

E-NARST NEWS

National Association for
Research in Science Teaching

*Organized to improve science
teaching through research*

Carla Zembal-Saul, Editor

Department of Curriculum and Instruction
College of Education
The Pennsylvania State University
University Park, Pennsylvania

VOLUME 52 (2)

July, 2009

*Published by Communications Department
Drohan Management Group, Reston, Virginia*

Message from the President Philadelphia in 2010

Rick Duschl



My thanks go out to Charlene, Bill, Robin and Heather at Drohan Management, Board Members, Strand Coordinators, and attendees for a most successful 2009 NARST Annual International Meeting.

The planning of the 2010 NARST International Meeting – March 20-24 – has begun. The call for proposals is available on the NARST web site: <http://www.narst.org/abstracts2010/>. The 2010 NARST meeting will be in the ‘City of Brotherly Love’- Philadelphia with the theme Research into Practice: Practice Informing Research. The city was once the second-largest in the British Empire (after London), and the social and geographical center of the original 13 American colonies. Benjamin Franklin took a large role in Philadelphia’s early rise to prominence. It was this city that gave birth to the American Revolution and American Independence, making Philadelphia a centerpiece of early American history.

This year the Philadelphia NARST meeting will overlap with the national meeting of the National Science Teachers Association (NSTA). As such, we are planning some events that will bring NARST members to NSTA sessions and vice versa. For example, the ‘Research Dissemination Conference’ is an NSTA event on Saturday March 20. This year’s theme is ‘Elementary Education’ and I have been working with

In this Issue

Message from the President: 1

NARST Presidential Speech: 3

A Message from the President-Elect: 8

Awards Committee: 9

Equity & Ethics Committee: 11

External Policy and Relations Committee: 13

International Committee: 14

Membership & Elections Committee: 15

Publications Advisory Committee: 16

Research Committee Report: 18

From the Editors of JRST: 19

Call for 2010 Award Nominations: 20

continued on next page ▶



Love Sculpture, Love Park, Center City, Philadelphia (photo by Flickr vic15)

NSTA Research Director Julie Luft to help plan the agenda for the day's events. [Note: there is a separate registration fee for the RDC.]

Let me remind NARST members and Strand Coordinators to think about offering NARST workshops that address the conference theme - Research into Practice: Practice Informing Research. The workshops are scheduled for Sunday morning and represent a wonderful opportunity to involve both NARST and NSTA attendees. Priority will be given to workshops that engage researchers, school leaders, teachers and educators working in classroom and/or informal learning environments.

Let me also remind Members that NARST, along with the other NSTA 'Association of Affiliates' (AOA) members, hosts sessions during the 4-day NSTA meeting. If you plan to attend NSTA ahead of the NARST conference, then I encourage you (1) to consider presenting a report of research at NSTA and (2) to attend the NARST and other AOA sessions. This year's AOA theme will be 21st Century Skills; an international effort to redesign and realign secondary education learning goals and assessment standards. To explore present-

tation of a paper at NSTA you need to contact Troy Sadler, NARST Research Coordinator, with a formal application. [tsadler@coe.ufl.edu]

When not attending sessions, I hope that you'll get the chance to see some of the 'City of Brotherly Love'. No visit to Philly is complete without visiting Independence Hall and the Liberty Bell. For a taste of Philly, be sure to make a visit to Reading Terminal Market where

among the 80 merchants you can sample the delectable culinary foods, breads and cheeses of the Amish, the signature 'Philly Cheese Steak', soft-pretzels with mustard, and the famous Italian hoagies. Fine dining is another feature of Philly so make plans to book a table.

Another signature feature of Philadelphia is its richness in science and cultural institutions. The major science museums include the Franklin Institute, the Academy of Natural Sciences (oldest in the USA), and the University of Pennsylvania Museum of Archaeology and Anthropology. The city is home to the Pennsylvania Academy of the Fine Arts, the Rodin Museum and the Philadelphia Museum of Art that features the steps made popular by the film *Rocky*.

I look forward to seeing you in Philly. Given the NSTA's meeting in Philadelphia just prior to NARST, be sure to book rooms early. If you are thinking about attending NSTA on Thursday, Friday or Saturday, then you'll need to book rooms through NSTA. I'll be sure to forward that information when the NSTA registration is announced. Here's wishing each of you a successful 2009-2010 academic year.



Grand Challenges and Great Opportunities in Science Education: Is the Glass Half Full or Half Empty?

NARST Presidential Speech

Charlene M. Czerniak, Past President

I would like to begin this speech by thanking the people who have given their time and talents to NARST. I owe a great deal of gratitude to those who have worked with me on the Board and the committees. I am particularly grateful for the guidance provided by Penny Gilmer as she prepared me for this task. I would also like to recognize Bill Kyle, our executive director, for his excellent fiscal oversight and superb organizational skills. The folks at Drohan Management also made the job easier. Finally, special thanks goes to Toni Sondergeld, the doctoral student from The University of Toledo, who was assigned to assist me with NARST. She helped in many ways with the day-to-day work, all scheduling for this conference, and some Rasch data analysis, which you will hear about later in this speech.

While thinking about what I would say in this presidential address, I thought back to some of my predecessor's speeches. The first NARST presidential speech that I remember was that of Bill Holliday in 1990. Frankly, I have absolutely no recollection of what he said, but I remember him introducing his dad. It was clearly a moment in NARST history since he appeared to be an exact clone of his father! I vaguely remember a band playing at one awards ceremony to herald the arrival of the dessert. There was something about the growth of our international membership and name of the organization in one speech... a plea to work with practitioners in K-12 schools in another... and something about evolution and intelligent design in different speech.

My long-term memory recalls more details from the last three presidential speeches—Penny Gilmer's on the importance of collaboration between scientists and educators, Jonathan Osborne's on the need for more armchair science education, and Jim Shymansky's provocative speech on the need for shorter articles in our journals. I must admit, it was somewhat reassuring to think that if

your long-term memory is as bad as mine, none of you will remember this beyond 2012! So, what could I say to this intelligent audience that might be remembered beyond the end of the day — or if I am lucky, for a few short years?

Last May at a meeting in Washington, DC, several speakers from various scientific organizations discussed the concept of “Grand Challenges and Great Opportunities” in their disciplines. For example, in the 125th Anniversary issue of *Science*, AAAS identified the most compelling questions facing society over the next quarter-century. I concluded that this concept might capture your interest and provide something of value to talk about. This concept of “grand challenges and great opportunities” is the conference theme this year, and as you have seen, many sessions touch on this topic.

It is noteworthy to remember that 20 years ago, AAAS released *Science for All Americans: Project 2061*. Yesterday, John Settlage observed in his presentation that we often-times characterize modern science education efforts in the US as being kicked off by the 1957 launch of Sputnik... and *Science for all Americans* called for a coherent vision for our science teaching by 2061. This year, 2009, is half-way between those 104 years. So, at this mid-point, is our glass half full or half empty? What have we achieved and what challenges and opportunities are still ahead?

