molecular Basis of Heredity.
- Biological Evolution.
- Nature of Scientific Knowledge.

IMMERSION



University of Nebraska Medical Center

Omaha Science Media Project Schedule July 6–17, 2009

Week 1

	Monday	Tuesday	Wednesday	Thursday	Friday
MORNING	Workshop overview Interview scientists Explore: What is a story?	Story planning and research Camera and sound recording Hands-on time	Review material from afternoon lab shoot Production planning	Recording preview Teams practice shooting footage and conducting interviews	Reflection and review of field taping Write for broadcast Log tapes
AFTERNOON	Become acquainted with equipment in cohorts Create audio postcards	Visit labs; learn and record sample media Project Check-in/Formative Assessment	Teams create sample reality show, soap opera, PSA, or media product with fun science message	Teams record and shoot footage and interviews	Critiques: teams revise outline and story; write focus statement Finish project elements from earlier activities

Week 2

	Monday	Tuesday	Wednesday	Thursday	Friday
MORNING	Review week 1 Introduction to editing	Review editing processes and science goals Teams shoot additional footage and interviews	Review field taping Finish logging footage Introduction to writing science stories	Reflections on process and project Integrate feedback, continue editing	Using virology projects in science classrooms Using science media more broadly for teaching and learning
AFTERNOON	Sharing science media stories on the web, DVDs, and podcasting	Begin editing footage to stories	Editing, shooting, and group time Share, explain, critique project with other team	Assemble final products for final presentations	Evaluations and reflections Final presentations with families, peers, administrators, funders, partners



SCIENCE MEDIA
implementation
IN THE CLASSROOM



IMPLEMENTATION

The 2010 Omaha Science Media Project workshop empowered teachers to develop media activities with science concepts they identified as challenging for students. After testing these activities with fellow teachers, students joined the workshop for an intense two-day experience where they produced their own videos about science in their lives. The workshop concluded with teachers revising activities based on student experiences.

Workshop Goals:

- To give science teachers a chance to create and test new media-rich activities for their courses
- To expand the community of Omaha Science Media Project teachers by fostering connections between returning and new participants
- To inspire a larger group of students to think creatively about how science connects to their own lives

The 2010 workshop participants included 21 elementary, middle, and high school teachers from Omaha Public Schools. The group integrated 10 new participants with 11 returning from the 2009 workshop. Participants identified specific curricular areas ripe for innovation. The workshop also involved 41 students (4th to 12th grade) from 16 Omaha Public Schools, including 10 students returning from the 2009 workshop. The remaining 31 were recruited through teachers' and returning students' recommendations. Students worked on project teams similar to their in-class school activities and provided direct feedback to teachers about projects and progress.

Every student and teacher was given a Flip Ultra™, a pocket-sized, card-based digital video camera with built-in USB cables. To edit and refine their documentaries, teams used a combination of Macbook Pro™ laptops and Apple iMacs™ in Benson High School's computer lab. Several teachers brought their own laptops.



IMPLEMENTATION

Benson High School Magnet Center for Academic Research and Innovation

Omaha Science Media Project Schedule July 12–16, 2010

	Monday	Tuesday	Wednesday	Thursday	Friday
MORNING	Workshop overview Bridging stories to inquiry Connecting media skills with science curriculum	Teacher pairs complete 2-3 minute science video started by another pair	Students arrive Teachers set up science and story inquiry for students Create assignments	Students continue shooting and begin editing footage	Discuss activities, how to translate them from summer workshop to classroom activities
AFTERNOON	Exploring royalty-free and rights-free websites Hands-on time with equipment and editing software	Share and critique projects Revise activities for workshop Teachers prepare materials for students	Student teams research, plan and shoot footage for 2-3 minute science video	Science Film Festival: students share and critique each other's work. Reflection and evaluation of processes Students depart	Teachers' hands-on technology time Pushing further: developing more activities to test during the school year Evaluation

