

## Final Issue Farewell

by Michael Hacker, Executive Director

As the MSTe Project ends its final year, I would like to express my deep gratitude to the Leadership Team members, Principal Investigators, Project staff, and Project Management Team for the extraordinary contributions they have made to education reform.

This Project has been, for many of us, one of the most significant professional undertakings of our careers. The numbers of teachers and students affected, the sustained commitment over time from those in leadership roles, the overwhelming shared sense of accomplishment, and the many sincere expressions of personal growth from children and teachers are testimony to the meaning of this endeavor.

The mission of the MSTe Project has been "to provide expertise, inspiration, support and means to elementary teachers in the participating schools so that they might better construct and sustain learner-centered environments where curriculum, instruction and assessment are guided by contemporary pedagogical practices and matched to MST learning standards." In achieving this mission, we have collectively:

- Developed a leadership team of 60 teachers who possess contemporary pedagogical, content, and leadership skills; reflect upon and improve their practice; conduct exemplary inservice programs for other teachers; and have become regional MST leaders.
- Provided more than 1,500 NYS elementary school teachers with the ability to use inquiry and design as mechanisms to connect MST in their classrooms; encouraged them to engage in reflective practice; and enhanced their MST skills.
- Developed a substantial infrastructure of MST capability within the Project schools.
- Enhanced the mathematical, scientific, and technological capabilities of elementary school students through instruction that interconnects MST.
- Scaled up the Project and provided for the continuation of its efforts by developing regional leadership teams in 14 regions across New York State.
- Sustained the commitment to MSTe reform through the planning of professional conferences, development of an MSTe professional association, and implementing of a series of local initiatives.

As we continue our work, we can rely upon the insights we have gleaned, the friendships we have made, and the new skills and knowledge we have gained to carry us forward.

My most profound thanks to all of you for all you have done. May the New Year bring us peace.

## MSTe Makes Believers Out of Another Group of Teachers

### Summer Workshop Takes MSTe Statewide

"MSTe rocks!" That was the assessment of one of the 63 participants in the final summer workshop of the MSTe Project.

The intensive two-week workshop opened at Hofstra University, where the focus was on the use of design as a way for students to deepen their understanding of scientific and mathematical concepts. Teachers rotated through sessions with David Burghardt and Janice Koch (children's engineering; designing a logo; constructivism, conceptual understanding of the "S" in MST, levers and linkages), Sharon Whitton (LEGO Logo), and Rose Kalman and Lisa Graves (solar house design).

Then it was on to Brookhaven National Laboratory to work with scientists there on activities that included magnetism and magnetic levitation; radiation; and seeing the light. In addition, Dr. Steven Dewey gave a presentation on physiological results of addictions.

At SUNY at Stony Brook, teachers attended sessions with Jackie Grennon Brooks, Tom Liao, Mike Hacker, Joanne Daly, Doug O'Loughlin, Emily O'Brien, and Wendy Powers. Topics included: using design as a springboard for learning; investi-

gating children's ideas; design of computer-based learning environments; MSTing the curriculum; and MST learning standards.

Here is what a few



"MSTe is inquiring about education!"

workshop participants had to say. Quotes from others appear with this story.

"The content of the workshop was excellent, well balanced and useful. This was a great opportunity for modeling constructivist interaction and teamwork to be utilized in our future teaching and administrative situations."

"I came away from these workshops ready to approach learning in the classroom in different way. Meeting those design challenges



"We need to get students to go beyond 'knowing' content. We want them to use the information and apply it to their lives. Using design theory, students get a chance to do that."

was a stretching experience. Thanks for treating us so well!"

"MSTe is a wonderful way for teachers to grow, to learn to be students again, and to truly develop an understanding of current effective models of teaching."

Please see page 7 for a list of participants in the summer workshop.



# Sharing Success – MSTe Leadership Team Retrospectives

The MSTe Project asked the Leadership Team members to reflect on their experiences and those of the students in integrating MST through the Project. Excerpts from their responses, submitted in May, are presented on pages 2-6.

## Syosset Leadership Team Marilyn Cacioppo, Kevin Oswald, Sheila Leitner



The Syosset MSTe team has developed a model for the integration of mathematics, science, and technology in the elementary schools that emphasizes student directed investigation, design and engineering and inquiry through cooperative learning and practical applications.