Last summer, I solicited input from you regarding your views about the grand challenges and great opportunities in science education. A two-step process was taken to cull ideas and provide a snapshot of your priorities. The first online survey asked the open-ended question: **From your perspective, what are the “grand challenges and great opportunities” that we face in science education?**

continued on next page ▶



Linda Darling-Hammond and Charlene Czerniak

From a pool of diverse qualitative responses, 10 prominent overarching themes were found in the data. These are listed on a handout at your table.

To obtain a better understanding of members' perceived importance of the options, a new survey was created consisting of 45 paired comparison questions. For each pair of themes, you were asked to select the challenge you believed to be the *greater challenge* to science education. The data from the second step were analyzed using the Rasch modeling technique.

If you are interested in learning more about Rasch modeling, a session is being offered later today. Briefly, Rasch separation indicates the distinct number of groups that can be classified by a variable- -in this case, the grand challenges and great opportunities in science education. For those not familiar with Rasch modeling, picture in your mind a ruler. From our survey, the 10 important items composing the grand challenges fall into 8 distinct separations on the ruler. Each item on the ruler is statistically significant from the other, and the distance or spread between the items illustrates the magnitude of the perceived importance. A diagram depicting this separation and perceived priority is on the backside of the handout at your table.

Aside from keeping you awake after lunch, the *goal of my speech* today is to share with you some of the exciting things happening in our organization that are targeting some of these challenges and to begin to get us thinking

about the opportunities we have before us as an important professional organization. So, I will discuss a few of these items about which I am most passionate.

To help us begin talking about future opportunities, there is a session immediately following this luncheon where a panel has been assembled to provide feedback to my speech. Now, for those waiting with bated breath who are thinking, "Here is my chance to get back at the NARST President," my hope is that you do not interpret this as a chance to skewer the speaker but rather as an opportunity to begin a dialogue.

Research into Policy

In the minds of those who answered the survey, **policy research** was a high priority. It is widely known that education research has had very little influence on policymaking. Russ Whitehurst, now the director of the Institute of Educational Sciences, has stated, "In no other field are personal experience and ideology so frequently relied on to make policy choices..." Heng (2008) adds, "among policymakers, educational research has a reputation of being amateurish, unscientific, and generally besides the point."

Look around this audience and you will find that the vast majority of individuals conducting research in science education are university professors, not school-based educators. In contrast, the intended audience for much of our research is PreK-12 teachers, school administrators, and educational governing bodies such as teacher licensing agencies.

Russ Holt, a Congressman from New Jersey, recently stated to a group of scientific society presidents, "Here in Washington, facts are negotiable." You might be thinking, "Finally, an honest statement from a politician!" Well, his point was that it is not sufficient to depict our data with graphs and charts but that we need to give a compelling story to get the attention of policymakers. In a recent article, a Texas principal was quoted saying, "highlight it for me...If what I read is the first page of the articles in administrator magazines...it will stick in my mind... If you want it read, then put it in the format that I consume." In short, we need to find better ways to tell our stories to others.

continued on next page ►

Advocacy and special interest groups are quick to disseminate policy information on the Internet, while it takes upwards of a year or more for our research to be published. The NARST community does not have a way to respond quickly (if at all) to issues of importance to us, so we miss opportunities to interact in a meaningful way with policymakers.

It is commonly understood (and accepted) in other disciplines that it takes years to conduct research. For example, in drug development, we understand that compounds have to be developed, tested in animals, simulated in computer models, and tried in clinical studies before a drug ever makes it to market. However, in education, it is commonplace to run a program in one setting, conduct a single study on it, and consider it a success.

One reason for the type of studies we have is the lack of funding allocated to education research. Some argue that our university budgets (as well as promotion and tenure processes) tend to bias our work in favor of inexpensive small-scale studies with less generalizable findings. This environment does not provide the monetary resources or timeframe needed to carry out large-scale efficacy studies over time (Brewer & Goldhaber, 2005). And, in the US, funding for education is relatively low (about 2% of the entire budget). Funding for education research is even lower. Henig (2008) states, “For every \$100 spent on research, less than \$2.25 goes to the social sciences and less than \$0.41 goes to research within the US Department of Education.”

Now, the good news is that NARST is making progress on policy matters. Two of the three goals communicated in our NARST mission statement focus on communicating and influencing policy. Last year, I selected the conference theme “*Impact of Science Education Research on Public Policy*,” and Peter Fensham gave a wonderful speech outlining the things we need to do as an organization to begin to have our research impact public policy.

This year we have a new conference strand on policy; and in its inaugural year, Judy Dori, Sarah Carrier and Sharon Lynch did a great job of soliciting 20 proposals. Under Lynn Bryan and Betsy Davis’s leadership, the External Policy and Relations Committee is in the process of developing guidelines for creating position papers, which are

continued on next page ►

Grand Challenges and Great Opportunities in Science Education

Handout, Charlene M. Czerniak, April 19, 2009

Question: From your perspective, what are the “grand challenges and great opportunities” that we face in science education?

From the somewhat diverse qualitative responses, 10 prominent overarching themes were found in the data:

- **Exposure to Science in Earlier Years** (e.g., providing high quality experiences in science for early childhood and elementary grades)
- **Teaching Science for Social Justice** (e.g., paying attention to issues of poverty, ethnic and racial diversity, gender equity)
- **Methodological Design Issues** (e.g., sample size, duration of study, methodological approach—qualitative, quantitative, mixed methods)
- **Creating and Using Reliable Assessments** (e.g., creating instruments to accurately measure science learning or scientific attitudes; utilizing diverse and valid assessments in PK-16 classrooms to assess students in multiple ways using multiple constructs)
- **Curricular Issues** (e.g., interdisciplinary curriculum, real life science curriculum, inquiry based materials, curriculum that creates scientific literacy, technology integration)
- **Research into Practice** (e.g., research-based instructional methods and strategies utilized in pre K – 12 classrooms)
- **Research into Policy** (e.g., conduct research in policy; narrowing the disconnect between policy makers and research to inform decisions on teacher licensure requirements, assessment regulations, and funding policy for science education)
- **Improving Pre-Service Teacher Preparation** (e.g., providing teacher education candidates with content knowledge and pedagogical skills, including technology skills)
- **Enhancing In-Service Teacher Education** (e.g., professional development for practicing teachers that focuses on content knowledge and pedagogical skills, including technology skills)
- **Valuing Science Education** (e.g., garnering community and parental support for science; generating students’ interest in science to increase number of students who pursue science careers; promote science education globally on issues such as environmental awareness)

intended to convey relevant research to policymakers and the community at-large. Although not directly intended to be a policy related activity, Carla Zembal-Saul and Randy Yerrick have been busy developing methods that would facilitate better communication among NARST members through our website. These new technologies may provide us a way to disseminate information more quickly and more effectively via a web presence.