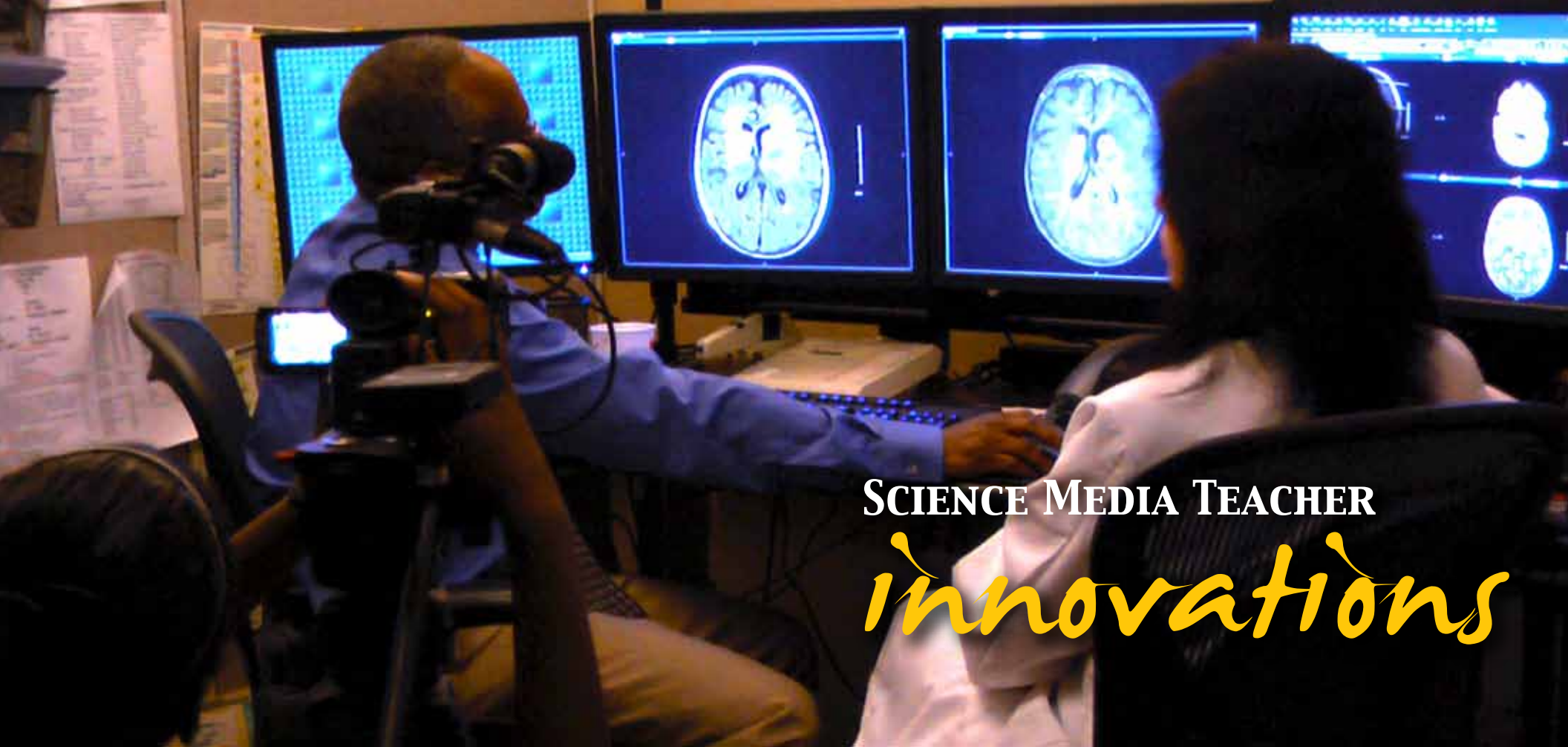


Two Approaches to Science Media Workshops

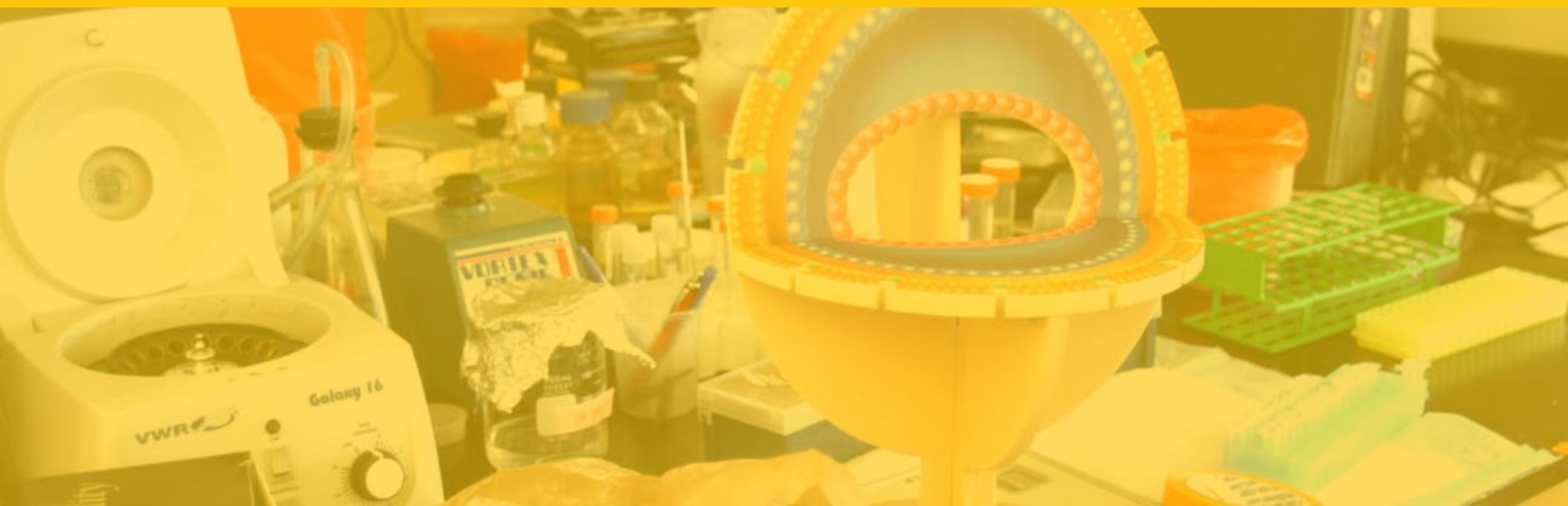
The 2009 OSMP workshop gave teachers and students the opportunity to work in close contact with research biologists and professional journalists to create in-depth documentaries about viruses and the people who study them. Students and teachers collaborated in small teams. Each team studied a specific virus in great detail and completed an edited, polished audio and/or video project. The 2010 workshop was intended to complement the experiences of the 2009 cohort. The planning team at Omaha Public Schools designed activities that would more closely reflect teachers' classroom experiences.



Workshop Characteristic	2009	2010
Participant numbers	16 teachers, 15 students Teams: 2 teachers, 1-2 students	21 teachers, 41 students Teams: 2-3 students
Length	Two weeks	One week
Content	Focused on virology research	Broad range of science concepts
Access to Researchers and Journalists	Very high	None
Technology	"Prosumer" Level	Consumer Level
Production Teams	Integrated student/teacher	Teacher teams directing student teams
Student-Teacher Ratio	1:1	2:1 or 3:1
Mentors	One journalist, one scientist per team	Returning teachers mentor newcomers
Teachers' Key Role	Active team members, peers to students	Coach students in content and technology
Setting	University of Nebraska Medical Center	Benson High School computer lab
Deliverable	5-8 minute high quality video about a virology research topic	2-3 minute student-generated video on a science topic
Stipends	\$2,000 per teacher \$500 per student	\$1,000 per teacher, Flip cameras for each student
Travel	Travel expenses to NSTA annual meeting in New Orleans (12 teachers)	Travel expenses to NSTA annual meeting in Philadelphia (12 teachers)



SCIENCE MEDIA TEACHER
innovations



INNOVATIONS



From 2008 through 2010, 25 teachers from 16 elementary, middle and high schools participated in the Omaha Science Media Project. Teachers used the skills, equipment, and experiences from the project to develop innovative activities in their classrooms. The following case studies document how several teachers leveraged the professional development of the Omaha Science Media Project to make an impact on their students' engagement in science learning.

