



NCRR Science Education Partnership Award  
**Annual Conference Report**

Washington, DC  
May 19 - 21, 2008



Conference Organizing Committee

Victoria Coats, Oregon Museum of Science and Industry  
Roberta Cooks, MD, Maryland Science Center  
Wendy Huebner, PhD, Montclair State University  
Samuel Silverstein, MD, Columbia University  
Louisa A. Stark, PhD, University of Utah

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Conference Supported By

NIH NCRR Grant R13 RR024901  
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## Overview

The SEPA 2008: NCRR Science Education Partnership Award Annual Conference was held May 19-21 at the Hilton Washington DC/Rockville Executive Meeting Center in Rockville, MD. Principal Investigators, staff, evaluators, and teachers from 74 SEPA projects as well as NIH NCRR staff members and other interested individuals participated in the Conference. A total of 181 individuals attended the Conference.

In order to assist SEPA projects in meeting the Academic Competitiveness Council's requirements for more rigorous project evaluations, the Conference had a strong focus on evaluation. In addition, the Conference was designed to facilitate networking and information exchange among SEPA projects; respondents to the SEPA 2006 Conference evaluation had indicated that this was one of the most valuable aspects of the annual Conference. Holding the Conference in the Washington, DC area facilitated participation by NIH NCRR leaders and staff as well as those from other NIH Institutes and Centers (ICs).

## Conference Schedule

### Sunday, May 18

- 6:30-9:00pm      Registration
- 7:00-9:00        NAHSEP Satellite Session  
*National Association of Health and Science Education Partnerships (NAHSEP)  
 Business Meeting and Reception*

### Monday, May 19

- 7:30-9:00        Buffet Breakfast, Registration, Poster Set-up
- 9:00-9:45        Welcome from the SEPA 2008 Conference Organizing Committee  
*Louisa A. Stark, Ph.D., Chair, SEPA 2008 Conference Organizing Committee  
 Director, Genetic Science Learning Center, University of Utah*
- Welcome from the NIH National Center for Research Resources  
*Barbara Alving, M.D., Director, NIH NCRR  
 Anthony Hayward, M.D., Ph.D., Director, Clinical Resources, NIH NCRR*
- Conference schedule and logistics  
*Louisa A. Stark, Ph.D., Director, Genetic Science Learning Center*
- 9:45-10:30       SEPA Program Overview and Update  
*L. Tony Beck, Ph.D., Program Officer, NIH NCRR SEPA Program*
- 10:30-11:00      Break
- 11:00-12:00      Keynote Address  
*The Honorable John Porter (former Representative from Illinois)*
- 12:00-1:10       Buffet Lunch

- 1:10-2:30 SEPA Project Presentations (20 minutes/project; focus on evaluation)  
Sessions A-J
- 2:30-2:50 Break
- 2:50-4:10 SEPA Project Presentations – continued  
Sessions K-S
- 4:10-4:30 Break
- 4:30-6:00 Poster session
- 4:30-5:00 – Sessions A-G presenters at posters  
5:00-5:30 – Sessions H-M presenters at posters  
5:30-6:00 – Sessions N-S presenters at posters
- 6:00-6:30 Break
- 6:30-8:00 Buffet Dinner

**Tuesday, May 20**

- 7:30-9:00 Buffet Breakfast
- 9:00-9:15 Welcome from the NIH  
*Marin P. Allen, Ph.D., Deputy Associate Director for Communications and Public Liaison, and Director of Public Information, NIH*
- 9:15-10:15 The NSTC Education Subcommittee and the Academic Competitiveness Council  
*Bruce Fuchs, Ph.D., Director, NIH Office of Science Education*
- 10:15-10:45 Break
- 10:45-12:15 Evaluation Workshops I
- Workshop A: Evaluating the effectiveness/impact of teacher professional development programs  
*Patty McNamara, Independent Consultant*
- Workshop B: Evaluating the effectiveness/impact of informal science education programs  
*Minda Borun, Director of Research and Evaluation, The Franklin Institute Science Museum*
- Workshop C: Evaluating the effectiveness/impact of educational media and multimedia  
*Kate Haley Goldman, Senior Research Associate, Institute for Learning Innovation*

Workshop D: Evaluating the effectiveness/impact of curriculum materials  
*Nancy Moreno, Ph.D., Professor of Allied Health Sciences, and Associate  
 Director, Center for Educational Outreach, Baylor College of Medicine*  
*Marsha Lakes Matyas, Ph.D., Director of Education Programs, The American  
 Physiological Society*

Workshop E: Evaluating the effectiveness of research and internship  
 experiences for students and/or teachers  
*Samuel Silverstein, Ph.D., John C. Dalton Professor of Physiology and Cellular  
 Biophysics, and Professor of Medicine, Columbia University*  
*Jay Dubner, Program Coordinator, Columbia University*

12:15-1:30

Buffet lunch

1:30-3:15

Evaluation Workshops II

Workshop A: Evaluating the effectiveness/impact of teacher professional  
 development programs (repeat of a.m. session)

Workshop B: Evaluating the effectiveness/impact of informal science  
 education programs (repeat of a.m. session)

Workshop C: Evaluating the effectiveness/impact of educational media and  
 multimedia (repeat of a.m. session)

Workshop D: Evaluating the effectiveness/impact of curriculum materials  
 (repeat of a.m. session)

Workshop F: Evaluating the effectiveness/impact of student programs  
*Martin Storksdieck, Ph.D., Director of Project Development, Institute for  
 Learning Innovation*

3:00-3:30

Break

3:30-4:30

Panel Discussion with Evaluation Workshop Presenters  
*Facilitators: Victoria Coats, Oregon Museum of Science and Industry*  
*Roberta Cooks, MD, Maryland Science Center*

4:30-5:00

Participants present topics for Participant-Initiated Sessions on Wednesday

5:00-6:00

Break

6:00-7:30

Buffet Dinner

**Wednesday, May 21**

7:30-9:00

Buffet Breakfast

9:00-10:00

Participant-Initiated Sessions I

10:00-10:30

Break

- 10:30-11:30 Participant-initiated sessions II
- 11:30-12:30 Buffet lunch
- 12:30-1:30 Reports on participant-initiated sessions
- 1:30-2:30 Town Meeting discussion on evaluation strategies and next steps  
*L. Tony Beck, Ph.D., Program Officer, NIH NCRR SEPA Program*
- 3:00-5:00 NAHSEP Satellite Session: Legislative Education Workshop  
*Sponsored and organized by NAHSEP*

**Conference Session Reports:**

<b>Monday, 9:45-10:30am</b>
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**SEPA Program Overview and Update***L. Tony Beck, Ph.D., Program Officer, NIH NCRR SEPA Program*

Report by: Louisa A. Stark, University of Utah

Dr. Beck first gave a brief history of the SEPA Program from its inception in 1991. He then introduced the most recent SEPA project awardees, including the first SEPA award to a veterinary school/college.

In 2008, the SEPA Program expects to be able to fund approximately 16 new projects. Dr. Beck expressed the hope of receiving fundable proposals from states that currently do not have SEPA projects. Areas of high interest to NIH/NCRR include regenerative medicine and the clinical trials process. SEPA projects that are not funded to the maximum of \$250,000/year may request a supplement for a program(s) designed to address these issues. These supplements may be submitted at any time and can be approved in approximately 30 days.

Dr. Beck spoke about the need for rigorous evaluation of SEPA projects, including randomized controlled trials or well-matched comparison studies. During fiscal year 2009 he will initiate a program-level evaluation of the SEPA Program by an outside evaluator.

Dr. Beck highlighted several information and dissemination mechanisms for the SEPA Program. The SEPA website provides an overview and contact information for each SEPA project as well as a dissemination mechanism for educational materials developed by projects. SEPA projects with teacher professional development programs are encouraged to send this information to the webmaster for posting on the site. NCRR has provided funding for a SEPA booth, which Dr. Beck hosts at several national conferences. All SEPA projects are encouraged to send advertising materials for the booth. Those which are presenting sessions at the conference are asked to provide the information for a joint flyer and invited to join Dr. Beck in the booth.