Staff development days were designed to provide elementary teachers the opportunity to learn specific scientific concepts and skills and to understand that the science curriculum is not taught in isolation but integrated with math and technology.

The district has supported MSTe by arranging schedules to permit time for “coaching” in the elementary schools. All Leadership Team members are available for consulting and modeling the MSTe approach to colleagues. This support has provided additional teachers with the philosophy and teaching strategies of the MSTe program.

The MSTe Leadership Team and teachers from the first-wave MSTe training have been working on specific curriculum revisions that focus on enhancing elementary science curriculum through MSTe approaches. The curriculum revisions include adding the MSTe format to the Science and Technology for Children kit. This enhancement enables each student scientist to be aware of the connection among math, science and technology.

In the MSTe units that have been developed and implemented, the children are encouraged to design, explore, and construct through the integration of MST and with a strong focus on language arts. The ultimate goal is for each unit to form a base for future attitudes and understanding in math, science, and technology.

The MSTe philosophy has expanded student parameters to incorporate constructivist problem-solving strategies, cooperative learning, and practical applications. By encouraging student creativity, the program has greatly enhanced the quality of the students’ journals and invention products and has dramatically increased student involvement at the annual Invention Convention in the Syosset elementary schools. The success of the program is evidence that students have utilized their MST knowledge and understanding to create unique exhibits.

### Quotes from Syosset Students

Reese:  
“The best part of MSTe to me is constructing. I enjoy building things to see if they will solve our problem.”

Christopher:  
“I like learning science this way because I actually use it in different activities.”

Randi:  
“Doing hands-on activities is more fun than learning from a book. I really think more this way.”

Jennifer:  
“It’s a great learning experience. It’s preparing me to solve problems in everyday life.”

Adam:  
“Building things teaches me how to plan. I like to get all of my ideas together before I decide what to do.”

Rebecca:  
“I like the technology part the best because it brings together the math and science that I’ve learned.”

Brian:  
“I like MSTe because you get to try things out instead of just talking and thinking about what you would do.”

Jenna:  
“I think the best part of MSTe is that there is more than one way to solve a problem. In life you can have a plan to do something but it doesn’t always turn out right. So the more ideas you have, the better.”

Sean:  
“I discovered that my ideas could expand as I go from the design to the construction. I can start out with a basic idea and make it better.”

Chelsea:  
“I love the challenging problems we get. It’s so much fun we don’t realize how much we’re learning.”

### Questions for Reflection

1. How have you personally experienced working on the MSTe Project?
2. What changes have occurred in your own classrooms and in those of your second-wave teachers?
3. How has your work with MSTe affected your school and/or district?
4. One goal of the MSTe project is to institutionalize changes in MST instruction. What do you believe will be the lasting impact of the project in your school and/or district?
5. What lessons have you learned that we can use to improve future projects?
6. How did you provide the 100 hours of professional development to 30 teachers in each of two summers as called for in the MSTe Project design?

### Quotes from Syosset Teachers

“MSTe gives a wonderful structure to discovery learning.”

- Mary Kolhorst

“MSTe has helped me grow as a professional by learning the importance found in the process of discovery. Integrating the components of math and technology into science was fun and encouraged higher level thinking skills.”

- Beth Kance

“Taking the MSTe course has reminded me that it is OK to have a fun lesson, and chaos isn’t bad.”

- Nina Trembley

“The best hands-on methods course I have ever taken. This I will use in my classroom.”

- Dominick Costa

“MSTe is an excellent hands-on methods course that can be utilized at any grade level within any content area. It truly takes us into the next millennium!”

- Robin Kleinman

# Sharing Success – MSTe Leadership Team Retrospectives

## Westhampton Beach Leadership Team

Kathy Haack, Lynne Marshall

We feel honored to have been a part of this project. It was certainly a rewarding experience that has made us better teachers. We are always looking for the MST in each lesson!

Here's what some second-wave teachers had to say about changes that have occurred in the classroom.