I feel the multimedia orientation is well suited to reach many of the struggling students in the 9th grade biology class. I believe that this concept will level the playing field for many students who do not have the background they need to be successful in high school. The possibility of creating videos tied to what is going on in the classroom is very exciting.

– Jeff Erixon
2009 Participant



Melissa Hartman

8th Grade Science

McMillan Magnet Middle School

Grades: 7th – 8th

Magnet Focus: Math, Technology, Engineering, and Communications

682 students; 76% qualify for free or reduced lunch

Creating Science Journalists in the Classroom

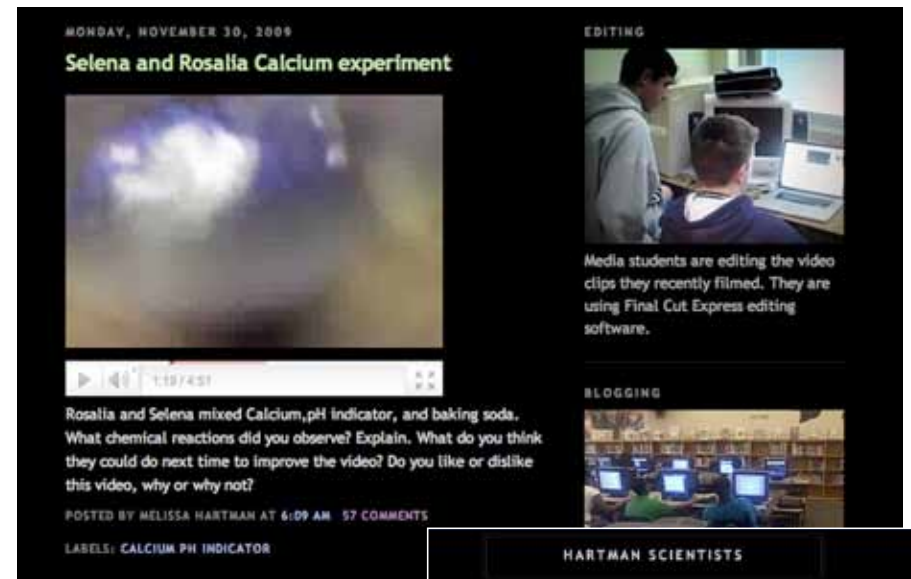
During her two years in the Omaha Science Media Project, Melissa Hartman created a science-journalism class, where student journalists recorded and reported the work of students in her other courses. In addition to developing science journalists, Melissa launched a class blog where students could post comments on videos of lab work, reinforcing the material they studied in class.

When students realized that they were being filmed, their vocabulary level and attention to detail increased significantly. Just knowing that they were being filmed played a major role in raising their concentration on their lab work.

– Melissa Hartman
2009 and 2010 Participant

I observed the chemical signs of a gas being produced...What they should do next time is add some calcium and zinc!!!!!!

– 7th grade student's blog entry reacting to peer's lab work



Screenshots of Melissa Hartman's class blog





Raquel Buckner
7th and 8th Grade Science

Morton Magnet Middle School

Grades: 5th – 8th

Magnet Focus: Decision Sciences,
Project-Based Learning, Service
Learning Activities

759 students; 54% qualify for free
or reduced lunch



Creating Infomercials for Simple Machines

After attending the Omaha Science Media Workshop, Raquel Buckner challenged students to build inventions demonstrating three simple machines, and create an accompanying video infomercial about their work. These products became a valuable channel for increasing communication inside families about school projects. Parents reported that their kids enjoyed explaining the inventions they built and the science behind them.

I want to continue to marry storytelling and media from a student perspective. I think owning the experience pushes them to think differently about science.

– Raquel Buckner
2009 and 2010 Participant



Top: Raquel Buckner with students

Bottom: Screenshots of student infomercials



Dr. Frank Tworek

7th and 8th Grade Science

King Magnet Middle School

Grades: 5th – 8th

Magnet Focus: Science and Technology

738 Students; 73% qualify for free or reduced lunch

Making Science Journalism a Key Component of Sustainability and Biodiversity Curriculum

Frank Tworek used media to connect the importance of healthy rain forests in Central America with students' experiences in Nebraska environments. After viewing his footage from Costa Rica, Frank Tworek instructed students in using video to document the ecosystems in the school courtyard and nearby parks. Students then made comparisons between rain forests and local ecosystems.

This media project shows the potential of capturing *all* students' attention – not just the traditionally "top" students – and then providing them with possible career direction in the fields of health, medicine, science and other related fields.

– Dr. Frank Tworek
2009 and 2010 Participant



Top: Dr. Tworek in Costa Rica
Bottom: Dr. Tworek teaching



Janet Raddish

Journalism and Yearbook Advisor
9th – 12th Grade

Bryan High School

Grades: 9th – 12th

1,654 students; 73% qualify for
free or reduced lunch

Investigating Everyday Science

Janet Raddish encouraged her students to investigate science topics relevant to their peers' lives. The school newspaper now has a science focus section and has featured stories about the science of caffeine, CPR, and fast food. Janet also challenged her students to research national and local news outlets and connect science stories with their own lives.