Dr. Beck described several ways in which SEPA projects are collaborating with NIH Institutes and Centers (ICs). Several SEPA projects received grants from the National Human Genome Research Institute (NHGRI) to conduct DNA Day programs. The ICs which have a neuroscience focus or connection are interested in supporting programs for K-12 students and teachers as well as the public, and are working together to develop a blueprint for this effort. Several SEPA projects are partnering with or providing the Community Engagement Core for their local NCRR Clinical and Translational Science Award (CTSA). At least two SEPA PIs (Michael Lichtenstein and David Potter) have secured funding from several ICs for their projects.

Dr. Beck is promoting SEPA Program and project collaborations with:

- NCRR Clinical and Translational Science Award (CTSA) projects
- Institutional Development Award (IDeA) projects
- Other NIH ICs that are interested in K-12 and public outreach
- NIH SBIR/STTR programs (NCRR and other ICs)
- Child Health, which has funding for community education

The SEPA Program staff are beginning work to facilitate collaborations among SEPA projects by forming interest groups focused around specific topics. Conference participants were invited to sign up for topic groups in a notebook at the conference registration desk.

At the end of Dr. Beck's presentation, Dr. Barbara Alving, NCRR Director, noted that disease-specific topic groups can provide important information for NIH/NCRR leadership. Advocacy groups want to know what NIH/NCRR is doing with respect to their focal disease. Racial and ethnic groups want to know what resources are being provided for their populations. NIH/NCRR also is interested in current and potential collaborations with other federal agencies, such as the Centers for Disease Control (CDC). Topic-specific groups can help provide this information. Dr. Alving encouraged SEPA projects to let their legislators know about their programs and to invite them to observe/participate. She noted that members of Congress are rarely thanked for their support of programs. As part of their evaluation, Dr. Alving encouraged SEPA projects to gather data on how much their stakeholders feel the programs are doing for them and how the programs are making a difference in their lives.

A Conference participant noted that HUDs Neighborhood Networks are a possible source of funding for SEPA-type programs.

<b>Monday, 11:00am-noon</b>
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**Keynote Address**

*The Honorable John Porter (former Representative from Illinois), Vice-Chair of the Foundation for NIH, Chair of Research America*

Report by: Louisa A. Stark, University of Utah

Our help is needed if science and engineering are to be at the heart of our country. Few members of Congress or the public have an understanding of science, yet this understanding is vital.

The US is experiencing global challenges to its science supremacy. This has slowed economic development and progress toward healthier lives for our citizens. The economic destiny of America lies in science, research and engineering. Appropriations are about choosing national priorities; science, engineering and education need to be national priorities.

In the current administration, science has had little or no place at the table. Federal budgets over the last seven years have stayed equal or declined. For example, the NIH has seen a 13% decrease in real funding, funding for the CDC has decreased, the Agency for Health Research and Quality (AHRQ) funding has decreased, and NSF funding has stayed equal.

Presidential candidates have indicated that they will respect scientific integrity and evidence-based research. However, they have not said if science will have a place at the table, such as in a Cabinet-level position.

Science and science education need to be a high priority for the President and Congress. The National Academy of Science report, *Rising Above the Gathering Storm*, called US leaders to urgent action.

Steps each of us individually can do now to support a higher visibility for science in the next



**Administration:**

- Get lead scientists ready to serve as candidates for the President's Science Advisor
- Prepare a list of candidates for other top science positions
- Insist that the next Administration reduce the obstacles to public service
- Get scientists and science educators behind the recommendations of the NAS Committee
- Sign on to [sciencedebate2008.com](http://sciencedebate2008.com)
- Pick your favorite candidate for (national, state and/or local office)
  - Call their campaign and tell them you would like to be their Science Advisor or serve on their Science Advisory Committee
  - Less than 4% of Congress people have science backgrounds; continue to advise them on science questions when they are elected
  - Do not concentrate all of your efforts in one party; we want both parties invested in scientific research and education
- Log onto science voter guides. See if your candidates have responded; if not call and ask them to respond. Example websites include:
  - Your Candidates. Your Health (<http://yourcandidatesyourhealth.org/>)
  - Scientists and Engineers for America Action Fund (<http://sefora.org/>)
- Run for office yourself
- Become a member of a federal advisory committee on science
- Write an Opinion Editorial on science and/or science education
- Take a science reporter to lunch
- Invite legislators to your programs (they will send a staffer)
- Encourage scientists to interact with the public

**Key points to keep in mind when meeting with members of Congress:**

1. A staff member is just as important as the member of Congress for whom they work
2. Start by thanking them for what they have done
3. Speak with a passion about things you believe in and why they are important
4. Be clear about what you want them to do; go in with a clear list
5. Be brief

**Comments during Q&A:**

The Boards of institutions of higher education have influential people. They can be reached via University presidents.

NIH should be encouraged to have broader impact components as part of the research grants they award (similar to what NSF does).

Encourage wealthy individuals to elect individuals and make investments that support science/research/education. The Research!America website has the messaging you need for this (<http://www.researchamerica.org/>).

The Coalition on the Public Understanding of Science (<http://www.copusproject.org/>) has declared 2009 the national and state year of science. SEPA projects can register on their website.

Leadership makes all the difference. Each state needs someone in their government to stand up and say that change is needed.

<b>Tuesday, 9:00-9:15am</b>
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**Welcome from the NIH**

*Marin P. Allen, Ph.D., Deputy Associate Director for Communications and Public Liaison, and Director of Public Information, NIH*

Report by: Louisa A. Stark, University of Utah

The Office of Communications is working to engage the public about the work of the NIH. SEPA is “about the most engaging thing going.”

NIH is engaged in a plain language/clear communication initiative.

- A new website is being launched, focused on public involvement with NIH (<http://www.nih.gov/about/publicinvolvement.htm>)
- Research Results for the Public – more than 100 fact sheets are available (<http://www.nih.gov/about/researchresultsforthepublic/index.htm>)
- NIH funding for each congressional district is available online
- Will be starting outreach to grantee public information officers

The focus of the Council of Public Representatives fits with SEPA programs.

During the Q&A a teacher noted that many schools block YouTube. Therefore, many teachers use TeacherTube (<http://www.teachertube.com/>).

<b>Tuesday 9:15-10:15</b>
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**The NSTC Education Subcommittee and the Academic Competitiveness Council**

*Bruce Fuchs, Ph.D., Director, NIH Office of Science Education*

Report by: Louisa A. Stark, University of Utah

In January 2008, Dr. Zerhouni, NIH Director, made his first statement about K-12 science education in a special issue of the Director’s Newsletter, (<http://www.nih.gov/about/director/newsletter/January2008.htm>).

The highly recommended *Two Million Minutes*, is a movie which follows six high school students – two each in the US, China and India (<http://www.2mminutes.com/> and <http://www.youtube.com/user/2MillionMinutes>). It explores how they spend their time as well as their and their families’ attitudes toward education. The movie’s title comes from the fact that there are two million minutes between the end of eighth grade and the end of high school. The movie is designed to serve as a wake-up call about American education.

To address issues in education, we need leadership from the STEM community, including politicians and business. Business has done the most, with business leaders often on Capitol Hill.

The 2003 Program for International Student Assessment (PISA - [www.pisa.oecd.org](http://www.pisa.oecd.org)) looked at students’ ability to apply knowledge and skills to real-life examples. In the US, 58% of 15-year-olds score at Level 1 or below on problem-solving ability. This lack of skill means that they do

not have the skills to get jobs that will enable them to join the middle class.

Companies look at these data and see that there are other countries they can go to for the same or higher skill level and pay a lower salary. The US spends \$90-100,000 to take a child from kindergarten through high school graduation, but we still achieve poor overall performance. So going to Capitol Hill and arguing for an increase in funding for education will not work. We need to teach the new basic skill of problem-solving.

The No Child Left Behind (NCLB) legislation was a compromise. The Republicans did not like the concept of a national test, so every state designs its own test and sets the passing score. However, the National Assessment of Educational Progress (NAEP - <http://nces.ed.gov/nationsreportcard/>) is required of all states. A study comparing state vs. NAEP scores showed that students scored higher on the state tests than on the NAEP, suggesting that the state tests are less rigorous.