"MSTe has made a difference in the way I approach many of my lessons. When planning enrichment lessons, I often consider how I can MS the curriculum or a special project. Previous to my MSTe training, I struggled with how to incorporate math and science into a language arts lesson. It is now rare if math and science are not a component of my projects. The biggest difference I see is in the students. For example, second grade students worked on a large MST project that involved creating community buildings to scale. Following this project, I noticed that the students' spatial intelligences were inspired, and they were more willing to take risks. I feel that MSTe has made me a better problem solver and a more creative teacher." – Jamie Thom

"Through MSTe I was exposed to different teaching techniques and tools that I now use on a regular basis in my room. I feel my kids are more process-oriented in their learning attitudes as well as content-curriculum immersed. My children and I are more excited and more focused in our learning because of the MSTe philosophy." – Pat Bodkin

Our district sometimes has artists from the community work with a grade level of students to help them write, draw, and express their feelings in creative ways. As a team we have decided to create an interactive kinetic sculpture for the children's garden, located in our courtyard, using our MSTe background and the expertise of our visiting artist.

As we walk around the building, we see many wonderful things happening. Everyone has embraced MSTe and is enjoying it. The Westhampton Beach School District has had many MSTe workshops, including workshops for Superintendent's Conference Day and pre-

sentation/workshops for school board meetings and parents. Westhampton Beach has truly embraced the MSTe philosophies and has already incorporated them into existing curriculum.

We advise teachers not to be afraid to try something new and to let the children work through a problem. Try to find colleagues that would like to work with you. For example in our school the enrichment teacher and the librarian are working on a pneumatic/hydraulic fairy tale and storytelling unit together.

We split the 100 professional development hours over two years in summer and fall. Included were some special WOW days at Brookhaven National Labs and the Discovery Center and Museum at Stony Brook University. We also visited the classrooms of most of the second-wave teachers during an MSTe lesson so we could offer on-site support. This model gave the teachers time to try new ideas while the support team was still in place.

In conclusion, some advice from a second-waver:

"...keep an open mind, be ready for adventure, and keep notes so you have names and contacts available when you have an idea you would like to try in your room." – Pat Bodkin



## South Huntington Leadership Team

Claudia Gary, Dan Rebori

We see many changes in classrooms as a result of the MSTe training. There is an increase in hands-on activities. Teachers are using more activities that incorporate MST instructional strategies. They are teaching elementary science more effectively and better integrating all areas of the curriculum. The teachers understand the MST standards and how to develop classroom activities and lessons that meet the needs of students.

We had a buildingwide MSTe activity, coordinated by the art teacher, who had participated in the training. It incorporated MST design and involved all students, parents, and teachers.

One of the most important outcomes of the MSTe Project was the development of integrated instructional strategies that helped teachers organize students into cooperative groups for the purpose of solving higher-level real-world problems. Of course, we could still use more classroom time to plan MST activities.

The MSTe Project was a terrific experience for all members of our Leadership Team.

## Mineola Leadership Team

Scott McMullen, Nicole DeSantis, Elena Murphy

With respect to changes in our own classrooms and those of our second-wave teachers, many teachers are enriching their instruction by adding design portfolios to their units in science and other subjects.

Teachers have reported notable improvement in problem-solving skills, decision making and optimization and in students' attitudes towards science and technology. The common themes of Standard 6 have been addressed through the integration of math, science, and technology.

Our work has been showcased as excellent examples of curriculum integration, a goal of our district. Our buildings host MSTe nights with thematic games, projects, and competitions. There is a growing demand for PTA-sponsored science programs before and after school. Often the topics of these programs come from our MSTe efforts.

As the Mineola School District begins the process of revising the elementary science program to reflect the new Elementary Core Curriculum, we are doing it under the MSTe umbrella. Technology and mathematics will be incorporated into the science instruction. Design portfolios will be an important part of the revised curriculum.

We wish the intensity of inservice/professional development of Year One carried forth through at least three years. The experience of Year One was outstanding and had a profound impact on our teaching and learning. We would have liked to interact more with other teams. We also would have liked to document our work and our district participants' work more.

In a way, we feel betrayed by the state. The state promoted integration, especially MST integration. We accepted that concept. Yet we have unbelievable pressure to teach the disciplines separately because of the grades 4 and 8 mathematics and science state tests. There is little on those tests that promotes integrated thinking and common themes.

## South Huntington



Westhampton Beach

# Sharing Success – MSTe Leadership Team Retrospectives

## Orange-Ulster Leadership Team

Eileen Candito for James Congelli,  
Tanya Duryea, Kimberly Rogerson

It is hard to sum up all that has changed in my perspective since beginning the MSTe Project. While I found many of the teaching strategies I had used for years to be validated, I also learned more in the two months of summer training than I had in most of my college career, including graduate work.