What I would like to gain from working on this project is additional media experience to share with my journalism students, and a renewed appreciation for scientific studies.”

– Janet Raddish
2009 and 2010 Participant

“The story we wrote about caffeine in the body opened me up to learn more about chemical reactions in the body.”
– Journalism student from Bryan High School





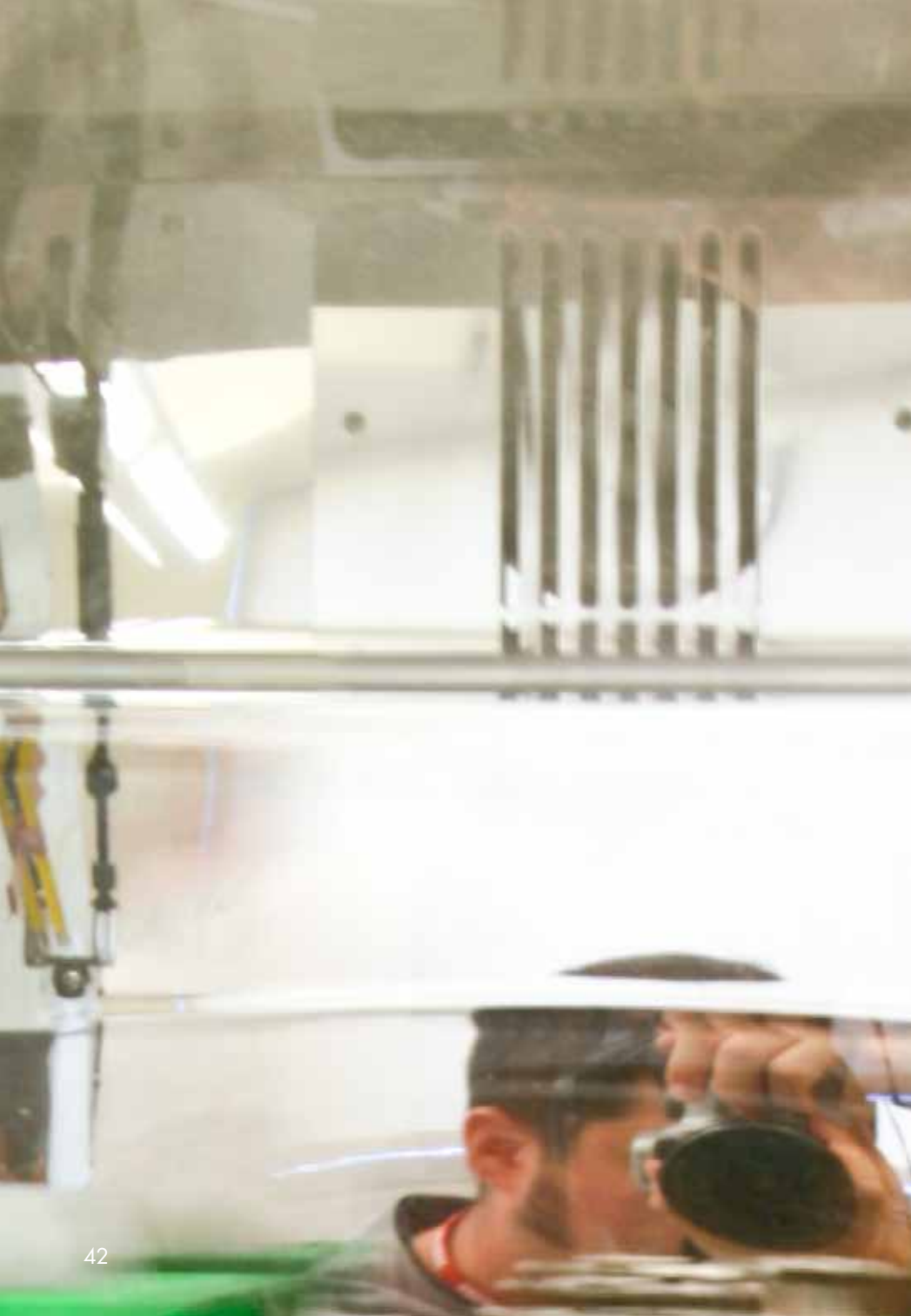
SCIENCE MEDIA

outcomes

CAPACITY BUILDING



OUTCOMES



Throughout the two years of the Omaha Science Media Project, participating teachers reflected deeply on how to engage students with science. Teachers explored different roles for themselves and their students, and used media to build connections with families and community partners. Creating media projects became an avenue for linking science education in the classroom with science in everyday life.

My first attempt was to interview students with my flip camera during a “Pill Bug Inquiring Lab” that student partners designed...I was really surprised to see how the students responded to just the taping with my flip camera. My biggest struggle now is finding time to add all this to my currently packed curriculum program. But I definitely see a benefit to this approach.”

– Marlene LuRue
2009 and 2010 Participant

Teachers increased their skill and confidence using media in science courses.

As a result of their experiences, Omaha Science Media Project teachers are now using their equipment and journalism skills to teach innovative science lessons. With these approaches, students are becoming not only science media consumers, but science media creators, responsible for making science learning relevant to their peers.

Using video makes the activity more personal for the students. With the editing, they are really hearing it at least three times and that helps them learn better. ”

– Kris Mazur
2009 and 2010 Participant



OUTCOMES



A professional learning community sprang from using media in courses.

Omaha Science Media Project teachers worked throughout schools and across disciplines to exchange ideas and models for creating lessons, building class blogs and avoiding pitfalls. Elementary and high school teachers worked together to design projects in which their respective students collaborate. Omaha Science Media Project teachers have also shared their work with peers throughout the district, and presented the results of their involvement at statewide and national conferences.

Having the chance to present at the NSTA conference elevated my confidence level as a teacher and in my skills about how to effectively engage students in the classroom with media. The feedback and dialogue with my peers from all across the U.S. was encouraging and reaffirming.”