A recent National Academy of Sciences report – *Research on Future Skills Demands: A Research Summary* – looks at the types of skills individuals will need to succeed in tomorrow's workplace (<http://www.nap.edu/catalog/12066.html>).

The Academic Competitiveness Council (ACC) is chaired by the US Secretary of Education, Margaret Spellings. Its members are high-level individuals from other federal education agencies. Their final report with their recommendations is available online (<http://www.ed.gov/about/inits/ed/competitiveness/acc-mathscience/index.html>). As part of their review, the NIH found that it is spending \$36 million/year on K-12 and informal science education.

The Office of Science and Technology Policy is under the US President. The job of the National Science and Technology Council (NSTC) is to obtain input to the policy process from within the government. Dr. Fuchs is a member of the NSTC Education Subcommittee.

The NIH Office of Science Education website has a report on scientists in science education (<http://science.education.nih.gov/>). It is important for scientists to become advocates for science education in their local areas. Dr. Fuchs will have a AAAS Science and Policy Fellow working in his office next year to look at creating tools and resources that would lower the barrier for scientists to get involved in science education. One example is the LifeWorks database on the NIH OSE website, which provides information on science careers (<http://science.education.nih.gov/LifeWorks>).

**Comments during Q&A:**

One way to better prepare scientists to become science education advocates would be to organize training sessions at annual scientific meetings.

*Education Week's* Bridging Differences blog looks for ways to bridge the research-education divide.

<b>Tuesday, 10:45am - 12:15pm – Evaluation Workshops I</b>
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**Evaluating the Effectiveness/Impact of Teacher Professional Development Programs**
*Patty McNamara, Independent Consultant*

Report by: Kristin Bass, Rockman Et Al

The purpose of this session was to discuss approaches for evaluating teacher professional development programs. Several ideas were presented, including identifying the “Big Idea” of a program, using concept maps, and implementing retrospective pretest studies.

***Key points:***

- Evaluation should start at the beginning of a project and continue throughout.
- It is important to answer the question “What’s the Big Idea?,” also defined as the best answer a participant could give to questions like “What is the program about? What did you get out of the program?”
- A retrospective pretest is administered at the same time as the posttest and invites participants to answer questions as though they were at the beginning of the program. The retrospective pretest measures perception and allows participants to reflect on the changes that have occurred. It should not be used as a substitute for a pretest, but can be used to complement other measures.
- Surveys are a very common way to gather information, but their quality depends on the types of questions being asked. Evaluators should consider asking questions that address a construct indirectly. For example, it can be more informative to ask teachers to apply their knowledge to a new situation than to ask teachers what they know about that concept. It is also fruitful to ask teachers to critique descriptions of other teachers.

***Challenges SEPA projects face:*** Evaluators are looking for ways to measure teacher practice that are less time-consuming than observations.

**Evaluating the Effectiveness of Informal Science Education Programs**
*Minda Borun, The Franklin Institute and Museum Solutions*

Report by: Victoria Coats, Oregon Museum of Science &amp; Industry

The session presented a concise overview of the development process for informal science education (ISE) exhibits or programs with an emphasis on the four phases of evaluation: front-end, formative, remedial and summative. After discussing the process, participants practiced writing behavioral objectives. The Report of the ACC and NSF/ISE Impact Categories were addressed and discussed.

Participants from a wide range of SEPA projects, including more formal projects, attended the session. Many participants identified elements of their projects as “informal” but were unfamiliar with the development model presented.

Ms. Borun emphasized evaluation as a process that occurs throughout project development and not just at the end, as is more typical in formal education. She stressed the importance of defining clear goals and measurable objectives and of setting aside time and funds for formative and remedial evaluation.

The ACC report recommendations are generally not practical in ISE settings, especially randomized controlled trials. It is possible to look at outcomes and comparison groups and use INSF/ISE Impact Categories to define project goals. Participants had difficulty filling in a Logic Model asking for Impact, Indicators, and Evidence of Success. Some participants viewed this model as merely a change in vocabulary, not a new model for evaluation.

### **Evaluating the Effectiveness/Impact of Education Media and Multimedia**

*Kate Haley Goldman, Senior Research Associate, Institute for Learning Innovation*

Report by: Deanne Erdman, Baylor College of Medicine

The focus of the session was to identify strategies for formative and summative evaluation of projects involving any type of multimedia.

#### ***Key points:***

- Definition of multimedia varies (some type of electronic delivery, e.g. videos, kiosks, distance learning, flash animations, synchronized PowerPoints, pod casts, etc.)
- Due to variety/range of multimedia (level of technology, interface, level of content, type of user), evaluation methods should consist of a tool box
- Questions to answer:
  - What stage of evaluation are you in?
  - Is the technology a deliverable or an outcome?
  - Are the audiences program-based or distributed?
- Formative and summative evaluation – Evaluation of technology is heavy on the front end/formative side
- Examples of formative evaluation methods for multimedia:
  - Paper prototyping
  - In person interviews
  - Focus groups
  - Think-aloud protocols
  - Heuristic evaluation
  - Expert review
  - Online survey
  - User mapping
  - Remote user test
  - Heat mapping
- Examples of summative evaluation methods involving multimedia (to get at the data):
  - Observations
  - Website analytics
  - Content/dialogue analysis -web 2.0 (blogs, chatrooms, tagging)
  - Imbedded performance tasks
  - Portfolio creation
  - Online surveys
  - Remote user interviews

### **Evaluating the Effectiveness/Impact of Curriculum Materials**

*Nancy Moreno, Professor of Allied Health Sciences, and Associate Director, Center for Educational Outreach, Baylor College of Medicine*

*Marsha Lakes Matyas, Director of Education Programs, The American Physiological Society*

Report by: Wendy Huebner, Montclair State University

This session, presented by a seasoned team, was a balanced combination of evaluation basics and first-hand examples to illustrate the themes presented. As such, it contained messages about evaluating curricula that were relevant for an audience that contained a range of people from new grantees to experienced researchers. The audience was very engaged and there were questions and discussion throughout.

#### ***Highlights:***

The session began with an emphasis on terminology and on the importance of directly linking evaluation efforts to project goals – which need to be centered on what the students are supposed to learn. Starting with this (the final goals), a backwards design approach will guide the development of curriculum materials. The presenters used a sample diagram that included elements of the formative and summative evaluation processes, and demonstrated how the various activities and feedback loops (formal and informal review) help develop an effective final product. The presenters stressed that this is an extensive, iterative process.

#### ***Other parts of the session dealt with:***

- Various ways to assess materials, such as for content accuracy, appropriate sequencing
- Specifics about data collection (e.g., what to ask and how),
- Choice of study designs for the most effective testing of curriculum effectiveness
- Advice about field testing, including discussion of human subjects issues
- Dissemination tips

The audience focused on questions about evaluators, reflecting concern about how to get good evaluators and how to use their expertise effectively.

The session ended with some parting suggestions that are worth repeating here:

- Be greedy about data
- Use the most powerful statistical tools you might be comfortable with
- Prove the process so that you can make a judgment about the outcome
- Involve your statistician/evaluator at the beginning of the study.

### **Evaluating the Effectiveness/Impact of Research Experiences for Teachers and/or Students**

*Samuel Silverstein, Ph.D., John C. Dalton Professor of Physiology and Cellular Biophysics, and Professor of Medicine, Columbia University*

*Jay Dubner, Program Coordinator, Columbia University*

Report by: William Cameron, Oregon Health & Science University

Dr. Silverstein talked about his program and the strengths of the SWEPT program. The discussion focused more on student outcomes than on teachers.