Research into Practice

The next topic that I would like to address is research into practice. Many of our organization's activities focus on this challenge. For example, two of our committees are co-sponsoring a session entitled *Engaging with Teachers around Science Education Research*. This year, NARST initiated a new membership fee designed to encourage Pre-K teachers to attend our conference.

Efforts are underway to connect NARST with the National Science Teachers Association (NSTA). NARST has had a booth at the NSTA convention the last few years where information, such as selected JRST articles,

Two top priorities among our members were **enhancing inservice teacher education** and **improving preservice teacher preparation**.

have been distributed. For the first time this year, NSTA is here at our NARST conference. NARST members who have published in NSTA books, chapters in books, and journals will staff the booth. An upcoming focus will be on science for elementary grades, a topic you also identified as important. As our NSTA representative, Julie Luft quickly began to work on making connections between research and practice. NARST has been invited by NSTA to contribute to the identification and dissemination of research publications; the design and delivery of Webinars on research topics; and the development of conference sessions focused on research. For example, Julie developed a "research reading list" for science teachers, which will be in the summer issues of *The Science Teacher and Science Scope*.

A new "Research and Practice" feature on our NARST web site will also create a space to share these initiatives using new media, such as podcasts. You will be hearing more from Rick Duschl - who is only minutes away from becoming your next NARST president (can you see the giant smile on my face when I said that?) - about the theme of next year's conference in Philadelphia that will focus on research into practice.

Despite these many NARST activities, we have work to do. Pellegrino and Goldman (2002) argue that one of the most legitimate criticisms of educational research is the failure to connect with problems of practice. Although inquiry-based curricula have been the hallmark of the AAAS and NRC guidelines (and the curriculum improvement projects decades earlier), the big elephant in the room is the fact that inquiry approaches are still not widespread in many schools. One might question whether we actually know *how* to move research into practice. And, are we using the best leverage points to make these connections?

Methodological Design Issues

At the bottom of the list of important challenges and opportunities are methodological design issues. Judging from the titles, fewer than five sessions focus on this topic at this year's conference. A few conference sessions, such as the ones proposed by Andrew Shouse and Sharon Lynch entitled "Scale-up research in science education: A grand challenge for science education or grand delusion?" focus on issues of methodology and scale. And, I invited two University of Toledo colleagues to present this afternoon's session on Rasch modeling.

With increased public attention on the need for scientifically based research, policymakers and practitioners are asking questions like, "If we adopt the kit-based inquiry program instead of the textbook, which would lead to greater student achievement?" To answer this question with any degree of confidence, we would need to use experimental methods with random control groups and replication. However, randomized experiments or carefully matched samples in education that involve entire classrooms can be expensive, difficult, and sometimes impossible to achieve.

continued on next page ►

Two top priorities among our members were **enhancing inservice teacher education** and **improving preservice teacher preparation**. However, we have little agreement about the characteristics of effective professional development, especially with solid data that links it to student achievement.

There is little consensus about best practices for science teacher preparation. We could probably have a lively debate at any one of our universities just asking a few simple questions like, “What is the right balance of content and pedagogy? What is the impact of coursework taken in arts and sciences on teachers’ learning or practice?”

Robert Slavin (2002) notes that **curriculum** is rarely put to the test of rigorous evaluation, and we seldom come to a consensus about what works best. We have the seminal piece by Shymansky, Kyle and Alport, which looked at the impact of 1960s curriculum improvement projects on student learning.

However, a quick review of the last 14 issues (about 50 articles) of JRST reveal only 4 articles focused on curriculum research. None of these were longitudinal or replicated studies. None synthesized research regarding the best curriculum.

As another example, a synthesis of research on **issues of social justice** revealed that while most diversity studies showed short-term benefits on attitudes, beliefs and classroom practices, follow up studies are thin. Little research focuses on impact of the teachers’ diversity training on actual classroom practice over time (Cochran-Smith & Zeichner, 2005).

Yesterday, Linda Darling Hammond spoke extensively about the need for rich assessments to guide and measure student learning, and indeed, **creating and using reliable assessments** is one of the top priorities you identified.

Improving our research methodologies won’t be easy. David Berliner (2002) argues that educational research is the hardest science of all — that we do our science under conditions that physical scientists find intolerable.

NARST Membership Identified Top 10 Grand Challenges for Science Education

1. Enhancing In-Service Teacher Education
2. Valuing Science Education
3. Exposure to Science in Earlier Years
4. Research into Policy
5. Research into Practice
6. Curricular Issues
7. Creating and Using Reliable Assessments
8. Teaching Science for Social Justice
9. Improving Pre-Service Teacher Preparation
10. Methodological Design Issues

He states,

Context is of such importance in educational research because of the interactions that abound. The study of classroom teaching, for example, is always about understanding the 10th or 15th order interactions that occur in classrooms. Any teaching behavior interacts with a number of student characteristics, including IQ, socioeconomic status, motivation to learn, and a host of other factors. Simultaneously, student behavior is interacting with teacher characteristics, such as the teacher’s training in the subject taught conceptions of learning, beliefs about assessment, and even the teacher’s personal happiness with life. But it doesn’t end there because other variables interact with those just mentioned — the curriculum materials, the socioeconomic status of the community, peer effects in the school, youth employment in the area, and so forth. Moreover, we are not even sure in which directions the influences work, and many surely are reciprocal. Because of the myriad interactions, doing educational science seems very difficult, while science in other fields seems easier.

Now, you might be asking yourself, “If education research is the hardest science of all, why isn’t my institution paying me a better salary?” The implication for NARST, I think, is that we need to address more effectively some of our methodological design issues that limit our ability to reach *consensus*.

continued on next page ►

Now to the conclusion. The purpose of this speech was to get us thinking and talking about our grand challenges and great opportunities. As you have heard, NARST is a vibrant organization addressing many of these priorities. One could say that our glass is half full. But, we have a lot of work to do before 2061, so the glass is also half empty.

We are a heterogeneous group engaging in research from different backgrounds (elementary, secondary, college level...life science, earth science, and physical science), different epistemological viewpoints, using different methods (quantitative, qualitative, or mixed methods), and even holding different ambitions. Thus, it is not surprising that it has been difficult to cultivate a consensus in science education that could be used by practitioners and policymakers.

... our NARST culture is based on our shared goals, values, and traditions.

It is probably unreasonable to think that NARST will ever be of one mindset – especially given the global nature of our organization. But, I would argue that our NARST culture is based on our shared goals, values, and traditions.

So, as we deliberate about our organization's ability to meet our greatest challenges and opportunities, I end by asking, "What unites us in NARST rather than what divides us?" I urge us to start developing consensus on matters of importance to science education.



Dana Zeidler in Washington, DC

A Message from Dana L. Zeidler President-elect

I recently returned from Washington, DC where I had the privilege of representing NARST at the Council of Scientific Society Presidents (CSSP) meeting. CSSP is made up of about sixty scientific associations representing over 1.4 million scientists and science educators. It provides a forum

for the exchange of emerging trends, needs and policy in STEM related areas.