– Lee Ann Stover
2009 Participant

OUTCOMES

Omaha Public Schools leveraged Omaha Science Media Project for innovative activities in history.

Building on the models discovered in the workshops, Omaha Public School educators developed the *Making Invisible Histories Visible* (MIHV) project that challenges students to use media and research skills to connect history with their lives. As in the Omaha Science Media Project, students and teachers worked with journalism professionals and history researchers to create a media rich website telling the stories of people and events from a local underserved community.

Omaha Science Media Project provided our program with a proven, novel approach to engaging and educating students using media. Kids can get excited about learning when they are responsible for communicating about significant issues that have a huge impact on their lives.”

– Emily Brush, MIHV Project Coordinator



OUTCOMES



Omaha Public Schools strengthened its relationship with the University of Nebraska Medical Center.

The UNMC Health Alliance currently brings high school students to a medical school campus for specialized science classes. Omaha Science Media Project teachers shared their experiences and equipment with the planning team and an Omaha Science Media Project participant has now joined the project as a science media coach.

During the Omaha Science Media Project, we learned about the benefits and challenges of putting students with cameras in research settings. Science educators in the UNMC Health Alliance program are implementing some of the techniques and tools that were piloted in the OSMP workshops to enhance student inquiry and reflections. ”

– Chris Schaben
OPS Science Supervisor



SCIENCE MEDIA
global
PERSPECTIVE



There is an anti-AIDS club at my school. The anti-AIDS club teaches people how AIDS is and how dangerous it is...the way people are infected and how to prevent HIV and AIDS.

— Chita Musonda
Zambian Teenager



Omaha Science Media Project teachers and students were given firsthand opportunities to learn about professionals who conduct virology research and the problems they are attempting to solve. But cutting-edge virology research doesn't occur only in developed countries like the U.S., and the impact of viruses on people in much of the world goes far beyond the effects observed in Nebraska.

In Africa, HIV has decimated families and threatened entire communities. The Nebraska Center for Virology has developed a long-term partnership with the University of Zambia to support education and training that strengthens Zambia's health science infrastructure.

Our project sent two teams, one from the UNL College of Journalism and Mass Communications and one from NET Television, to Zambia to produce videos aimed at helping students in Nebraska better understand the impacts of viruses in Africa. In addition, we provided media equipment to the University of Zambia's Department of Mass Communications to continue efforts to enable African journalists and students to share their stories with people around the world.

Omaha Public School science teachers are using these videos in their classrooms to help students build global awareness. The videos are available on the Omaha Science Media Project's website, www.omahasciencemedia.org.

Red Elephant

Throughout Zambia, the widespread HIV/AIDS epidemic has produced a generation of orphans. It's a problem that Africans themselves are trying to solve.

The Red Elephant is trying to help. The children's concern known as The Red Elephant is a small refuge and school in Lusaka dedicated to raising children orphaned by HIV/AIDS.

Working on the front lines of the HIV/AIDS epidemic, Dr. Charles Wood travels from Lincoln, Nebraska, to Zambia several times a year. In the summer of 2009, a crew from NET Television, supported by the Omaha Science Media project, followed Dr. Wood to witness firsthand what he's doing for Africans and what Africans are doing for themselves. The product of this journey became a short documentary called *Red Elephant*.

At his clinic in the teaching hospital in Lusaka, Dr. Wood works with HIV positive mothers to keep them and their children healthy. He is learning more every day about how to fight HIV/AIDS.

**Look at me and think twice, for I
did not choose to be an orphan.**

— **Zambian Boy**
Red Elephant





Life and HIV

Produced by the College of Journalism and Mass Communications at UNL, the short video *Life and HIV: Zambian Perspectives* connects Nebraskans to Zambians' experiences of HIV/AIDS and provides another way for students to learn about the impacts of viruses.

The Zambian children chosen for the project either have HIV/AIDS or have lost parents to the disease. Most live with relatives. We interviewed Zambian children of generally the same age as Omaha students involved in the virology workshop, hoping that Nebraska students could better relate to their Zambian counterparts who have been affected by HIV/AIDS.

It's sad to lose your parents. Because once you lose them your life will never be the same again. I've got my grandmother... she's suffering from HIV and AIDS. When I finish my education, I want to be a doctor or a nurse. The reason I want to be a doctor, I want to be helping those who are sick.

— Precious Banda
Zambian Teenager

EVALUATION AND LEARNING
research
ON SCIENCE MEDIA



Understanding Impacts

The Omaha Public Schools District has long worked to increase science achievement of students at all levels. Like other urban school districts, Omaha faces challenges to improving student performance in science, and teachers have implemented many innovative methods for improving science learning in their schools and classrooms. Our project aimed to strengthen the reforms and programs that have been put into place throughout the district over many years.

At every stage of the Omaha Science Media Project, we tried to understand the motivations and experiences of the teachers who chose to be involved. We were interested in why teachers wanted to participate, what they hoped to get from the experience, and what changed as a result of the program. The evaluation group initiated two different approaches to understanding program impacts.

Evaluation

The evaluation group, coordinated by Amy Spiegel, Ph.D., conducted surveys that revealed students' prior knowledge and teachers' prior experiences and expectations. These findings guided planning and management decisions for the 2009 workshop. Afterward, evaluators gathered data from teachers on the strengths and limitations of that workshop, and used the information to improve the design of the 2010 workshop. After teachers returned to their schools, they reported on how they applied new science media skills in their classrooms.



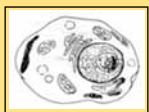
Teens responding to our initial survey typically showed a basic grasp of viruses as disease agents, and most could correctly recognize an image of a virus. However, students struggled to connect individual facts, whether correct or not, with a conceptual understanding of how viruses function. Thirty-three percent described viruses as attacking cells, and 20 percent mentioned the role of the immune system or white blood cells in fighting viruses. Yet fewer than one in five identified viruses as needing hosts or possessing their own genetic material. Only 20 percent correctly identified all four images shown below; most students knew only one or two.