- When the question was asked if anyone had done randomized control trials as specified by ACC guidelines, no one had. We quickly moved to discussing measures that people had documented.
- There was some discussion discerning between student interest and cognitive gain. One measure of interest in program is student demand (vote with your feet); how many want to participate in the program.
- There are two distinct populations of students to be reached. (1) those who we hope to change their attitude toward science for the better (literacy) and (2) those who we want to consider a career in science (skill acquisition), mainly targeting more advanced classes (AP, IB).
- In defining interest, it was further subdivided into interest to (1) take another science course, (2) do extra work in present science class or (3) tell another student about the experience and encourage them. There was no consensus on the best measures of student performance based on the diversity of desired outcomes.
- The one teacher in the room reminded the individual PIs that there is a similar privacy protection around student information as there is for HIPPA. This was not evident in the kind of suggestions for longitudinal tracking that were being made.
- There was a distinction made between short-term and long-term longitudinal tracking. Only the University of Arizona program and potentially the Harvard program has any database of what students are doing long after the grant period ends. Unfortunately, there was only a short discussion on this important point about the data we wish to collect.

***Common hurdles encountered by programs with teachers and/or students in research settings:***

- How do we get longitudinal data when the system wants to guard student privacy?
- How can we use the model of some states that make their aggregate data available to researchers and use it to leverage changes in the policy of other states?
- How can we give the Academic Competitiveness Council a better sense of the reality of evaluation in K-12 today instead of applying unobtainable standards of double-blinded randomized trials?
- What are some of the successful strategies that have been employed with school districts large and small that can help investigators in their dialogue with the school districts and individual principals?

You are lucky if you are in a state like Ohio in which the data is made available. If not, it is difficult to see how we can replicate some of the successes of the SWEPT program for comparables.

We all need to come to agreement about what constitutes a successful outcome for students and teachers. We know that attitude changes are critical for public understanding but they are not a metric used in No Child Left Behind. What is the expectation of cognitive knowledge gains in order to do better on the test?

The NIH needs to frame the question and not be directed by the Academic Competitiveness Council and their guidelines. Is it really important to know about the pathways of plaque formation in Alzheimers or is it more important that people appreciate that the question is worth asking and deserving of more funding?

One comment summarized some of the frustrations felt about the imposition of the ACC guidelines. How can the NIH ask this kind of rigor from the K-12 science educator community

when they cannot compile longitudinal data of T32 training grants in which they have all the data?

**Action items:**

- Clarify the goal of our science education. Is it acceptable to achieve attitudinal change? Are test scores and advanced science class placement our gold standard?
- Match the dialogue about meeting evaluation standards with the realities of working within different state department of education and different school districts.
- Determine how programs of similar focus can share their experiences with one another.

<b>Tuesday, 1:30-3:00pm – Evaluation Workshops II</b>
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**Evaluating Professional Development Programs for Teachers**

*Patty McNamara, Independent Consultant*

Report by: Mel Limson, American Physiological Society

Workshop presenter, Patty McNamara, introduced her professional evaluation work, strategies, techniques, and approaches to learn about the effectiveness of programs. She started with the example of concept mapping as an evaluation tool, and used this tool to develop the program for this evaluation workshop. McNamara reviewed the Guskey's (2000) levels of evaluation, and an interconnected framework of evaluation between planning and action. She addressed the need to identify a program's goals, outcomes, and "big idea," a very brief statement that clearly describes the scope and purpose of an educational program. McNamara described specific tools and strategies, such as the retrospective pretest, surveys, questionnaires, and embedded assessments. For each tool, she facilitated participants' discussions on the tools' advantages and disadvantages, as well as encouraged the audience to develop questions that require higher order thinking skills.

The audience discussions brought up several issues in evaluating the effectiveness of professional development programs. The primary challenges include: the impact of teacher programs being based on the impact on students, the need to demonstrate, analyze, and access quantitative data within the limits of funding, and how to get a measure of what teachers are doing in their classrooms.

**Key points and questions:**

- Program evaluation on teacher professional development is challenging because the questions that are usually needed are measuring the impacts on students or in the classroom.
- What sources of data are available? What is it about student changes (in attitude, content, skills) that can be documented?
- How can SEPA programs develop rigorous instruments and facilitate sharing on how we can be more effective in this context?
- How can we use research more effectively?



## **Evaluating the Effectiveness/Impact of Informal Science Education Programs**

*Minda Borun, Director of Research and Evaluation, The Franklin Institute Science Museum*

Report by: Liliana Bronner, University of Nebraska Medical Center

The beginning was spent briefly reviewing the 4 phases of evaluation:

- **Front End:** Setting the boundaries and the levels
- **Formative:** Testing prototypes and first drafts, test for failure and adjust
- **Remedial:** Post installation. Getting everything together in the room but not opening to the public. Invite a trial group to test it out and reserve part of the budget to make changes
- **Summative:** Measuring the impact of the completed project.

Objectives have 3 parts – target audience, what the audience will do after seeing the exhibit/program, time frame.

*Example: after viewing the Franklin Air show 65% of the visitors age 12 and above will be able to explain at least two forces that allow an airplane to fly.*

The rest of the meeting was spent in small groups discussing the project descriptions/goals of three attendees and time creating objectives, based on these goals.

Conclusion – identify intended impact up front, identify target audience, decide how to accomplish impact, and develop achieving impacts.

### ***Best/better practices:***

- Triangulating – using a variety of methods and approaches - qualitative and quantitative. Measuring the outcome in several different ways to have “confidence measures”
- Engaging the whole family and not just children
- The *51% Solution* by Beverly Sorrell, a professional museum exhibit evaluator from the Chicago area, has developed a “framework for assessing excellence” that provided a formal structure for making and sharing judgments about exhibition quality.
- *Framework to Evaluating Impacts of Informal Science Education Projects* – a 114 page report published by the National Science Foundation, Informal Science Division

### ***Challenges SEPA projects face:***

- Sorting through the “noise” when children give you silly answers.
- Human contact (interviews) vs. a kiosk/computer
- Not having multiple exposures to the same people, having that “one-crack” – one chance to gather information
- Not doing conscious reflections about outcomes and communicating this to others.

### ***Ways SEPA projects are addressing these challenges:***

- Reaching out to museum members – setting budget money aside to make follow up calls six weeks to six months after their visit to ask questions that demonstrate impact/change in behavior.
- Encourage people to do things “pre-visit” – such as exploring the website and doing work on the on-line unit, this particularly might work well, for school groups.

**Evaluating the Effectiveness/Impact of Curriculum Materials**

*Nancy Moreno, Professor of Allied Health Sciences, and Associate Director, Center for Educational Outreach, Baylor College of Medicine*

*Marsha Lakes Matyas, Director of Education Programs, The American Physiological Society*

Report by: Charlotte Mulvihill, Oklahoma City Community College

Curriculum is intended as an agent of change in teachers and students. The presenters offered a sample model for the process of curriculum development and the crucial role for embedded integral evaluation processes.

***Key recommendations:***

- Tie evaluation strategies tightly to goals and objectives.
- Plan on multiple revisions of curriculum as evaluation goes forward; expect and allow for reiterations.
- Expect follow-up review and revision of released/completed curriculum materials because the science on which the curriculum is based is constantly changing.
- Plan/consult the IRB early so that maximum use can be made of data collected.

***Best/better practices:***

- Use a checklist of questions for planning the evaluation, to make sure the questions the project addresses are embedded in evaluation plan.
- Data security: Must lock up data on human subjects, especially if it contains identifiers; don't forget to train student helpers, work studies, undergrad assistants on data security. PDF files often can be better secured than paper files.

***Challenges SEPA projects face:***

- IRBs in biomedical institutions are not "tuned into" educational projects that come before them
- Data security
- Recruiting control groups that are non-interventional – hard to motivate for this purpose
- Definition and common understanding of INQUIRY

***Ways SEPA projects are addressing these challenges:***

- For teacher reluctance to admit they did not learn from a workshop: remind participants that we are evaluating the project, not the teacher nor the student.
- For student helpers, can use the Collaborative Institutional Training Initiative (CITI - <http://www.citiprogram.org>), an online human subjects training module (<http://www.citiprogram.org/>).
- On data security: To avoid identifiers to match pre/post responses in the hands of project personnel and records, ask teacher to handle the pre/post input (give explicit directions) and then teacher passes on the data to the PI with non-identifiers (assign number) – compensate the teacher for the extra time and effort as part of the evaluation.
- Free online resource: <http://wise.berkeley.edu> has assessments by class and by group.