Rick Duschl and Penny Gilmer initiated NARST's participation in the meeting last year, and this year I was joined by Penny to further our involvement in this association. We heard from a wide range of speakers on such diverse topics as:

- *Adjustable Climate Models for Policy Thinking* (John Sterman, Forrester Professor of Mgmt. & Engineering Systems Director, System Dynamics Group, MIT)
- *Tracking Differentiation Cell by Cell* (Martin Chalfie, Nobel Laureate, Chair of Biological Sciences, Columbia University)
- *New Vehicles & the Oil Endgame* (Amory Lovins, Co-Founder, Chairman & Chief Scientist, Rocky Mountain Institute)
- *Memory Molecule Kinase M-Zeta* (Todd Sacktor, Professor of Physiology, Pharmacology & Neurology, SUNY Downstate Medical Center)
- *Hot, Flat and Crowded* (Thomas L. Friedman, Pulitzer Prize Winning Journalist, Author & Columnist New York Times)

Perhaps more importantly, I had the chance to meet with Senior Staff at Congressman Daniel Lipinski's office. Congressman Lipinski is the Vice Chair for the Committee of Science & Technology and chairs the subcommittee on Research & Science Education. I wanted to make NARST's presence known to his office and the fact that our collective membership may be able to offer expertise to help inform policy decisions at the federal level.

NARST has been making inroads with other associations as well to better inform, and be informed, on critical matters concerning policy and science education. We are still finding our footing with respect to CSSP, but both Rick and I agree that for the present, this is a worthwhile path to follow.

Awards Committee

Phil Scott, Chair

NARST 2009 Awards

Distinguished Contribution through Research Award — Three awards were made for Distinguished Contributions through Research at the NARST 2009 Annual Conference, at Garden Grove California.



Peter Hewson, Distinguished Contribution through Research Award, with Mariana Hewson

Peter Hewson
Department of Curriculum
and Instruction, University
of Wisconsin-Madison

Dr. Peter Hewson's scholarly contributions to science education have been consistent and of exceptional quality. He has provided outstanding leadership and continues to substantially influence new, as well as established researchers, through his scholarly activities. His early notable contributions to science edu-

cation research were in conceptual change theory, both from the standpoint of the learning and the teaching of science, and its implications for teacher education and professional development. His papers, published alone and with others, provided the theoretical basis for a vibrant area of research that dominated science education for two decades. Throughout his career, he has mentored prospective teachers and future scholars. With the advent of democracy in South Africa in 1994 he has played a major role in opening a dialogue between researchers in the U.S. and Southern Africa with particular emphasis on the development of new researchers in South Africa. A series of collaborative projects, spearheaded by Dr. Hewson, has contributed to the development of a pool of young researchers in mathematics and science education and has enhanced the quality of research conducted in Southern Africa and elsewhere in other less-economically-developed countries. His research and theoretical contributions on conceptual change and systemic reform as well as his selfless promotion of the careers of others make Dr. Peter Hewson a most deserving recipient of NARST's 2009 Distinguished Contribution through Research Award.



Léonie Rennie, Distinguished Contribution through Research Award, with Bill Kyle, Dana Zeidler and Ken Tobin

Léonie Jean Rennie
Office of Research and Development
Curtin University of Technology, Australia

Through her research and mentoring, Dr. Léonie Rennie has touched the lives of many in the science education research community for more than twenty-five years, and all have been enriched by that experience. She is a world-renowned science educator and an inspiration to the research community.

Léonie has made major contributions in four distinct areas of science education research: science and technology in the school curriculum; gender studies; science education in informal settings, and the integration of the curriculum across the sciences and across all school subjects. Léonie's leadership, vision, and pioneering spirit contributed to these emerging areas in science education through original research, leadership within professional organizations, and by supporting the scholarship of graduate students both in Australia and around the world. In each area, Léonie has provided high quality

continued on next page ►

insight to the research community through her strong interest in research design and analysis and by reporting research clearly and widely.

Léonie's strong intellect and commitment to excellence have ensured that her research and collaborations have been academically sound, thoroughly supported and described, and useful to the community. The inclusive and supportive leadership that Léonie stands for improves science education in the school classroom, in higher education and in the research community. Léonie Rennie is a most deserving recipient of NARST's 2009 Distinguished Contribution through Research Award.



Wolff-Michael Roth, Distinguished Contribution through Research Award, with Ken Tobin, David Treagust, Bill Kyle and Dana Zeidler

Wolff-Michael Roth
Applied Cognitive Science
University of Victoria, Canada

Wolff-Michael Roth is a prodigious researcher whose major contributions span the psychological, philosophical, and sociological foundations and cognitive parameters associated with teaching and learning in general and science teaching and learning in particular. Through his interdisciplinary research, Michael has challenged the status quo causing many science educators to re-think approaches to the applications of research, the generalizations that can be drawn from them, and the theories that they support. Many of the fundamental questions that his work has raised will continue significantly to impact the field of science education research for many years to come. His research includes an impressive spectrum of key science education concerns including learning process studies, investigations of the role of gestures in teaching, learning and understanding, and new emphases in scientific literacy.

Michael's leadership through the mentoring of junior colleagues is exemplary. He has developed a program that involves young scholars from many countries, who receive the kind of scaffolding they need to become strong researchers themselves. He has greatly served science education research in various ways: by a large number of ongoing studies, by the impact of seminal and widely cited publications, and by editorships, mentoring and international collaborations. Michael is a most deserving recipient of NARST's 2009 Distinguished Contribution through Research Award.



Clockwise from Top:

*Troy Sadler
Early Career Research Award*

*Jrene Rahm
Outstanding Paper Award
 with Ann Cavallo, Bill Kyle
 and Dana Zeidler*

*Bryan Brown and Kihyun Ryoo
JRST Award
 with Dana Zeidler*

*Lei Liu
NARST Outstanding Dissertation Award
 with Deborah Tippins and Bill Kyle*

Equity & Ethics Committee

Valarie L. Akerson and Julie Bianchini
Co-Chairs

The Equity and Ethics Committee is pleased to report many great events from a very busy NARST 2009. We held a Preconference Scholars Workshop, a Scholars Session, and a Symposium. We also held our annual Equity Dinner — organized by Heidi Carlone, Angie Calabrese Barton, and Tara O’Neill (thanks so much!) — that was attended by about 70 people! A local Thai restaurant opened that evening just for our group. In the sections below, we describe these events in greater detail. First, however, we must thank our hard-working outgoing E & E Committee members, Heidi Carlone, Gayle Buck and Bryan Brown, and welcome our incoming co-Chair, Julie Bianchini.

Our current committee consists of Felicia Moore Mensah, Lisa Martin-Hansen, Jrene Rahm, Michiel van Eijck, Sumi Hagiwaras, Kathy Fadigan, Dorothy Ash, Jim Ellis, and Sara Barrett, with Valarie Akerson (vakerson@indiana.edu) and Julie Bianchini (jbianchi@education.ucsb.edu) as co-chairs. Please feel free to contact our committee to provide input or suggestions, and to get involved in our work.