**Bacteriophage
(Virus)**



Bacterium



**Human
Mammalian
Cell**



**Human
Immunodeficiency
Virus (HIV)**



Teachers came to the workshop with varying levels of media experience, but recognized the value of using media to enhance science learning. Teachers expressed the hope that the Omaha Science Media workshop would improve their skills and give them the tools and equipment to accomplish more in their classrooms.

After selection, teacher participants reported their levels of experience, confidence and interest in using specific technologies. Their responses shaped components of the Omaha Science Media Project workshop.

What is your level of experience working with..	None or Novice	Intermediate	Proficient or Expert
shooting video?	22% (4)	29% (7)	29% (7)
editing video?	67% (12)	17% (3)	17% (3)
creating audio essays, podcasts, etc.?	72% (13)	11% (2)	17% (3)
pulling resources off the web for producing media?	56% (10)	22% (4)	22% (4)
How frequently do...	Less than once a week	Once or twice a week	More than twice a week or daily
you use any kind of electronic media in your classes?	6% (1)	39% (7)	56% (10)
students use any kind of electronic media in your classes?	44% (8)	17% (3)	33% (6)
What is your level of confidence in effectively doing the following things?	Not at all confident or apprehensive	A little nervous	Mostly or very confident
creating video products for use in your classes?	39% (7)	11% (2)	50% (9)
creating audio products for use in your classes?	39% (7)	28% (5)	28% (5)
creating multimedia products for use in your classes?	39% (7)	22% (4)	39% (7)
directing students in creating video products?	22% (4)	33% (6)	44% (8)
directing students in creating audio products?	33% (6)	39% (7)	28% (5)
directing students in creating multimedia products?	39% (7)	28% (5)	33% (6)





The evaluation showed that teachers made meaningful changes in their classroom pedagogy and curricula as a result of participation in the Omaha Science Media workshop. After the 2009 session, teachers returned to their classrooms with new enthusiasm and brought with them equipment and experience that made the new emphasis on science media possible. Not surprisingly, most teachers struggled to find the time to plan and implement curricular changes. In addition, some teachers had limited access to equipment; others did not yet feel fully competent to use it.

Nevertheless, some teachers added new assignments requiring students to shoot videos demonstrating their lab activities. Others created opportunities for students to write about science projects on student blogs. Others had students use storytelling across curricula as a means to communicate their learning.

Teachers also used videos created during the workshops to introduce lessons and promote discussion, and some even continued to make videos to aid communication with students. Still others used media for both assignments and assessment, such as having students create video book talks or video reports to demonstrate their understanding. Overall, the Omaha Science Media Project fostered a community of science media educators.

Learning Research

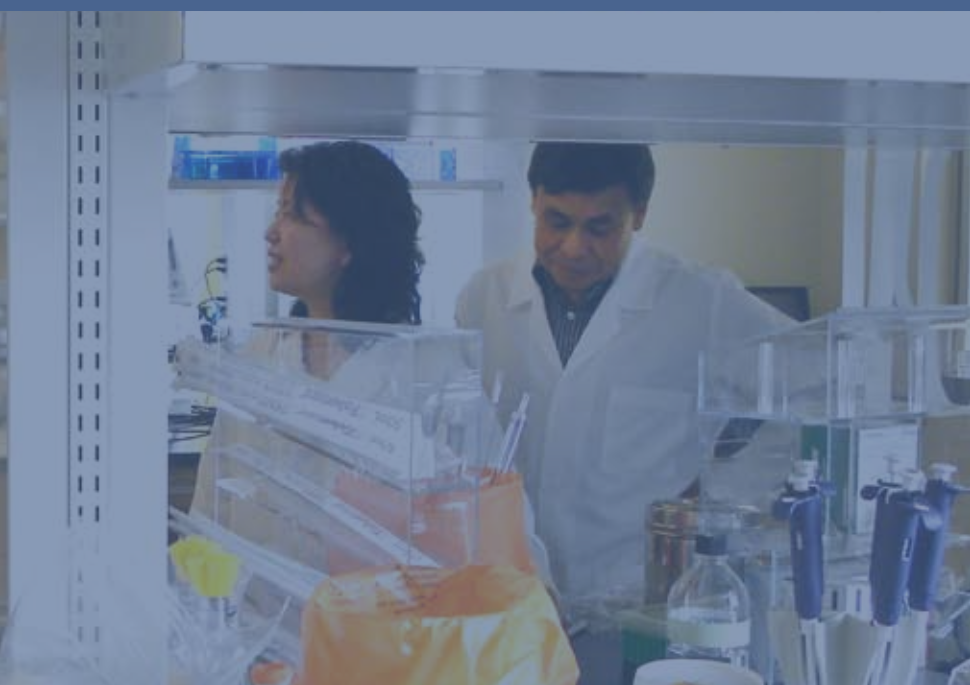
The learning research group, headed by David Uttal, Ph.D. and Benjamin Jee, Ph.D., conducted cognitive learning research with teachers, students, and virologists to characterize their reasoning about viruses. The research aimed to capture subjects' mental models of the invisible, microbiological processes that underlie viral infection, replication, transmission, and related phenomena. By shedding light on their mental models, this learning research provides a basis for understanding how different educational experiences, such as participation in the Omaha Science Media Project, influence learners' beliefs, attitudes, and reasoning about viruses.

Viruses are invisible, and their effects, though often experienced, arise through mechanisms that may be poorly understood by many people. The present work examined what people with differing levels of virology expertise think and believe about viruses. The team conducted detailed, semi-structured interviews about virus infection, replication, transmission, and other topics with a group of middle-school students, science teachers, and expert virologists. Participants' responses were coded for content and used to illustrate their mental models for several key topics.