***Suggestion:***

The wide disparities across the nation on how IRBs at biomedical institutions treat educational projects that come before them for approval leads to degrees of stringency that may exceed what is needed to protect student/teacher subjects in a project operating as a "normal classroom activity." It would be enormously helpful if an agency with scientific "clout" (NAS was

suggested) could educate IRBs across the nation about human subject protections in the context of evaluating education projects.

### **Evaluating the Effectiveness/Impact of Educational Media and Multimedia**

*Kate Haley Goldman, Senior Research Associate, Institute for Learning Innovation*

Report by: Bruce Howard, Wheeling Jesuit University

The purpose of this session was to provide a series of questions to ask and suggested places to start when considering formative and summative evaluation, with an emphasis on rigorous summative evaluation.

The speaker touched on the following topics and recommended these questions to ask ourselves and/or starting places:

- Key questions to answer when evaluating educational multimedia (such as the stage of evaluation, the audience, whether the technology is a deliverable or an outcome)
- The evaluation lifecycle
- Formative methods (including paper prototyping, focus groups, think aloud protocols, heuristic evaluation, online surveys, heat mapping for online products)
- Questions to answer for summative evaluation (Is random assignment possible? How many variables are involved?)
- Key attributes of rigorous summative evaluation (clarity of the evaluation questions, design, balanced set of methods, thoughtful sampling, well-planned instruments)
- Summative methods (website analytics, content/dialogue analysis, embedded performance tasks)

#### ***Best/better practices:***

- Do lots of formative evaluation. Use quick and dirty approaches to maximize observations and revision cycles.
- When conducting focus groups, don't look for consensus, but for the range of use and responses.
- Highly recommend using think-aloud protocols for technology.
- Don't really recommend the expert/heuristic evaluation approach. Tends to focus on unimportant aspects.

#### ***Evaluation challenges:***

- On a website, which statistics are the most informative?
- With dialogue analysis, how to produce useful summative data in a time-efficient manner?

#### ***Ways to help address these challenges:***

- Use Google Analytics (free and powerful)
- Use online survey software such as Vovici or Survey Monkey
- Use Ethnio online survey services to screen your population

## **Evaluating Student Science Enrichment Programs**

*Martin Storksdieck, Director of Project Development, Institute for Learning Innovation*

Report by: Ann Chester, West Virginia University

The purpose of the session was to provide training to assist SEPA projects in conducting Front End Evaluations, Formative Evaluations, Remedial Evaluations, and Summative Evaluations.

### ***Topics discussed included:***

- Logic Models: Make sure what is being done is related to outcomes you desire.
- How do we measure change: Test, Ask, See/observe, Experience
- How do we design it?
  - Randomized control trial
  - Pre/post with control
  - Pre/post
- Goals, Objectives, Indicators, and Measures were defined.
- Student Enrichment: What are you trying to achieve? science literacy, attitudes, career aspirations, career choices.
- Validity and Reliability: Validity is how you know you're measuring what you're trying to measure? For reliability, you're trying for repeatability of the results.
- Audience was polled for questions and challenges of evaluation

### ***Key points:***

- Really important to measure because here is where change happens that is most likely to be long term. Attitudinal change.
- Not one single way that is superior to others in evaluation. Overall strategy depends on the program.
- No matter what you choose to evaluation, you need to look at it in the beginning of your project.
- Measure the reaction to the experience and the assessment of the experience separately.
- Sometimes the effect of the program is negative and it's OK. It could be because expectations were too high, or parents made them do it, or some other realization that helps the student make appropriate career decisions.

### ***Best/better practices:***

- No such thing. Benefits to all types in many different situations
- Make the evaluations as fun and integrated as possible to avoid assessment fatigue.

### ***Challenges SEPA projects face:***

- Randomized control trails
- How to separate evaluation and research: Evaluations apply and are valid for individual project, research is generalize-able
- Retrospective pre-post tests are valid though often scorned.
- How do you measure inquiry? The effectiveness of inquiry? There are criteria for critical thinking and these are measurable.

### ***Final thoughts:***

- Keep an open mind when it comes to evaluation strategies.

- Few evaluations that are being done effectively that assess a broad array of projects using a standardized set of questions. Meta-evaluations are difficult, often ineffective and expensive.

<b>Tuesday, 3:30-4:30 pm</b>
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**Panel Discussion with Evaluation Workshop Presenters**

*Facilitators: Victoria Coats, Oregon Museum of Science and Industry  
Roberta Cooks, MD, Maryland Science Center*

Report by: Robin Fuchs-Young, University of Texas, M.D. Anderson Cancer Center

The session began with comments on the Academic Competitiveness Council Report:

*Samuel Silverstein:* Quasi-experimental design is adequate as far as he is concerned. Projects all face issues of getting data from school systems.

*Martin Storksdieck:* Some wiggle room for informal project evaluation; non-standard evaluation is probably allowable; problem is not going away, issues of effective evaluation will persist.

*Patty MacNamara:* Current environmental requires documentation of effective investment – gap between intention and implementation of evaluation standards is concerning; recommendations for more systemic support for development of appropriate evaluation models, to inform all our practices not only focusing on one project, collect and compare data across

*Kate Haley Goldman:* Concerned about the negative impacts on projects of the ACC report recommendation, some aspects could be inexpensively done internally and do not need to be so onerous; focus on clarity of evaluation question, balanced approach, thoughtful evaluation planning.

*Minda Borun:* ACC report is modeled after NCLB, based on “more testing” approach; we do not need better scales to know that obesity in children is a problem; however, increased conscious planning, accountability, and assessing audience impact is a good thing. Need to include more emphasis on formative evaluation and listening to participants.

*Nancy Moreno:* Her survey instruments have changed over the years; increased emphasis is probably helpful. However, she is somewhat worried about over emphasis on student achievement and quantitative data at the expense of useful qualitative analysis. Ultimately the evaluation will bolster our case about better and different ways to teach science effectively.

Responses to questions/comments from the audience:

***Concerns about the rigor of the evaluation that may be required***

*MS:* NSF evaluation is focused on student attitudes, rather than achievement. What is the goal? Better test performance or increased interest in science and pursuit of science careers.

*SS:* We should be concerned about what the schools are cutting out: sports, art, music - hands on stuff kids love. Perhaps find alliances with sports figures, artists and writers. Need people with standing with the kids and the public.

*Beck:* SEPA is not interested in diluting the enthusiasm of students, teachers and communities and their commitment to SEPA Projects by forced quantitative evaluation. However, we can improve rigor and effectiveness of our evaluation process.

***How important are professional outside evaluators?***

*Goldman:* Probably not critical for formative evaluation; formative evaluation is very important and makes summative evaluation possible.

*MS:* Formative evaluation should be integrated into the program.

*MB:* Evaluation requires team effort – evaluator should be part of the team, should come in very early, can help structure formative evaluation.

*NM:* We as program directors need to become more knowledgeable and better consumers of evaluation services and expertise.

*PM:* Some distance and objectivity is useful, although it is a team effort. Need to optimize communication with evaluators to assure that overall quality of evaluation is high and to make sure that the projects get the kind of information that they need at both front and back end.

*SS:* Suggests that we are looking for creativity, and we should not demand that proposals have anything specific, but that they are rigorous. Have the proposals judged by peers as to quality, controls, design, etc. Professional evaluator not the gold standard, but that the evaluation plan is solid.

***What about having both an internal and an external evaluator?***

*MS:* Outside experts are valuable – teaming up inside and outside evaluators is a good idea.

*MB:* Concern about ACC report is that it blurs the line between evaluation and research. Standards and experimental design of research is being applied to evaluation, confusing.

*MS:* Experienced evaluators add value in ways that a researcher may not - experience in funneling data back into project to improve project.

*PM:* Work together – get all the skills that are needed, end results meaningful and process rigorous.

*NM:* We have collected a lot of data, can use for as variety of purposes, can use the data for hypothesis testing purposes. Wasn't directly related to evaluation – crossed line into research.