This Project had a mission. The leaders had a firm commitment to making learning better for ALL children. The most powerful aspect of the Project was the continued training and support. I never felt it was anything but a collaborative effort.

Though I had taught for more than 25 years, MSTe greatly enhanced my approach to teaching science, math, and design technology. The most important emphasis was on the depth of knowledge that children should explore. Now, teaching fewer subjects in greater depth is my goal. It is hard to give up trying to “cover” the curriculum instead of providing an atmosphere where true learning can take place.

I have learned to search for answers more now than ever. Each day I have more questions about the how and why of our world and the impact of humans on it. I traveled to England with the group and found my eyes opened daily through the tours and discussions.

Our district is completely committed to the MSTe philosophy and has provided us with the necessary tools to support teachers who are working toward this interdisciplinary inquiry approach. As of April 2001, we had developed 28 units and supporting materials, with many more under development.

Many of our teachers have participated in the MSTe training, and we have made great strides in making MSTe a part of our daily routine. We have had MSTe family nights for our first and second graders and their parents for the past three years. The response is wonderful. We typically have more than 300 participants.

Our community is now acquainted with MSTe and some of the inquiry skills. Parents are more aware of the difference in the approach to learning. They are beginning to understand that asking the questions is more important than telling the answer.

Students are realizing that the explanation of how the answer was achieved is at least as important as the correct answer. When children can explain how they reached their solution, then teachers can better assess where problems in processing are. Parents have commented that this type of experience creates a “great environment for learning” where “kids have fun and learn something at the same time at the same time.” Children ask better questions and are beginning to appreciate that they have to search for the answers to really understand. The best part is that they see learning as a wonderful adventure, and they are ready to take on new tasks.

When I began participation in this NSF grant, I was overwhelmed by what I thought to be lofty goals of the Principal Investigators. I did agree that many of these changes were necessary, but I was not convinced that 61 teachers could make that happen. I now see how much impact the training has had on teachers and districts in the Mid-Hudson region. All schools know about implementing the MST Standards and about the MSTe training that is available to them to support that effort. Teachers have encouraged others to take the training because it is productive, classroom oriented, appropriate, and supportive of the ideas that teachers believe will help children learn.

One major benefit is that children with learning disabilities are much more engaged in this type of inquiry learning, and they are able to succeed where they have failed in the past. During a second-grade unit on frogs, for example, we noticed that children who seemed unable to write information were able to keep journals about their frogs’ development, including labeled illustrations. They also looked forward to the activities, which put them into cooperative groups where learning was collaborative.

I deeply regret that this Project has to end. The mission to educate our students in the best possible way should never be hindered by time and funding. I commend the grant writers for their commitment and dreams and will always be proud that I was able to be a part of the experience.

## Copiague Leadership Team

Jodi Foster, Rich Knox, Marie Nicharico

Working on the MSTe project was rewarding, challenging, and at times mind-boggling. Elementary students have been achieving significantly above the state assessment averages on the fourth grade math test and the ESPET. Since 60 percent of the second grade teachers, 100 percent of the third grade teachers, and 80 percent of the fourth grade teachers have completed MSTe training, we attribute the improvement in scores in large part to this philosophy.

We appreciate that it was part of the process to be exposed to the MSTe philosophy as adult learners. Learning as we went along, the challenge of overcoming difficult design projects and the frustration of not having answers helped us empathize with our students.

Rather than limit the professional development to summer hours, when not all teachers would be available, and in order to work under optimum environmental conditions, we decided to conduct a significant number of hours of training during release time and the remainder over Saturdays in the spring and the last several hours during the summer. This also afforded us the opportunity to visit a number of off-campus sites, including the Long Island Science Museum, the Goudreau Math Museum, and the SONY Wonder Technology Lab. We also revisited Brookhaven National Lab and the Stony Brook Discover Lab with our second-wave teachers.

The teachers trained in the MSTe philosophy now routinely integrate science, math and technology into their content area lessons, thus exposing students to real-life problems.

More classroom time for projects is sometimes needed and is not always available. However, we have overcome this by integrating the content areas. Most teachers feel this is a beneficial approach in spite of the obstacles we face.

To support MSTe, we have formed an MST committee that meets monthly to discuss various ideas and projects. This is our time to share things that have worked well for us, explore things we want to change in the future, and help formulate new ideas.