Many of the students—and several teachers—demonstrated scientific inaccuracies and inconsistencies in their mental models. By capitalizing on experts' organization of knowledge and targeting common misconceptions about viruses expressed by both students and teachers, we can develop materials and tools for increasing people's understanding of viruses and the microbiological world.

Visit www.omahasciencemedia.org for evaluation and learning research papers, presentations, and reports.





PARTNERS

The following eight institutions collaborated to develop the Omaha Science Media project:



Omaha Public Schools

is the largest, most diverse school district in Nebraska. Omaha Public Schools serves more than 47,000 students through educational opportunities that include magnet schools, elementary schools with Academy Programs, and seven high schools.



University of Nebraska Medical Center

provides research, education, and public service on biopreparedness, occupational health sciences, epidemiology, health disparities, health policy analysis, health promotion and disease prevention, rural health and toxicology.



Nebraska Center for Virology,

a NIH-supported Center of Biomedical Research Excellence, fosters collaboration among virology researchers at the University of Nebraska-Lincoln, University of Nebraska Medical Center, and Creighton University.



University of Nebraska State Museum

is a national leader in informal science education, with award-winning NSF and NIH-funded projects on evolution, infectious disease, women in science, and climate change.



NET

includes Nebraska's public television and radio networks and an interactive media production group. NET's recent award-winning productions for PBS include NOVA and The American Experience, including the documentary *Antarctica's Climate Secrets*.



Soundprint Media Center, Inc.

develops innovative formal and informal education projects for public broadcasters, schools, and community groups including the award-winning Soundprint Series.



College of Journalism and Mass Communications at the University of Nebraska-Lincoln

supports educational programs in advertising, broadcast, and news-editorial, and sponsors award-winning student-produced advertising campaigns, magazines and documentaries.



The Department of Psychology and the Multidisciplinary Program in Education Sciences at Northwestern University

promotes research on how people perceive and understand the world around them, in light of cognitive theories and from a developmental perspective.

EVALUATION & RESEARCH



Amy N. Spiegel, Ph.D.
Research Associate Professor
Center for Instructional Innovation
University of Nebraska–Lincoln

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Multidisciplinary Program in Education Sciences
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College of the Holy Cross

Kristin Watkins, MBA
Librarian and Grants Coordinator
Center for Preparedness Education
University of Nebraska Medical Center

Caroline Crouch
Lab Manager and Research Technician
Department of Psychology
Northwestern University

Leah R. Carpenter
Graduate Student
College of Public Health
University of Nebraska Medical Center

Omaha Science Media Project Teachers

(*Italicized* names participated in both 2009 and 2010 workshops)

Christina Argo	<i>LaDeidre Jackson</i>
Teresa Bender	Ashutosh Kumar
<i>Raquel Buckner</i>	<i>Marlene Larue</i>
Jane Colling	Therese Laux
Andrea Cooney	<i>Todd LeMense</i>
<i>Julie Cusack</i>	<i>Kristine Mazur</i>
<i>Sue Durfee</i>	Barbraleigh Mihai
Jeffery Erixon	<i>Janet Raddish</i>
Pamela Galus	Matthew Rousek
Justina Gregory	Lee Ann Stover
<i>Melissa Hartman</i>	<i>Frank Tworek</i>
Janice Henninger	<i>LeeAnn Vaughan</i>
John Huber	Elaine Westbrook

Omaha Science Media Project Conference Presentations

Conference	Presenters	Presentations	Description
National Science Teacher Association 2009 and 2010	Janet Raddish, Kris Mazur, Lee Ann Stover	Training Teachers & Students as Science Journalists: Developing Interdisciplinary Media Programs	Science and English teachers and students combine research narrative to create original, relevant science documentaries
National Science Teacher Association 2009 and 2010	Melissa Hartman, Todd LeMense	Developing Science Media Producers: Urban Students Build Identities as Creators of Media Instead of Consumers	Teachers and students collaborate to produce rigorous science documentaries relevant to today's urban students
National Science Teacher Association 2009 and 2010	Teresa Bender, Raquel Buckner, Sue Durfee	Creating Science Media Collaborative: Teacher/Student Science Documentaries	Students and teachers work as peers to develop documentaries, strengthening their technology skills and creating products and processes for making science relevant
National Science Teacher Association 2009 and 2010	Marlene Larue, Andrea Cooney, LeeAnn Vaughan, Chris Schaben, Dan Gilbert, Jeff Erixon	Informal Science Day Session: Informal Science Education Share-a-thon	Science teachers across a large urban school district share their best practices from innovative science media projects
National Science Teacher Association 2009	Teresa Bender, Sue Durfee	Building Professional Learning Communities and Innovative Pedagogies Through Authoring Media	Working as a community, Omaha teachers strengthen technology skills, develop innovative pedagogies and mentor one another within and across schools

STUDENTS

Omaha Science Media Project Students

(*Italicized names participated in both 2009 and 2010 workshops*)

Breannon Adam	Eros Mejilla
Charrita Austin	Brittany Merrill
Suzanne Brooner	<i>Natalia Moss</i>
<i>Diana Carranza</i>	Paris Newton
Nixon Chica	Malachi O'Neal
Allesa Clair	Emily Painter
Khalia Dailey	<i>Max Pederson</i>
Travis Dixon, Jr.	Trent Richardson
Nysia Esterly-Torres	Jesse Rose
<i>Alexandra Flowers</i>	Trent Runge
<i>Jonathan Galeano</i>	Garrett Sehr
Jeffrey Gilmore, Jr.	Grace Siy
Selena Gray	<i>Ashia Smith</i>
Jackie Hammond	Callie Smith
Cherish Harbour	Khalid Solomon
<i>Mitch Hezel</i>	Nya Solomon
<i>Reginald Holt</i>	Danielle Staton
Alisha Johnson	Emily Stott
Taiyonna Johnson	Robert Stubblefield
John Lucas	Madison Sutula
Michael Lucas	Shane Vogel
Maci Lyman	Shawn Ware
Allison McGovern	<i>Raven Welchel</i>

ADVISORS

Project Management Team, Advisors and Mentors

Directors: Judy Diamond, Ph.D., University of Nebraska State Museum, and Dan Gilbert, Omaha Public Schools

Omaha Public Schools: Toba Cohen-Dunning, Christina Elf, Gail Formanack, Janelle Mullen, Luanne Nelson, Chris Schaben, Dee Washington, Rachel Wise, Ph.D.