Scholars Program and Scholars Session:

The E & E Preconference Workshop “Grand Challenges and Great Opportunities in Science Education for Scholars of Color” was organized and facilitated by E & E Committee members Maria S. Rivera Maulucci and Felicia Moore Mensah; it follows the E & E Committee’s charge to promote and support research from underrepresented groups at NARST. The E & E Preconference honored the newly selected E & E Scholars who submitted an application through a competitive review process. The 15 new scholars selected were Mamta Sing, Hyunju Lee, Nievita Bueno Watts, Rashmi Kumar, Younkyeong Nam, Dominike Merle, Femi Otulaja, Sibel Uysal, Xenia Meyer, Sara Salloum,



Brian Williams and Dominik Merle, Equity & Ethics Pre-conference Workshop

Joi Merritt, Christopher Emdin, Wesley Pitts, Nicole Grimes, and Frances Matecik. Congratulations to these amazing scholars.

The session began with a tribute to Jhumki Basu, presented by Angie Calabrese Barton, Maria Rivera Maulucci, Bhaskar Upadhyay, Edna Tan, and Tara O’Neill. In this panel, science educators reflected personally and professionally on the life and work of Jhumki. Her parents were also present during this session. We passed out a recent publication in Cultural Studies in Science Education, written by Angela Calabrese Barton, that spoke of Jhumki’s work. We also announced that the Equity and Ethics Scholarship was renamed the Jhumki Basu E & E Scholars Program.

Maria Rivera Maulucci and Felicia Moore Mensah did a wonderful job of bringing together experts from different areas to work with attendees (about 30 in all) on ways scholars of color can navigate challenges and capitalize on opportunities in science education. The second panel, “Grand Challenges and Great Opportunities in Science Education for Scholars of Color,” was facilitated by Eileen Parsons, Jerome Shaw, Malcolm Butler, Karen Philips, and Wesley Pitts. In this panel, science educators spoke first on their personal experiences as scholars of color. After this, participants were divided into small groups according to career levels, which were facilitated by one of the panelists.

continued on next page ►



Valarie Akerson, Angela Calabrese Barton and Maria Rivera Maulucci, Equity & Ethics Pre-conference Workshop

The participants were given a worksheet to complete while at NARST to think about their research agenda. The Keynote address by Eileen Parsons followed a brief reporting from the break-out sessions. The program ended with remarks from Maria and Felicia. Felicia Moore Mensah and Jim Ellis will facilitate the 2010 E & E Preconference Workshop.

The Scholars Session “Exploring the Grand Challenges and Great Opportunities in Realizing a More Equitable Science Education” was organized and facilitated by Gayle Buck, an E & E Committee member. This session featured research from six recipients of the 2008 Scholars Award: Jennifer Adams, Geary Cofford, Cesar Delgado, Allison Kang, Kihyun Ryoo and Stephanie Preston. The E & E Committee, under the leadership of

Teresa Jiminez and Tara O’Neill, will sponsor a similar symposium, highlighting work of this year’s Scholars Awardees, at NARST 2010.

Special Symposium – Opportunities and Challenges of Equitable Science: A Call for Action at Many Levels:

This E & E sponsored symposium was organized by E & E Committee member Jrene Rahm. It included discussions by Doris Ash, Mary Atwater, and Cory Buxton on ways to acknowledge and promote equitable science in formal and informal settings, curricula and technology, and policy making. Angie Calabrese Barton served as the discussant, highlighting crossing-cutting themes from the papers in her remarks.

External Policy and Relations Committee

Betsy Davis, Chair

The External Policy and Relations Committee (EPRC) has been working this year on efforts related to fostering the development of partnerships and collaborations with appropriate professional organizations and groups concerned with the quality of science teaching and learning.

Policy for Affiliation with NARST

The External Policy and Relations Committee is refining a draft of a policy for organizations that wish to have affiliation with NARST, having reviewed existing policies from other related organizations with similar missions. Our goal is to develop a policy that is flexible enough to allow different flavors of affiliations. Some may focus mainly on impacting policy, for example, while others might focus more on sharing research.

NARST at NSTA 2010

Next year, NARST will once again host a booth at the 2010 NSTA annual meeting. We use the booth as a means to raise our visibility among K-12 classroom teachers. We will have NARST membership applications available at the NSTA booth, as well as copies of a few papers from JRST. For the past two years, there have been numerous inquiries from teachers about how they can get a subscription to JRST. If you will be at the 2010 NSTA meeting, please consider volunteering a couple of hours to promote the mission of NARST and connect with classroom science teachers — it's never too early to volunteer! If you're interested, contact Betsy Davis (EPRC chair) at betsyd@umich.edu, and she will contact you again closer to the annual meeting.

NARST External Policy and Relations Committee

Chair: Betsy Davis

Members:

Eileen Parsons
Carla C. Johnson
Andrew Shouse
Mike Vitale
Sharon Lynch
Kevin Holtz
Mike Barnett
Nam Hwa Kang
Kathy Malone

NARST 2010 EPRC-Sponsored Sessions

The External Policy and Relations Committee will be sponsoring one or more sessions for the 2010 NARST annual meeting. Watch this space for details!

We would like to thank all of the External Policy and Relations Committee members for their on-going hard work and dedication to the charge of the committee and mission of NARST.

Do you have any suggestions, comments, or questions about any of the above activities? Are you interested in becoming involved in the External Policy and Relations Committee? If so, please email the EPRC chair,

Betsy Davis at betsyd@umich.edu



International Committee

Mei-Hung Chiu, International Coordinator

The NARST International Committee is pleased to share the report of the Development of Research Capacity in Malawi through Partnerships in Science Education—the first of the 2008 Linking Science Educators Program (LSEP) that was conducted in Malawi between 29 September and 6 October in 2008. For members who are interested in knowing more about the program and for potential applicants, please read the entire report at <http://www.narst.org/lsep/2008-09LSEPReport.pdf>. The second LSEP has been awarded to Dr. Uchenna Udeani at the University of Lagos, Nigeria. We are thrilled to announce after two years of piloting the LSEP that the NARST Board of Directors has approved the LSEP as an official and sustainable project to provide continuous support for improving science education in different countries. As the chair of the Committee, I would like to take this opportunity to express my sincere thanks to the NARST Board of Directors and to the members of the International Committee who have helped to set up the program and to review the proposals for the LSEP. The members of International Committee are: Eduardo Mortimer (Brazil), Soonhye Park (Korea), Sibel Erduran (UK), Barbara G. Ladewski (USA), Uri Zoller (Israel), Irene Osisioma (USA), Max Dass (USA), Knut Neumann (Germany), and Feral Ogan Bekiroglu (Turkey). We also welcome Marie-Claire Shanahan (Canada) to our committee to serve the NARST members.

This year the International Committee offered scholarships to 15 awardees from Austria, Canada, Denmark, England, Israel, Singapore, South Africa, South Korea, Taiwan, Turkey, and United Kingdom. We hope these young scholars will continue to contribute their efforts and inspiring thoughts to the NARST community.