*“This MSTe really has been for dreamers and having their dreams come true.”*

Orange-Ulster

# Sharing Success – MSTe Leadership Team Retrospectives

## Plainview-Old Bethpage Leadership Team

Myra Brand, Lynda Lyons, Emily O'Brien

Each of us has experienced the MSTe Project as a collaborative venture and, most importantly, as an introduction to the constructivist philosophy that has changed our teaching. Our classrooms resemble learning labs where students work cooperatively toward a common goal or solution. Students learn differently and approach problem solving differently. It is from this diversity of ideas that they reach a common solution.

Many participating teachers have integrated the curriculum areas. They have also focused on the importance of planning and design as a major part of the interdisciplinary model. Teachers are spending more time on MSTe projects and challenges and integrating manipulatives and problem solving in cooperative groups in math. As a result, we see teachers spending more time on projects and eliciting solutions to problems generated by the children. More emphasis is being placed on the process of the planning and design phases.

The impact of two summers of MSTe training in Plainview-Old Bethpage has been positive and well received by teachers, as evidenced by the work in their classrooms. As lead teachers for the MSTe Project, we have been regarded as experts and our practices have been valued. All three of us served on the district math, science, and technology committees.

Our district has committed to the MSTe Project well beyond Year Five by creating positions for two MST specialists at the elementary level and one for the gifted at the middle school level to support teachers in their quest for inquiry-based design and problem solving. These positions are seen as an ongoing and lasting movement toward the goal of institutionalizing changes in MST instruction.

Even skeptics are realizing the necessity of integrating math, science, and technology into all curriculum areas as well as providing problem solving within a real-world context. Knowing that more can be accomplished by curriculum integration and that children learn more through inquiry and design based upon problem solving, teachers can feel assured that they are providing the best possible educational experiences that go beyond the state assessments.

MSTe has brought us all to a new level of teaching. We hope that we can continue to carry on this legacy.

*Lynda Lyons and Emily O'Brien are among the three finalists for the New York State National Science Foundation Presidential Award. One person from the state will be selected as the national winner and receive the award at a White House ceremony.*

## Bronx District 10 Leadership Team

Lynette Vasquez

Working as a Leadership Team member on the MSTe Project has changed my whole perspective on teaching math and science. My approach is to see what math, science, and technology concepts and skills can come out of my lessons. I have learned how to make my lessons more integrative and basically more meaningful through hands-on experiences.

Almost everything I do is MSTe. My classroom reflects an MSTe environment. The activities lend themselves to the integration of reading, writing, researching, and social studies.

It's amazing how much my students have learned. Concepts and skills covered through my MSTe lessons were very meaningful. I particularly noticed an improvement in my students' math and reading scores.

As a result of all the MSTe practices, my school produced a mass volume of science projects for our districtwide Science Fair in March. In addition, teachers are becoming more comfortable with science because of their students' enthusiasm for MSTe lessons.

I remember one student's mother who wanted to meet me because MSTe had brought a newfound awareness for her daughter. She grew to love science and math and is enjoying more of her elementary school years.

Our district Science Coordinator supports MSTe implementation. There are more workshops reflecting MSTe practices and materials for MSTe investigations and explorations. Our principal is always willing to allocate time for MSTe professional development. She has also purchased math, science, and reading materials that lend themselves to MSTe practices and funded my MSTe after-school program. At the district level, the science professional development is reflecting MSTe pedagogy and practices.

I have struggled with my management of time for MSTe instruction. I used to feel very frustrated at not being able to finish within a reasonable time. After visiting schools in the UK for the MSTe Summer Institute, I came back and tried it their way — one day per week for MSTe instruction. I get more done within that time, and my students are more satisfied.



## Bronx District 10 Leadership Team

Mary Vaccaro, Paul Lopin

The MSTe Project has given us the ability and confidence to expand on different strategies and learning modalities. Through teaching MSTe, we have seen how students are levitated to their ability without fear and hesitation. When MSTe is applied to any content area, it automatically opens a wide range of learning. The MSTe Project has expanded the ability of both educator and student to meet the highest achievement possible.

In doing the MSTe training with both waves of teachers, we saw changes in everyone. Teachers who had been teaching more than 15 years and fewer than two realized that MSTe could and does change the way they think and teach. The experience of teaching other teachers and the ability to use MSTe in both adult and student environments were great rewards.