**Wednesday, 9:00-10:00am – Participant-Initiated Sessions**

**Multimedia: Video/Web/Animation, Etc.**

*Organized by:* John Pollock, Associate Professor, Duquesne University

Three SEPA projects shared their products and discussed production issues and challenges with participants.

- “Our Cells, Our Selves” a planetarium show on the immune system and Type I Diabetes – John Pollock, Duquesne University

- “AIDS, Race & Culture” trailer from Diversity Films Documentary – David Guilbault and Claudia Pryor, Diversity Films
- “Virtual Cocaine Neurobiology Lab and Virtual Stroke Clinic” – David Anderson, Illinois State University

### **Best Methods for Dissemination of Program Materials**

*Organized by:* Nathalie Sessions, The University of Texas Health Science Center at Houston

*Report by:* Nathalie Sessions, The University of Texas Health Science Center at Houston

This session focused on a discussion of the pros and cons of offering project materials free of charge versus commercialization and the best methods for making materials created with SEPA dollars more widely available.

#### ***Recommendations:***

- Consider applying for SBIR/STTR grants
- Set up a SEPA “marketing arm”
- Explore possible formation of a collective group of SEPA contacts/consortium to create an entity that could allow for centralized dissemination of program materials from SEPA programs

#### ***Best/better practices:***

- Ensure project materials are novel/publishable/able to be easily disseminated
- Extremely important to provide continual teacher professional development to accompany materials
- Identify appropriate business partners/suppliers if commercializing/publishing

#### ***Challenges SEPA projects face:***

- Sustainability
- Ways to fund and staff preparation of materials for publication and/or widespread dissemination

#### ***Ways SEPA projects are addressing these challenges:***

- Most projects are offering materials free of charge; some have commercialized

#### ***Action items:***

- Share email list of participants with attendees – Nathalie Sessions (completed 5/27/08)
- Create a Listserv for follow-up contact – Tina Bordonaro

#### ***Participants:***

<b>Name</b>	<b>Institution</b>
Tina Bordonaro	National Institutes of Health, Office of Legislative Policy and Analysis
Liliana Bronner	University of Nebraska Medical Center
Teresa Demel	UW Engineered Biomaterials
Vince Hardy	Texas A&M University
Anne Harrington	The Hope Heart Institute
Jana Hovland	Ohio University
Nancy Marra	University of Montana
Lisa Marriott	Oregon Health and Science University
David Micklos	Dolan DNA Learning Center

Nancy Murray	The University of Texas Health Science Center at Houston – School of Public Health
Nathalie Sessions	The University of Texas Health Science Center at Houston – School of Public Health
Sam Silverstein	Columbia University
Amber Vogel	University of North Carolina at Chapel Hill

### **Ideas for Science Careers Research Grant R01 RFA-GM-08-005**

*Organized by:* Kelley Withy, University of Hawaii

*Report by:* Kelley Withy, University of Hawaii

- Literature review of factors influencing choice of science careers
- Form national research team to review data on important variables to test
- Research team meets (in Hawaii) to develop a standard web-based evaluation tool to assess attitude toward science and experiences in science activities for current young researchers
- Test survey with young researchers at institutions across the country
- Send survey to K, R and minority supplement recipients
- Analyze data based on demographic characteristics and experiences to determine which categories of enrichment (if any) had the most impact on students from different demographic groups or regions

### **Dissemination of Curriculum Materials at the EHS Summer Institute for K-12 Educators**

*Report by:* Robin Fuchs-Young, University of Texas, M.D. Anderson Cancer Center

The focus of the session was to discuss our programs and dissemination mechanisms, including the summer institute

#### ***Key points:***

- Biotech materials are designed to teach overall concepts, use reagents and equipment electrophoresis, redox
- Distinguish between training and education
- Focus on education

#### ***Best/better practices:***

- Use of inquiry-based process, allowing experiments to open to concepts and processes

#### ***Challenges:***

- Loss or breakage of equipment
- Teachers not comfortable with inquiry-based methods

#### ***Ways SEPA Projects are facing these challenges:***

- Using inquiry-based approaches
- Allowing questions to lead the activity

#### ***Action items:***

- Exchanged URLs and websites and ideas



**Participants:**

<b>Name</b>	<b>Institution</b>
Robin Fuchs-Young	University of Texas, M.D. Anderson Cancer Center
Don Bell	Oklahoma City Community College
Kim Soper	University of Nebraska Medical Center
Maurice Godfrey	University of Nebraska Medical Center

**Evaluation Idea and Instrument Exchange**

*Organized by:* Kristin Bass, Rockman Et Al

*Report by:* Kristin Bass, Rockman Et Al

The focus of the session was on (a) networking and exchange of ideas about evaluation, (b) come up with new ideas for projects and (c) gain knowledge about what other SEPA projects offer.

**Key points:**

- Evaluators have a lot of questions and answers, but need a forum to exchange ideas.
- Getting data from schools and districts is a particular challenge, and one that might benefit from NIH staff assistance.
- There is a need for instruments besides test scores as an indicator of student learning. For example, there were several requests for information about assessing websites.

**Ways SEPA projects are addressing challenges:**

Evaluation of teacher research program (Columbia) jd109@columbia.edu

- Started out using surveys. Problem: self reported surveys are unreliable, teachers may tell you what you want to hear.
- 1993: requested state standardized exam data for students
- Control groups: teachers teaching the subject without intervention
- After 13 years, the data is statistically significant
- Grant success rose after data was available

*Question:* What do you have to go through to get the student data

- *Answer:* Challenges are: finding the right person to give you the data. Requires a special program (made by school) to pull out specific student data. School employees are paid extra to do this.

*Question:* Is data anonymous

- *Answer:* Yes. Can get independent student data, but names are unknown. But project only takes averages.

*Question:* Would anyone be interested in creating a blog of evaluation of SEPA projects?

- *Comment:* Access to school district data stores?
- *Comment:* Required liaisons that had gone on for a long time. Perhaps we could share the success stories in writing?
- *Comment:* Difficulties in getting data (Stored in separate places)
- *Comment:* School max – districts should be giving data, but it's still hard to get it (Due to administrative changes and upheaval)
- *Comment:* It would help to have backing from SEPA to collect the data

- Comment: Data is not centralized (NY is centralized). So it's hard to get – can federal agencies or state education centralize the data?
- Comment: Districts own data and have to give permission for it to be released. One idea is to get Tony Beck to write a letter to the district to explain the importance of providing data.
- Comment: In teacher application to program – it's explained that pre and post-surveys will be given – maybe important to establish what is needed in great detail BEFORE the teachers participate. Therefore, “permission” given by district backs the efforts of the project to obtain the data.
- Comment: Sometimes, principals can give permission, sometimes districts need to get involved.
- Comment: Anarchy between district and school creates problems in obtaining data.
- Comment: If you want to do research in the Houston school district, the research project has to go through the research board in the district. If the board accepts it, then you have implied permission to collect data. If the district commits to accept the grant, they accept giving up student data.

*Question:* How do you contact the district?

- Answer: Grant coordinator facilitates getting the data. If there are concerns about identity, the school personnel collects the data and processes it and gives it to the evaluator.
- Comment: Sometimes you need a friend to “run interference” in the district. Someone you know in the district.
- Suggestion: There needs to be a procedure for collecting student data. Is this Tony Beck?