At the NARST conference 2009, the International Committee organized one session entitled, From teaching to “know” to learning to “think” in science education. Five presenters contributed their experiences and expertise to this session: Reinders Duit from

Germany, Helge Strömdahl from Sweden, Uri Zoller from Israel, and William (Bill) C. Kyle from USA, and Mei-Hung Chiu with her colleagues from Taiwan. Jonathan Osborne, the former President of NARST, was the discussant for the session. Duit discussed how influential international monitoring studies like TIMSS and PISA played an important leading role in the national standards reform as the nationwide network of initiatives. Strömdahl commented that the seven basic physical quantities in the International System of Quantities and their SI-units in the textbooks of physics and chemistry should be explicitly taught to learners to develop their own thinking about quantity calculus and mathematical modeling. Zoller concluded their longitudinal research program with two findings. First, enhancing students’ evaluative thinking and transfer capabilities in science education is attainable. Second, the generic HOCS development is contextually-bound but not content-bound by discipline. Kyle discussed how to collaborate with rural South African communities on transformative action research. In his talk, he focused on the relationships of transformative action research to social transformation, democracy and human rights, research ethics and consequences, and epistemology, and how these aspects would influence each other. Chiu reported on a university-high school collaborative study that aimed at building a systematic framework to evaluate the effectiveness of developing and implementing the new curriculum for achieving excellence in learning and teaching in Taiwan. These presentations proposed different approaches to match the main theme of the session.



Reinders Duit, Helge Strömdahl, Mei-Hung Chiu, Jonathan Osborne, William (Bill) C. Kyle, and Uri Zoller

continued on next page ►



ASERA at NARST

We also had a special session organized by the President of ASERA, David Treagust, at the NARST conference. The title of the session was Approaches to teaching and learning science that foster interest and understanding: Examples from Australia and New Zealand. Christine Howitt and Elaine Blake reported on a collaborative science project involving scientists, engineers, teacher educators, and pre-service teachers working together to develop resources for pre-service early childhood science teacher education. Gillian Kidman and Garry Hoban worked with pre-service teachers and secondary school students on exploring chromosome mapping and DNA replication using Claymation/Slowmation. Philemon Chigeza shared a research program on developing Creole Science that might empower Indigenous students to develop the capacity to successfully negotiate the language systems. Kimberley Wilson, David Lake, and Sue McGinty addressed a need to build a framework for guiding scientific teaching practice in the context of working with students with complex needs and diverse backgrounds. Kathy Brazier and Leonie Rennie presented a model of ethical inquiry for teaching and learning about controversial science issues in secondary science classrooms. Finally, Deborah Corrigan, Richard Gunstone, Ian Mitchell and Gregory Lancaster presented an evaluative study that investigated a web-based support structure for science teachers used by school science departments and individual teachers, and consequences of its use to foster student learning. Although this session was the last session on the last day, we still had strong attendance and audience participation.

Membership and Elections Committee

*Reinders Duit and Renee Schwartz
Co-Chairs*

2009 NARST International Conference

The M&E Committee organized the three “classical” sessions to introduce young colleagues into the NARST science education research community: (1) Mentor-Mentee-Nexus (Laura Henriques, April Adams, & Brian Fortney); (2) Graduate Student Forum (Mary Atwater, Kathryn Drago, Cathryn Koehler, Eileen Parsons); (3) New Researcher and Junior Faculty Early Career Discussion (Laura Henriques). The sessions were well received. The M&E Committee, therefore, feels encouraged to organize the same set of sessions at the 2010 International Conference in Philadelphia. However, the two discussion sessions will be made more attractive, e.g. by providing additional time for discussion among the young researchers after the official end of the sessions. Colleagues are kindly asked to consider being a Mentor in the above Mentor-Mentee-Nexus. Please contact the colleagues in charge of this session: April Adams (adams001@nsuok.edu) or Julie Grady (grady@vt.edu).

Procedure for Nominating and Rating Candidates for Board Members and President-Elect

During the past two years a new procedure for nominating and rating candidates was developed. It was approved by the NARST Board and will be published within the revised NARST Policies and Procedures Manual soon. The major improvements are:

- (1) Right after the NARST Conference members are informed that they may nominate candidates for the NARST offices by the “petition” option the NARST Bylaws allows. They have to find 10 colleagues supporting their nomination to the Executive Director.
- (2) It is taken into account that the diversity of NARST members is represented by the board.

continued on next page ►



Mentor/Mentee Nexus: NARST 2009 – Hedy Moscovici, Penny J. Gilmer, Donna King, Gillian Kidman, and Phyllis Baudoin Griffard

(3) Rating of the candidates is based on three major criteria:

- (a) The candidates' research record
- (b) Their contribution to NARST so far
- (c) The expected contribution as a Board Member or President

For the International Coordinator (Chair of the International Committee) who is a full member of the board the familiarity with the international state and future development are also essential.

(4) Candidates are asked to provide information with regard to the above criteria. Additional information on the candidates available is briefly summarized by the co-chairs. Therefore, it has become much easier for the members of the M&E Committee to achieve familiarity with the candidates' qualification for the offices.

In a nutshell, the new procedure allows a more transparent and informed rating than the previous procedure.

Additional activities

It is not only the duty of the M&E Committee to facilitate fair and informed election of members for the Board and President-elect but also to serve the interests of NARST members in general, in other words to make NARST membership as attractive and fruitful as possible. The M&E Committee decided in Garden Grove to develop – in close cooperation with the NARST Publications Advisory Committee – a web-based forum for discussion of science education research issues among the members. We will be exploring options for on-line venues and procedures that will enable community discussions amongst the NARST membership. We anticipate forums for graduate student members, early career members, research interest groups, and the membership at large.

Publications Advisory Committee

*Carla Zembal-Saul and Jan van Driel
Co-Chairs*

The Publications Advisory Committee (PAC) would like to thank outgoing members, Hedy Moscovici and Kate McNeill, for their hard work and commitment to serving NARST through their tenure on the committee. We welcome newly elected NARST Board member and co-chair, Jan van Driel, and newly appointed committee members, Heidi Carlone, Martina Nieswandt, and Debra Tomanek.

The PAC was pleased to welcome the new editors of the *Journal of Research in Science Teaching*, Angela Calabrese-Barton (MSU) and Joseph Krajcik (UM), at our conference committee meeting. We discussed their vision for the journal, as well as the transition process with current editors.

The PAC has been entertaining the idea of reviving Research Matters to the Science Teacher. Currently there are more than 30 brief publications that summarize science education research and propose implications for classroom science teaching available on the NARST

continued on next page ►

website under publications archive. Most of these documents were authored by members of NARST in the 1990's. While the PAC will continue to work toward agreement on issues of process, venue, etc., we did resolve to facilitate the development of two "next generation" Research Matters prior to the 2010 meeting of NARST.