In the classroom, we saw how high and low functioning academic students were able to understand the content better. Moreover, they carry the MSTe methods through to other content areas, as evidenced by their questioning, writing, and testing. MSTe has given many students the extra push and confidence they needed.

Before MSTe, teachers would give instruction and then practice. Now we look at what it is, what does it mean, and how is it used. Manipulatives are the key. Their use has taught students before the actual teaching has taken place. This sets thoughts in motion so when the instruction comes, they have a better understanding of the content and objectives.

The effectiveness of MSTe on student performance could be seen in the district's March 2000 Science Fair. MSTe students had done more work and were more knowledgeable. They had explanations for why certain things occurred, and they made connections to other things that did or could affect their projects.

Our challenges consisted of teaching the methodology during a short period of time and lack of money for exemplary materials. We met these challenges with enthusiasm and acceptance. We believe MSTe is the best way to engage our students and increase their critical thinking skills. The more involved and committed we became, the more involved our teachers and students became. The seed has been planted, and we have all benefited.

The long-term goal is to further develop our ability to look deeper into our investigations. Being able to adjust our course and understand why we made those changes brings us to a new level of understanding. Time will always be a factor in determining the lasting impact of the Project, but many teachers are committed to making the necessary time.

Lynette Vasquez with MSTe Study Tour to England

# Sharing Success – MSTe Leadership Team Retrospectives

## Smithtown Leadership Team Cheryl Borden, Lois Rudin, Ernie Ruiz

We polled our MSTe participants and received the following feedback.

“I feel that teaching is also a continuous learning process, and I have learned much as a participant in MSTe. It broadened my perspective and gave me concrete activities that I could bring back to my class. I was encouraged to try new and different integrated activities in my classroom.”

Teachers see the curriculum in a real-world setting. They are doing more: hands-on projects, preplanning, cooperative grouping, interdisciplinary themes, integration of skills, self-discovery, new field trips, team teaching, and student investigation leading to more inquiry and interest in exploration. There’s less teacher input in decision making and more student-centered learning. Teachers see enhanced critical thinking skills, increased excitement in learning, better problem-solving strategies, and more cooperation among students.

Children feel more responsibility because they have to present their ideas orally to the class. They also feel more ownership of the work. Parents have more involvement in the classroom, and teachers hear many positive parent comments.

MSTe has fostered sharing of ideas by teachers at different grade levels. It has encouraged teamwork and expanded teachers’ creativity. The use of the design portfolio as a planning tool has improved the quality of class projects.

Teachers appreciate the potential of MSTe after trying it with students. “Children can do more than we think.” As teachers who were not involved in the MSTe training see what those who were are doing, they want to try it, too.

The MSTe Leadership Team and recruits are continuing to work in 2001-02. They are looking at curriculum development and integration with science curriculum.

The teachers’ advice to others: “Be open-minded. It works!”



Photos from the 1998-99 school year



## Reflecting on a Professional Development Journey: Lessons Learned

by Thomas T. Liao, MSTe Co-Principal Investigator

Many years from now, we all will still remember what we were doing when two hijacked passenger airliners crashed into the twin towers of the World Trade Center. For me, I was attending The International Conference on Research Related to Science Education in Monterrey, Mexico. The conference became very somber when the tragic event occurred. However, the participants bonded and resolved to continue our exploration for more effective ways to help the children of the world to become more scientifically and technologically literate.

I was invited by the US-Mexico Foundation for Science to share the approaches and outcomes of our five-year professional development effort. Two of my themes were the MSTe approach to curriculum and instruction and what we learned about professional development.

I discussed what we mean by MSTing our classes. I cited examples from our leadership teams and second-wave teachers to provide concrete illustrations for the following aspects of our MST approach:

- MST Integration: Linking Technological Design to Scientific Inquiry and Analysis

- Informed Design Challenges: Understanding the Human-made World
- Inquiry-based Scientific Investigations: Understanding the Natural World
- Learning in Context: Searching for Solutions to Real-world Problems
- Beyond Textbooks and Science Kits
- MST Plus Language Arts, Social Studies, etc.