University of Nebraska Medical Center: Philip Smith, M.D., Kristin Watkins, MBA, Georgette Kanmogne, Ph.D., Sue Swindells, B.B.S., Diana Florescu, M.D., Steven Tracy, Ph.D., Pete Irwen, Ph.D., Tony Sambol, M.S., Sharon Medcalf, M.E.D., Keith Hansen, Mat Smith, John Lowe, M.S., Leah Carpenter, Catherine Heorei, Anna Walburn, M.P.H., Sara Brostrom, M.D.

Nebraska Center for Virology: Charles Wood, Ph.D., Peter Angeletti, Ph.D., Deborah Brown, Ph.D., Willie Hughes

NET: David Feingold, Terry Dugas, Mike Farrell, Gary Hochman, Chet Kincaid, Gary Targoff, Perry Stone, Christine Lesiak, Philip Hammar, Ray Meintz

Northwestern University: David Uttal, Ph.D., Benjamin D. Jee, Ph.D., Caroline Crouch

Soundprint Media: Moira Rankin, Jared Weissbrot, Sora Newman

College of Journalism and Mass Communications

University of Nebraska-Lincoln: Amy Struthers, Adam Wagler, Belita Kalala, Bruce Mitchell, Scott Barry, Rebecca Aiken, Soo Hui-Lee, Julie Nichols, Mary Claire Rice, Elizabeth Gamez, Nkem Kalu

University of Nebraska Center for Instructional Innovation: Amy Spiegel, Ph.D.

PROJECT TIMELINE

September 29

Science and journalism teachers recruited at district-wide curriculum day meetings

October 15

Omaha Science Media Project teacher applications due

November 1

16 teachers and two alternates selected for OSMP

January 27

Roll-out of program at the University of Nebraska Medical Center

February 17

Media planning event for participants at NET

March 18-21

OSMP teachers attend National Science Teacher Association (NSTA) Conference

April 15

16 students accepted to participate in 2009 summer workshop

July 6-17

Two-week professional development workshop: Science Media Immersion in Virology Research

November 8

LaDeidre Jackson and Blackburn HS students visit UNL museum and conduct lab activity with virologists

January 15

22 teachers selected for 2010 Workshop

March 17-20

OSMP Teachers present at 2010 NSTA

May 1

41 students accepted to participate in 2010 summer workshop

July 12-16

One-week summer professional development workshop: Science Media Implementation in the Classroom

March 2011

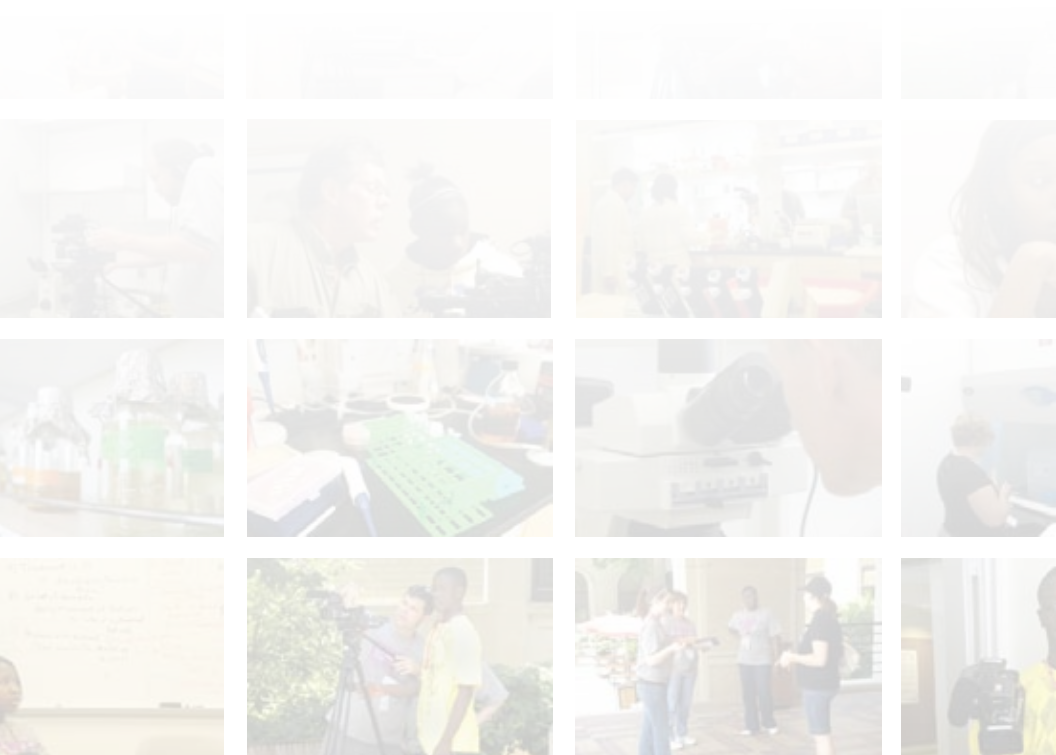
OSMP teachers present at 2011 NSTA

2008

2009

2010

2011



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