Julie Luft, NSTA Research Director, has been charged with strengthening the connection among research and practice for that organization. One of these efforts involved working with NARST committees for research, publications, and external policy to identify 2008 research articles from JRST to promote and make accessible to teachers through a Summer Research Reading initiative. Five JRST articles were recommended to NSTA, and the following three were selected. The abstracts will be published in summer issues of *The Science Teacher* and *Science Scope*, and PDFs of the articles will be freely accessible to teachers online for download.

Abd-El-Khalick, F., Waters, M. & Le, A. (2008). Representations of nature of science in high school chemistry textbooks over the past four decades. *Journal of Research in Science Teaching*, 45(7), 835-855.

McNeill, K. L. & Krajcik, J. S. (2008). Scientific explanations: Characterizing and evaluating the effects of teachers' instructional practices on student learning. *Journal of Research in Science Teaching*, 45(1), 53-78.

Zeidler, D. L., Sadler, T. D., Applebaum, S., & Callahan, B. E. (2009). Advancing reflective judgment through socioscientific issues. *Journal of Research in Science Teaching*, 46(1), 74-10.

The PAC co-sponsored a session at NARST 2009 with the research and external policy committees titled, *Engaging with Teachers around Science Education Research*. Five teachers were supported (comp meeting registration and \$500 stipend each) to co-present their work with NARST researchers and science teacher educators. Presenters included Barbara Crawford (Cornell University) & Debra Ortenzi (Teacher, Rochester School District), Julie Luft (NSTA Research Director), April Luehmann (University of Rochester) & Michael Occhino (Teacher), Scott McDonald (Penn State) & Erik Steiner (Teacher, Allentown School District), Felicia Moore (Teachers College)



Research AND Practice Sponsored Session



Joseph Krajcik and Angela Calabrese Barton, JRST Incoming Editors, starting January 1, 2010

& Kassandra Brown (Teacher), Tamara Holmlund Nelson (Washington State University – Vancouver) & Charlotte Waters (Teacher), and Celestine Pea (NSF) & Melvina Jones (Teacher, District of Columbia Public Schools).

Finally, the PAC continues its commitment to increasing the functionality of the NARST web site. We recently contracted with Memberclicks to provide web enhancement services, and the following components of the web site have been targeted for initial implementation: News & Announcements (Announcements, E-NARST News, Calendar), Research AND Practice, and Committee Workspace. More information on these important developments is forthcoming.

As always, we welcome your feedback. Please contact Carla (czem@psu.edu) or Jan (Driel@iclou.leidenuniv.nl) with your questions, suggestions, and/or interest in working with the committee.

Research Committee

Troy Sadler, Chair

The NARST Research Committee remains active in supporting the research mission of the association. The Committee's work has involved collaborations with the National Science Teacher Association (NSTA) as well as supporting professional development in the area of research for the NARST community.

Collaboration with NSTA

As an organization, NARST is committed to partnering with NSTA to enhance the extent to which research informs practice in science education as well as the extent to which practice shapes research. To help promote these goals, the Research Committee has coordinated NARST-sponsored sessions at upcoming NSTA regional and national meetings. Committee members have also represented NARST at NSTA's Alliance of Affiliates meetings, the NSTA National Congress on Science Education and NSTA's Committee on Science Education Research. We look forward to continued collaborations with NSTA for the improvement of science teaching, learning and research.

Professional Development

The Research Committee is charged with supporting professional development for the NARST membership. As a part of this charge, the Committee coordinated two pre-conference workshops at the 2009 annual meeting in Garden Grove. Dr. Uri Zoller presented a workshop on shifting educational frames from "teaching to know" to "learning to think." Dr. Donna Sterling and her colleagues presented a workshop addressing retention of beginning science teachers. In preparation for the 2010 meeting, the Research Committee will be soliciting pre-conference workshop proposals later this summer. We encourage you to consider submitting a proposal.

At the 2009 annual meeting, the Committee sponsored a session related to scale-up research in science education. We also partnered with the Publications Advisory Committee and corporate sponsor Apple Inc. to host the *Science Teaching, Learning, and Research Technology*



Scott McDonald's Session on Video Analysis at the Science Teaching, Learning, and Research Technology Forum

Forum. This day-long event within the conference provided a new venue for presenting technology-supported innovations in science education. We thank all of our partners, the presenters and the participants who made these sessions successful.

NARST Summer Research Institute

NARST is initiating a new professional development opportunity for graduate students within our community. An organizing team led by Sandra Abell, Pat Friedrichsen and Carla Zembal-Saul proposed that NARST sponsor a week-long research institute designed to support advanced-level graduate students working on dissertation research. The NARST Board enthusiastically supported the proposal. The inaugural NARST Summer Research Institute is being held June 21-26 at the University of Missouri in Columbus, MO. Twenty-five students from 19 institutions are participating in the Institute. They will work with nine science education faculty mentors. Small groups of students and mentors will work as teams throughout the institute to support development of the students' projects. Students and faculty will also participate in research colloquia and workshops. We thank Dr. Abell and her team for all the work they have done in organizing this experience. The Research Committee will work with the Institute leadership team to examine the implementation of this, the first NARST Summer Research Institute with an eye toward making recommendations for future Institutes. We expect this to be the first of many successful Summer Institutes.

From the Editors of the Journal of Research in Science Teaching (JRST)

J. Randy McGinnis and Angelo Collins

1. We are pleased to announce the appointment of the following new Editorial Board Members to the JRST Editorial Board.

JRST EDITORIAL BOARD MEMBERS

term, spring 2009 to spring 2012

Dr. Teresa Arámbula-Greenfield

California State University at Monterey Bay, USA

Dr. Doris B. Ash

University of California, Santa Cruz, USA

Dr. Leonard A. Annetta

North Carolina State, University, USA

Dr. Chun-Yen Chang

National Taiwan Normal University, Taiwan

Dr. Christine Chin

Nanyang Technological University, Singapore

Dr. Erin Marie Furtak

University of Colorado, Boulder, USA

Dr. Maria-Pilar Jimenez-Aleixandre

University of Santiago de Compostela, Spain

Dr. Catherine Milne

New York University, USA

Dr. Meshach Ogunniyi

University of Western Cape, South Africa

Dr. Alandeom W. Oliveira

University at Albany, State University of New York, USA

Dr. Victor Sampson

Florida State University, USA

Dr. Michiel W. van Eijck

Eindhoven University of Technology, The Netherlands

Dr. Nathan Wood

North Dakota State University, USA

JRST ASSOCIATE EDITOR

term, spring 2009-December 31, 2009

Ravit Golan Duncan

Rutgers University



These new Editorial Board members represent a wide range of diversity present in the NARST community (including: international institutional affiliation, national (USA) institutional affiliation, science content expertise, methodological expertise, gender, race/ethnicity, and rank). While not all who

applied for consideration of editorial board appointment could be appointed this year due to an issue with qualifications (prior experience reviewing for and publication in the journal (or comparable journals) were stated prerequisites) and/or limitation in the number of spaces available for new Editorial Board members, we would like to thank all who responded to the open call.