My presentation was part of the conference segment that focused on effective and innovative approaches to professional development for K-12 teachers. Thus, I took this opportunity to reflect on our effort to provide professional development for about 1,500 K-6 leaders and classroom teachers. First, I discussed five lessons that we learned in our effort to improve the capability and effectiveness of the 20 leadership teams. We learned that we need to:

1. Devote more thought and time to working with local school districts in the selection of leadership team members.
2. Add a senior school administrator to the three-person leadership team.
3. Provide more emphasis on “leadership by example..”

4. Recognize that conflict among educational leaders is inevitable and can be a positive form of intellectual engagement, which is needed to achieve systematic change.
5. Provide programs for interaction of leadership teams.

The above lessons were learned during the first two years, when the project focused on the professional development of the leadership teams. During the past three years, we have also learned to fine-tune the content of and approach to the teacher enhancement workshops. We learned that we need to:

6. Balance adult learning and classroom learning activities at workshop sessions.
7. Provide explicit links between teacher workshops and new classroom practice.
8. Provide more opportunities for teachers to experience the symbiotic relationship between “informed design” and “guided inquiry.”
9. Develop further the use of design activities and portfolios as authentic assessment tools.
10. Focus more on teacher understanding of “big ideas.”

## MSTe Goes Statewide with New District Leadership Teams

These leaders attended the summer workshop and will be conducting MSTe workshops in their districts. For contact information, call Jackie Kampf at (631) 632-6744.

### **Broadalbin-Perth Public Schools**

Amy Fazio  
Kristie M. Marshall  
Rosanna M. Steele  
Deborah Topper

### **Buffalo Public Schools**

Clifford J. Alf, Jr.  
Lynn M. Diagostino  
Diane Johnson  
Deborah A. Lazarski

### **Center Line School District**

Amy Bopp  
Noelle Broaddus  
Laurie Fowler  
Barbara Klimek

### **Chenango Valley Central Schools**

Anne S. Gleason  
Karen Dupre  
Dorothy Pierce  
Joel Laczak

### **Croton Harmon Union Free School District**

Shirl M. Kaplan  
Kelly A. Maloney  
Peter P. Yablonski  
Trish A. Zamperlin

### **Groton Central School District**

Keith R. Goodwin  
Margaret A. LaFrance  
Mark Triolo  
Nancy F. Triolo

### **Hannibal Central School District**

Julia D. Brooks  
Karolyn A. Bullard  
Nancy J. Labbe  
Martha L. Mileskey

### **Hauppauge Public Schools**

Anthony Gibson  
Laura Fornabia  
Gina Reiner  
Jennifer Saltzman

### **Jordan-Elbridge Central School District**

Judith A. Jordan  
Kathy Kauffman  
Mary T. Stanton  
Deborah A. Trexler

### **Kingston City School District**

Betty L. Chin  
Rachel Hunsinger  
Joyce E. Luby  
Robert E. Hansen

### **Middletown City School District**

Richard Babcock  
Leona M. Babcock  
Elizabeth F. Muenta  
Marianne B. Parrino

### **Niagara Falls City School District**

Holly C. Masic  
Denise L. Muth  
Carrie H. Shurtleff

### **North Bellmore Public Schools**

Maureen Byrne  
Joyce Howard

### **Saugerties Central School District**

Jennifer L. Criser  
Anita Payne

### **Skaneateles Central Schools**

Susan J. Grady  
Christine F. Johnson  
Karen S. Marino  
Anne M. Montreal

### **Watertown City School District**

Margaret M. Drappo  
Jamie S. Kalk  
Pamela Kedenburg  
John S. Tocornal

### **Yonkers Public Schools**

Miriam L. Digneo  
Theresa E. Garraffa  
Maria R. Ramirez  
Auguilda Rosario

## Posters from the Final Leadership Team Meeting

Please see story on page 8.



“Every one of us  
is both a learner  
and a teacher.”

## The People Who Brought You the MSTe Project



## Leadership Teams Hold Final Meeting

The MSTe Leadership Teams met for the last time on September 28 at Brookhaven National Laboratory. The teams provided an update on their Year Five activities.

**Oceanside:** Developing an MST institute through Hofstra to provide sustained staff development opportunities to Long Island teachers.

**Plainview-Old Bethpage:** Push-in program mentoring new teachers. Supporting second-wave teachers. Lynda Lyons is now the MSTe district specialist. Developing a program that articulates with grades 5-8. According to the team, science was "in the back seat." Now it is the foreground. MSTing is a district priority and is understood by the faculty.