***Give and Take:***

*(What can you give/share with others? What would you like to take/learn from others?)*

Kristin Bass

- Give: Scoop notebooks. Portfolios, comparable to classroom observations. ITEST – info like what's on here in other places.
- Take: More about evaluating websites. Innovative ways of tapping into how students navigate

Steve Rider (evaluator)

- Give: Being creative and problem solving
- Take: Good instruments that people have, especially if there are compendiums

Berk Moss

- Give: Preliminary data that looks pretty good.
- Take: More ways to evaluate the program in terms of student outcomes

Tahlia Esser

- Take: Instrument to evaluate curriculum in the long term

Rebecca Rowntree:

- Give: Not sure...
- Take: Evaluate online modules and videos

Catherine Johnston:

- Give: Broader view of educational research
- Take: Ideas about how to evaluate online modules and curricula used by vets in an uncontrolled environment

Mary Williams

Disturbed about concern with test scores. Her pre-post surveys about content (what do you know)

- Give: Clicker system to learn what students know during a presentation (CPS). Aka automated response systems. Solved having students take another test.
- Take: Evaluating how we're evaluating (As opposed to handing data over to evaluators and getting back analysis)

Laura Hemminger

- Give: Incorporate behavior change theory
- Take: Names of good evaluators in the northeast

Wendy Huebner

- Give: Reference for attitude towards science survey = Molly Wineburg (?) (Will this encourage people to share other surveys?). It would be nice to use the same surveys
- Take: More information on evaluating websites

Randy Knuth

- Give: Project management consulting with project team in order to evaluation – logic models to keep team on track
- Take: Following students who graduate into college and careers – how to do? By engaging research in long term projects – how do you measure large groups of students

Louise Jones

- Give: Project management, interaction with project staff. PI's don't always understand the evaluation.
- Take: How can PI's learn more about evaluation – workshops, conferences?

Consuelo Morales

- Give: Experience as a 6 year teacher and interaction with communities.
- Take: Ways to evaluate the community component. Other instruments besides pre and post surveys.

Kwame Opuni

- Give: Information about getting data from school districts (has worked with Houston and New Jersey)
- Take: Use of web surveys like survey monkey. What are other versions?
- Give: Created a DC alliance – government agencies offering services to schools
- Take: More information on work products and how they're being used

Shaw-Ree Chen

- Give: A way of looking at student interest, engagement, thought process through looking at what kinds of questions student ask
- Take: A way of validating and formalizing that process (how to elicit questions, how to record questions)

Molly Stulsatz

- Give: Experience in thinking about teacher fidelity of implementation. Retrospective pre/post design for professional development
- Take: Alternative methods of data collection from students who aren't used to "typical" data collection. Use of "photo voice" – students take pictures and then write about it.

Jay Dubner

- Give: Surveys (pre/post for teachers and students), how their standardized data was collected and organized
- Take: Evaluation of website, portable labs (teacher and student feedback)

Debra Felix (HHMI)

- Give: Talk to Tony Beck about how HHMI can share with SEPA about how to share tools. Know about good evaluators.
- Take: To hear what we have to say about the realities about getting data/info from teachers and students. "Reality check" from front liners.

***Participants:***

<b>Name</b>	<b>Institution</b>
Steve Rider	Oregon Health Science University
Mary Williams	University of Alabama at Birmingham
Tahlia Esser	Cankdeska Cikana Community College
Laura Hemminger	University of Med/Dent NJ-School of Public Health
Wendy Huebner	Montclair State University
Louisa Jones	Jackson State University
Consuelo Morales	University of Michigan at Ann Arbor
Kwame Opuni	University of Texas Health Science Center Houston
Debra Yourick	U.S. Walter Reed Army Institute of Research
Kristin Bass	Rockman Et Al
Molly Stuhlsatz	University of Nebraska Medical Center
Shaw-Ree Chen	University of Rochester
Randy Knuth	University of Montana
Catherine Johnston	Texas A&M University System
Berk Moss	Oregon Health & Science University
Jay Dubner	Columbia University
Rebecca Rowntree	Texas A&M University

**Science Pubs (aka Café Scientifique, aka Science Café)**

*Organized by:* Marilyn Johnson, Oregon Museum of Science and Industry

No report submitted

**How can we encourage/support more science center SEPAs?**

*Organized by:* Vicki Coats, Oregon Museum of Science and Industry

No report submitted

<b>Wednesday, 10:30-11:30am</b>
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**SBIR/STTR Program**

*Presented by:* Krishan Aurora, Ph.D., NIH NCRR, SBIR/STTR Program Officer  
(Telephone: 301-435-0760; e-mail: AroraK@mail.nih.gov)

Report by: Louisa A. Stark, University of Utah

NIH NCRR SEPA projects are encouraged to consider SBIR and STTR grants, particularly as a way to sustain and/or disseminate products they develop.

SBIR = Small Business Innovation Research

STTR = Small Business Technology Transfer; is a cooperative research and development effort between a small business and a university

Information on the NCRR SBIR/STTR programs is available online  
([http://www.ncrr.nih.gov/research\\_funding/small\\_business\\_opportunities/](http://www.ncrr.nih.gov/research_funding/small_business_opportunities/)).

Annually, NIH NCRR has \$27 million available for SBIR grants and \$3.2 million available for STTR grants. Projects are to be conducted in three phases:

- Phase I – feasibility studies
  - \$100,000\* for 6 months (SBIR) or 12 months (STTR)
- Phase II – full research/research and development; commercialization plan required
  - \$750,000\* for two years
- Phase III – commercialization; no funding provided

\* These amounts are guidelines, not ceilings. One can ask for higher funding if it can be justified.

The awards are always made to the small business, which must be a for-profit company. The Principal Investigator (PI) must have their primary employment with the small business. A SBIR grant many have more than one PI; only the contact PI must have their primary employment with the small business. A small business may have more than one SBIR.

NIH puts out an omnibus solicitation for SBIR and STTR grants  
(<http://grants1.nih.gov/grants/funding/sbir.htm>). A SBIR/STTR conference is held annually to provide information and assistance to potential and current grantees.

NCRR received approximately five applications for each of the three annual funding rounds (due dates of April 5, August 5 and December 5).

Examples of education grants NCRR has funded:

- LiFESim software for health science education
- A classroom tool to create interactive science web pages
- A multi-user virtual biology environment
- Virtual labs
- Genetics for Kids, a multi-media genetics curriculum for middle school students

A project could develop one module in Phase I as a pilot/feasibility study, and then additional modules in Phase II.

An application should include the following components (among others):

- A needs assessment – who needs the product

- A summary of similar products that are available on the market and a description of how this product will be different
- A plan for how you will evaluate the product, such as in schools
- If you will include a consultant(s), a description of how they will help develop the project

A university's office of technology transfer may be able to assist you with starting a small business. Alternatively, if you would like to work with an established small business, you can call NIH to find out what businesses they are currently funding for science education projects.

If your proposal is not funded by one NIH Institute, but would make the funding level at another appropriate Institute, you can call the second Institute and ask to have your proposal transferred to them.

**Participants:**

<b>Name</b>	<b>Institution</b>
Amber Vogel	University of North Carolina
Anne Harrington	University of Washington
Cathrine Sasek	National Institute on Drug Abuse
Diana Gordon	Oregon Health & Science University
Janet Dubinsky	University of Minnesota
Jeri Erickson	Foundation for Blood Research
John Pollock	Duquesne University
Kim Soper	University of Nebraska Medical Center
Lisa Marriott	Oregon Health & Science University
Louisa Stark	University of Utah
Maurice Godfrey	University of Nebraska Medical Center
Monroe Duboise	University of Southern Maine
Nancy Marra	University of Montana
Nathalie Sessions	University of Texas, Health Science Center at Houston
Teresa Demel	University of Washington
Walter Allan	Foundation for Blood Research

**Focus on Diabetes/Obesity Epidemic/Nutrition**

*Organized by:* Wendy Huebner, Montclair State University

*Report by:* Pam Koch, Columbia University Teachers College

**Summary:**

We had about twelve people in the meeting. They fit into three groups (about 1/3 in each group):

- Those that work on diabetes, obesity, etc. issues on their current SEPA
- Those that work on these issues for other projects, but not their current SEPA
- Those that are interested in applying for a SEPA grant in this area

There were already collaborations among some members of the group. There were many ideas for more collaborations including:

- Sharing resources (especially formal to informal and vice versa)
- Working together on dissemination of the projects
- Sharing evaluation instruments, designs, etc.
- Sharing expertise such as knowledge of behavior change and cognitive theories and registered dietitians sharing their expertise of nutrition issues.