2. We have continued to work with our JRST guest editors (Dr. Cindy Hmelo-Silver and Dr. Ravit Golan Duncan, and Dr. Rodger Bybee, Dr. Peter Fensham, and Dr. Robert Laurie, respectively) of the upcoming two JRST Special Issues (“Learning Progressions,” the call was in v. 44 (10), and it is scheduled for publication in volume 46 (6) and “Scientific Literacy and Contexts in PISA Science,” the call was in 45 (6), and it is scheduled for publication in 46 (8). We expect these two special issues will be groundbreaking for our field.

3. We are actively working with the incoming JRST editors (Dr. Angela Calabrese Barton, Michigan State University, and Dr. Joseph Krajcik, University of Michigan) and with the publisher regarding the editorship transition at the end of this year (note: all manuscript submissions after December 31, 2009 will be reviewed by the new JRST editorial team, except for those manuscripts accepted with revisions by the present editorial team).

4. Finally, we would like to acknowledge how much our JRST Editorial Board members continue to contribute much to the journal. They, along with our reviewers worldwide, and the JRST office personnel (Amy Dai, Wayne Breslyn, and Elaine Henry) deserve the association’s deep appreciation for the scholarly service they contribute to the association’s research journal outlet.

Call for 2010 Award Nominations

NARST Distinguished Contribution Through Research Award Nominees

The National Association for Research in Science Teaching seeks to improve science education through research. To this end, the Association desires to recognize and reward individuals who have made significant contributions to science education through research. Contributions may be of several types, including but not limited to empirical, philosophical or historical research, evaluative studies, policy-related research, and studies reflecting new techniques to be applied in research. Recipients of the Award should have contributed over a period of at least 20 years since the award of his or her doctorate and should be at the pinnacle of his/her career. This award is the highest recognition NARST can bestow for contributions to science education through exemplary, high quality research. Nominations are due not later than **August 30, 2009** to ktobin@gc.cuny.edu.

All members are encouraged to consider nominating a colleague for this award. Self-nominations are not permitted. Please note that the award will be made to an individual, or individuals, who over a period of at least 20 years have:

- a) made a continuing contribution to science education through research;
- b) provided notable leadership in science education through research; and
- c) had substantial impact on science education through research.

All that is necessary to start the nomination process is for a NARST member to send a name or names with no more than a one-page letter supporting the nomination of the person.

Please send the names of nominees to Kenneth Tobin (co-chair with Nancy Romance) at ktobin@gc.cuny.edu.

NARST Early Career Research Award: Submission Invitation

The NARST Early Career Research Award acknowledges contributions to science education through research by individuals during the five years immediately following receipt of the doctoral degree. To qualify for the award this year, the nominee must have received the doctoral degree on or after **January 1, 2004**. All NARST members are encouraged to consider nominating an eligible and deserving early career member.

Nominations for the award must be accompanied by the following supporting material:

- a) A letter of nomination which discusses the nominee's impact on the field;
- b) The nominee's vita;
- c) A two-page summary of the nominee's research interests, prepared by the nominee;
- d) Three of the nominee's best papers; and
- e) Two additional letters of support to be sent separately.

Nomination materials should be received by the Committee Chair, Randy Bell (randybell@virginia.edu) no later than **November 15, 2009**.

All nomination packages and materials should be sent electronically in PDF format.

Note: Each candidate is reviewed independently by eight committee members. If you are interested in seeing the rating sheet that is used in this process, please request it directly from the Chair of the Committee.

NARST Outstanding Doctoral Research Award

The NARST Outstanding Doctoral Research Award Selection Committee invites all current NARST members who completed a dissertation within the 15 months prior to September 15, 2009 to submit an expanded ten-page abstract (in PDF format) to the committee for consideration for the 2010 NARST

continued on next page ►

Outstanding Doctoral Research Award. Submissions are sought from as wide a field of candidates as possible, inclusive of gender, age, and ethnicity.

Judging will occur in two rounds. The first round of judging will be based on the ten-page abstract. From these, a small group of applicants will be asked to submit one copy (in PDF format) of the complete dissertation. The final decision of the committee will be based on the complete dissertation. All applicants will be notified of their status after the first round of judging is completed in early November. The recipient will be announced at the awards luncheon at the 2010 NARST Annual Meeting in Philadelphia.

The committee welcomes doctoral dissertations from all research perspectives. The ten-page abstract should be structured to describe clearly the following: (1) purpose or objectives of the study; (2) conceptual/theoretical framework; (3) research approach/methods; (4) data sources and methods of analysis; (5) findings or results; (6) conclusions and implications; and (7) significance of the study. It is suggested that nominees model their abstracts after conference proposals submitted for NARST: Abstracts should foreground rationale, methods, and results.

Judging in both rounds (for abstracts and dissertations) will be based on the following three central questions: (1) Is the research question(s) being asked of importance to the community of science educators? (2) Is the research approach and its implementation thorough and appropriate for the research question(s) asked? And (3) Are the results and conclusions appropriate for the context of the study? Specific criteria considered in relation to these questions include: The significance of the research problem/area; conceptual/theoretical background; thoroughness of the research approach and methods; identification of conclusions/outcomes and their implications for science education; clarity and coherence of communication; and overall originality or creativity. In the past successful applicants have been those who were able to make a case for the significance of their study to the science education community as a whole and/or who convinced the reviewers of the originality of the questions asked or methods employed.

Submission Procedure: An all-electronic submission process will be used. Persons wishing to be considered for the award should submit an e-mail with the following three attachments (in PDF format): (1) one file containing a ten-page, double-spaced abstract (margins limited to one inch all around using 12 cpi font); (2) one file containing a five-page abbreviated bibliography; (3) one file containing a cover sheet which includes the author's name, address where they can be reached through December 2009, e-mail address, telephone and fax numbers, title of the study, the name and address of the institution where the dissertation was completed, a list of the members of the dissertation committee, and the date the dissertation was passed. This cover sheet should be signed by the major advisor/professor/supervisor or chair of the dissertation committee. An electronic signature is acceptable.

Alternatively, the dissertation supervisor/director can send an e-mail to the Chair of the Outstanding Doctoral Research Award Selection Committee endorsing the application and attesting to the accuracy of the information provided in the application. (Note: The title of the study should appear on the first page of the abstract, but the author's name and other identifying information should appear ONLY on the cover sheet.)

An e-mail with all three attachments must be received by Julie Kittleson at jkittl@uga.edu no later than **September 15, 2009**. We regret that the committee will be unable to consider incomplete or late applications. Questions regarding this award should be e-mailed to the Chair of the Committee: Julie Kittleson at jkittl@uga.edu.

SUBMISSION DEADLINES:

Distinguished Contribution Through Research
August 30, 2009

To: ktobin@gc.cuny.edu

Early Career Research
November 15, 2009

To: randybell@virginia.edu

Outstanding Doctoral Research
September 15, 2009

To: jkittl@uga.edu