**Oyster Bay:** Providing one hour per week of staff development with a science and technology teacher. Also conducting a three-hour-a-week inservice class for teachers with a club for children.

**Orange-Ulster BOCES:** Teachers are writing MST units. Staff development program in place for 30 new teachers. MSTing existing science kits.

**Mineola:** Conducted summer staff development program. Did curriculum gap analysis. Team felt it was the best curriculum development effort they'd ever been involved in because "they were ready."

**Northport:** Worked with 20 new teachers. The teachers have changed the way they teach. MSTe is a big part of everything in the school. There is an MSTe after-school club. 85% of the teachers in six elementary buildings have been involved in MSTe staff development as a direct outgrowth of an MSTe day that showed teach-

ers how powerful creative expression could be. Quality circles were convened which decided to use design activities.

**Smithtown:** Working with NYSED to put together a NYS guide for elementary technology education using MSTe teachers' ideas and activities. Partnering with Suffolk BOCES to conduct a two-week staff development program in summer 2002.

**Syosset:** Kevin Oswald is the district elementary MST specialist. Team is conducting academic semester staff development. Holding grade-level full-day workshops to MST curriculum.

A poster session provided opportunities for the teams to showcase work accomplished during the Year Five workshops and to focus on lessons learned.

Emily O'Brien, Wendy Power, and Doug O'Loughlin conducted a session to identify MSTe next steps. It was suggested that MSTe teachers form the nucleus of a new MST statewide professional association and that an MSTe conference be convened in spring 2002. Scott McMullen and the Mineola team offered to host the event.

Dr. William Peruzzi facilitated a session that provided an overview of the state MST assessments under development.

At a closing ceremony, certificates were presented to all Leadership Team members. Brookhaven staff dedicated a memorial to Karl Swyler, who was a Co-Principal Investigator on the MSTe Project and Director of the Science Education Center at BNL until his death in August 2000.

## MSTe Rolodex

### MSTe Project Staff

**Dr. Jacqueline Grennon Brooks**

Co-Principal Investigator

(631) 632-7523

jacqueline.brooks@sunysb.edu

**Dr. David Burghardt**, Co-Principal Investigator

(516) 463-5550

m.d.burghardt@hofstra.edu

**Joanne English Daly**, Staff Associate

(631) 632-9940

joanne.daly@sunysb.edu

**Michael Hacker**, Executive Director

(631) 632-6744

mhacker@nycap.rr.com

**Jacqueline Kampf**, Administrative Assistant

(631) 632-6744

jkampf@notes.cc.sunysb.edu

**Dr. Janice Koch**, Co-Principal Investigator

(516) 463-5777

janice.koch@hofstra.edu

**Dr. Thomas Liao**, Co-Director

(631) 632-8767

thomas.liao@ccmail.sunysb.edu

**Martha Riordan**, Project Secretary

(516) 463-5233

soemcr@hofstra.edu

**Dr. Sharon Whitton**, Co-Principal Investigator

(516) 463-5954

catswa@hofstra.edu

### MSTe Project Liaisons

**Dr. Joan Daly-Lewis**, Eastern Suffolk BOCES

(631) 244-4201

jdalylew@aol.com

**Marie Archibee**, Nassau BOCES

(516) 997-8700

marchibee@mail.nasboces.org

**Christine A. Wylie**, Orange-Ulster BOCES

(914) 774-7256

cwylie@ouboces.org

**Dr. Brian Murfin**, Brookhaven National Laboratory

(631) 344-7171

bmurfin@bnl.gov

### MSTe Project Evaluators

**Dr. Penelope Haile**

(516) 463-5743

edapjh@hofstra.edu

**Dr. Iris Weiss**

Horizon Research Inc.

iweiss@horizon-research.com



**Executive Editor:** Michael Hacker

**Managing Editor:** Sue Siegal

This material is based upon work supported by the National Science Foundation under Grant No. 9618962. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Please send questions, comments, or requests to be added to our mailing list to: Michael Hacker, MSTe Project Executive Director, SUNY at Stony Brook, 350 Harriman Hall, Stony Brook, NY 11794-3760 (631) 632-6744; fax (631) 632-7809



The State University of New York at Stony Brook is an equal opportunity/affirmative action educator/employer