The group would like to form a listserv to be able to keep in communication with each other and tried to think about ways, such as having a specific mission, to keep in contact with each other after the enthusiasm of the conference wears off. We did a give or take, where everyone shared what they could give to this group and what they would like to take from the group.

***Give and Take:***

*(What can you give/share with others? What would you like to take/learn from others?)*

Laura Hemminger

- Give: Knowledge about behavior change theories
- Take: Potential partners

Pam Koch

- Give: Exhibit that can build community interest around awareness of nutrition and physical activity issues (switching January, May, Sept.) Also can make micro exhibits that can be transported in pickup truck
- Take: Implementation partners to help us with dissemination

Jana Hovlan

- Give: Jana Curriculum 3-5<sup>th</sup> grade
- Take: Registered Dietitians

Thalila Esser

- Give: Share findings, experiences, curriculum – inquiry-based science
- Take: None

Wendy Huebner

- Give: Understanding patterns and trends in diabetes and obesity (she is an epidemiologist)
- Take: Us all thinking together, combining museums with curriculum—doing it with a vengeance because it is such an important health issue. How to sustain the conference enthusiasm. Can better succeed when the virtual group has a specific mission. SEPA planning grant to build partnerships might allow this to really develop. Might even develop a common logo with all SEPA in this area.

Cathy Ennis

- Give: Curriculum specialist in physical activity interested in cognition and developing conceptual change and how they develop in science education. Physical activity curriculum that teaches science for 8-11 year olds.
- Take: Wants to learn new things and connections between cardiovascular disease and diabetes. Prevention of diabetes.

Andrij Holian

- Give: Biochemistry and medical aspects of these diseases. For example how fructose in corn syrup is so much worse than other sugar because of how it is metabolized. Therefore, high fructose in our food is a devastating aspect of what is going on.
- Take: Partnering in grant development with different projects developing materials for different aspects of the problem diet, exercise.

Diana Vanek

- Give: Teachers to pilot. Helping with challenges in rural and ultra rural location, where you have to drive everywhere.
- Take: Would love to sit with others and talk through the challenges of both doing education and how to work on behavior change (i.e. Indian taco that is not at all traditional food.)

David Petering

- Give: Share experimental module on chemistry and how to talk about calories. Professionally made video for education of Native Americas.
- Take: Would be interested in curricular materials. Would like to know rental fee for museum exhibit because he is interested.

Jennifer Campbell

- Give: Share their work with seven partners
- Take: Resources

George Eyambe

- Give: Provide feedback from his community because he did focus groups with physicians, RD, teachers, parents who have children in therapy for overweight, other parents and other stake holders. They discussed if they think obesity is a great problem. They agreed it was a problem. He asked about the cause and how to solve the problem. Insights: transportation problem- no means of transportation, no grocery store with no fresh food. Culture was a problem because of needing high volume for funds. Food preparation and portion sizes a problem. Exercise is a problem. Children cannot go to park because taken over by drug dealers. Lack of time, parents working, no time to prepare meals like their parents did. Rely on fast food. Exposure to US; when came to US were skinny and healthy, then became obese. Easy access to soda (everywhere and cheap) in US. Food stamps cause problems; provides excess food and don't make healthy choices. He can share more information.
- Take: Would like information from experts who can come down and sit with them to see what they came up with in focus group and give guidance to help develop interventions from what they found out

**Participants:**

<b>Name</b>	<b>Institution</b>
Laura Hemminger	University of Med/Dent NJ- School of Public Health
Marilyn Johnson	Oregon Museum of Sciences and Industry
Pam Koch	Columbia University Teachers College
Jana Hovland	Ohio University Athens
Thaila Esser	Cankdeska Cikana Community College
Wendy Huebner	Montclair State University
Cathy Ennis	University of Maryland College Park
Andrij Holian	University of Montana
Diana Vanek	University of Montana
David Petering	University of Wisconsin Milwaukee
Jennifer Campbell	University of Med/Dent NJ-School of Public Health
George Eyambe	University of Texas-Pan American



**SEPA's future in the world of YouTube, MySpace and Social Networking***Organized by: Peter Crown, University of Arizona College of Medicine*

No report submitted

**Quantitative Measurement of Scientific Questioning Skills***Organized by: Lew Jacobson, University of Pittsburgh*

No report submitted

***Participants:***

<b>Name</b>	<b>Institution</b>
Denise Linzman	Oklahoma City Community College
David Anderson	Illinois State University
Cathy Ennis	University of Maryland College Park
Sonsoles de Lacalle	Charles R. Drew University of Medicine and Science
Deborah Colbern	Charles R. Dre University of Medicine and Science
Charlotte Mulvihill	Oklahoma City Community College
Mary Williams	University of Alabama at Birmingham
Cary Scheiderer	University of Alabama at Birmingham
Debra Yourick	U.S. Walter Reed Army Institute of Research
Louise Jones	Jackson State University
Susan DeRiemer	Meharry Medical College
Gail Fletcher	University of Southern Maine
Sarah Foster	Lytle ISD
Katy Joseph	University of Rochester
Susan Holt	University of Rochester
Shaw Ree Chen	University of Rochester
Consuelo Morales	University of Michigan at Ann Arbor
Deanne Erdmann	Baylor College of Medicine

**SEPA is a federal program. NCLB is a federal program. ACC is a federally-mandated law. ACC and SEPA should seek ways the government can encourage the state DOEs to help SEPA investigators obtain data from schools***Organized by: Sam Silverstein, Columbia University*

No report submitted

**Wednesday, 1:30-2:30****SEPA Town Meeting***L. Tony Beck, Ph.D., Program Director, NIH NCRR SEPA Program**Report by: Wendy Huebner, Montclair State University*

The meeting was lead by Tony Beck. Following his acknowledgement and thanks to Louisa Stark and others who planned and participated in a highly interesting and successful meeting,

Dr. Beck raised a number of items and lead discussions about many of them. These are listed below with details about discussion where appropriate.

- The SEPA R25 PAR: This is being changed, with possible clarification to sections on Scope of Activity, Evaluation, and Collaboration. Input is needed and members were encouraged to send e-mails to Tony.
- SEPA website: would like a live link during the next meeting. There are plans to develop a searchable database. Tony encouraged members to add information to the current events calendar on the site, particularly professional development events.
- NCRR Report: This is an excellent marketing tool; Tony encouraged projects to submit good stories.
- SEPA conference booths: There are several coming up in 2008. Tony encouraged projects to send posters, and literature for the booths (e.g., letter size, half letter size, DVDs, posters, and give a-ways). These materials should be eye-catching.
- SEPA Trans-NIH: There are events such as Brain Awareness Week, DNA Day, Wear Red, Evolution Revolution, and others that have potential connections to SEPA projects.
- Regarding new SEPA grantees, Tony asked if more experienced researchers would be receptive to a mentoring program. Members answered positively. Other ideas then mentioned by the group included FAQ's on the SEPA website, and informal lists of members with their areas of "expertise."
- CTSA's: Tony encouraged interactions between SEPA and CTSA's, and there was discussion of some of the existing interactions.
- Potential for diverse SEPA projects: Tony noted that results of this morning's sessions are encouraging and indicate the potential for more collaborations. He said we can put together Listserv's to keep these informal groups connected. He also mentioned that it is possible to propose \$5-15K for a small conference grant to facilitate face-to-face meetings for such groups
- SEPA Subgroups: There was discussion about having an informal organizational structure between "SEPA Central" and the 70 SEPA projects. It could consist of "Affinity Groups" that could be organized in some local way, for example their could be groups for Engineers, HIV/AIDS, Darwin 200, Genetics, Diabetes, Cardiovascular, and Neuroscience. People will give feedback to Tony as to the types and number of groups that could be informally established.
- SEPA Strategic Plan: Tony described a timetable for developing this. He asked for ideas, large and small, to be sent to him in May and June. He will collate the data, define major areas, and circulate for comments in August. The goal is to draft a five-year by the fall of 2008.
- Increasing effectiveness of collaborations with evaluators: The group discussed options such as embedding a group of evaluators who focus on SEPA projects, have website links to sites that have evaluator lists, and having FAQ's and evaluations on the website.