

Math and Science Advisory Council
Minutes for Friday, September 18, 2009
Los Alamos National Laboratories Foundation (LANLF) Office
Española, NM

In attendance: Liz Shipley, Brian Every, Raymond Nance, Robert Eisenstein, Doug Brown, Toney Begay, Jonathan Wolfe, Franny Dever, Lorenzo Gonzales, Joyce Kaser, Tom Gruszka, Cathy Kinzer, Ted Stanford, Rebecca Kerr, Kathryn Watkins, Richard Nygren, Claudia Ahlstrom, Mary Jo Daniel, Melissa Lomax, Pascal Buser, Felicia Leyba (note-taker)

Guests: Anne Madsen, Jamai Bliven, Nena Villemil (NM MESA)

Welcome/Introduction/Council Norms

Susan Herrera, CEO of the LANL Foundation welcomed MSAC to the Foundation's office building; the meeting space is available for community members to use. The LANL Foundation focuses on investing in education, especially educational enrichment, STEM education, scholarships, and partnerships with school districts. On November 10th they are holding their annual conference in Pojoaque.

Mary Jo Daniel introduced Melissa Lomax who will be providing administrative oversight to the Math and Science Bureau in addition to her duties as the Bureau Chief for Career Technical and Workforce Education at the PED. Melissa expressed her appreciation for the opportunity to work with Math and Science and provide leadership and continue the efforts already begun by the Council and the Bureau staff.

Math and Science Report

The Math and Science Report was distributed electronically before the meeting; additional copies were provided. In response to a question, it was clarified that the legislative recommendation for creating standards-based course descriptions applied to secondary courses and, if passed, would probably go into effect the following July 1.

Melissa Lomax was asked to present an issue that arose at previous week's LESC meeting and which was not included in the M&S Report. She reported that the LESC wants PED to draft a rule to specify how parents waive the requirement of Algebra II for their students as provided for in statute. The rule would go through the official process for rule; there might also be an "unofficial" guidance document created to help parents and schools as well. She asked members of MSAC who would like to serve on a small working committee for this task to provide their names to Felicia (note-taker) as well as the names of others they know who could contribute.

After discussion, it was determined that the MSAC would like further information on the portfolio option for graduation for those students who do not "pass" the SBA.

NM Project 2012: Status Report

Bob Eisenstein briefly reviewed the status of the legislative recommendations MSAC had put forward to Secretary Garcia. He then highlighted the three areas that have been identified as needed additional attention in NM Project 2012: leadership, assessment, and student input. The

Council then divided into 3 working groups, according to assignments announced through email previously by Franny Dever. Each group was asked to discuss their assigned topic and make a list of ideas to be more fully developed and drafted by a writing committee.

Reports and questions

Leadership: Knowledgeable leaders are necessary at all levels for successful reform in math and science education. Leadership must be systemic. Policy makers, superintendents, school principals, professional development coaches/facilitators and school based teacher leaders all have the power to move Project 2012 forward or to slow progress. As with teacher and student learning, educating leaders should be an on-going process. The group discussed how to create an on-going system for leadership development using avenues that already exist to get “our message” across. The group also identified resources available including “Strong Leaders for NM Schools” from OEA, *Lenses on Learning*, and *NCTM Professional Teaching Standards*.

Student Input: Eric MacInteer joined the group discussion by phone. He had previously conducted a focus group of 13 students (mostly college level) and gave them questions about their attitudes towards math and science. Student demographics were well represented. Students reported they wanted to see more enthusiasm and better prepared teachers. Tutoring could be useful. They are interested to see science and math in everyday life. They respond well to video games, should be used as a teaching tool. What helps them learn best? Real life application, hands on experiences; no one mentioned self-paced computer-based learning. Project Tomorrow might be a resource; Jamai Bliven will provide more information. Kids should some how be asked about home life and personal life that might affect ways of learning at school. It’s not that NM Project 2012 needs to provide solutions to issues of home/family life, but that it acknowledge these as factors. Kids should also be asked if they prepare for class and if they do their homework ... that is, do they use the readily available learning methods.

Assessment

- NM math & science assessment needs to be aligned to NAEP (National Assessment for Educational Progress)
- Changes in teaching attitudes, classroom practice and teaching strategies have been driven due to the NMSBA with criterion referenced items
- Short cycle assessments must be aligned to both the content and process standards and have criterion referenced items
- Professional development in math and science should include professional learning communities that focus on analyzing student work using common formative assessments of both process and content and determining next steps for instruction
- Continue annual standards based assessments in math and science in grades 3-8 and 11 as these standards based assessments are essential for standards based classroom instruction

Bob will put together a group of people to flesh out the information on these three topics and modify NM Project 2012 appropriately. He hopes to have a draft version of a revised Project 2012 ready for public comment in early November.

Northern New Mexico Project Presentations

PowerPoint presentation is available on M&S Bureau webpage (www.ped.state.nm.us/MathScience/msac.html).

In May, 2009, several projects in southern NM were invited to present to MSAC on how their work aligned with and supported NM Project 2012. Projects in northern NM asked to be given a similar opportunity and several were invited to do so at this meeting.

Santa Fe Science Initiative: Anne Weaver, Janet Brandt

They provide professional development in the form of mentor support and workshops. Housed at Gonzales Community School in SF, they want to become a regional resource center for science. Currently, they provide mentor support in 7 schools in SF, primarily at the elementary level. PD workshops provide whole school/grade level support; focus on inquiry science (aligns with 2012). They introduce science as an opportunity to expand literacy and math in schools; integrate reading, writing, and oral skills with science instruction. Workshops address content and pedagogy; model hands-on inquiry based approaches.

Verbal support from school leaders is present; it has been challenging to get substantive support both in terms of funding and participation. Science needs to be “squeezed in”.

Math Science Academy (MSA) Lorenzo Gonzales and Zach Leonard

The MSA has been working with schools in Chama, Taos, Pojoaque, and Espanola but are now focused on Espanola. They provide 3 weeks of intensive professional development in the summer with ongoing in-class support throughout the year. They have seen significant achievement gains in several schools. They also have a Masters program for teachers. They have just begun an Inquiry Science Pilot, working with 9 4th grade teachers in Espanola. They have had conversations with Susan MacIntosh (SFSI), but are not working directly with her in the Inquiry Pilot program.

Powerpoint slides available

Northern Network Carlos Atencio

The Northern Network works with 29 rural school districts. They use a Circuit Rider model--going to schools providing follow-up to professional development and getting districts together to fulfill mandates. Their professional development has focused on research-based NSF curricula (IMP, CMP) and building partnerships. They have done a lot of work with NWEA MAPS short cycle assessments and are now working to improve teacher preparation programs—and supporting Future Educators of America (FEA) clubs in middle and high schools. The Network has also instituted performance based compensation in 2 districts (Taos and Espanola), providing incentives for teachers based on improvement in skills and knowledge (focus areas identified by districts) assessed by walk-throughs and how well school does as a whole; they are now looking at classroom growth on NWEA MAPS. The Network holds monthly meetings with superintendents which includes PD. MSA and Northern Network are intertwined in that those teachers who are in MSA are more likely to qualify for incentives.

Earths Birthday Project: Cliff Ross, Kit Brewer, Shannon Murphy

EBP works with over 30 districts and more than 1600 teachers throughout the state. They provide materials and professional development to enable teachers to incorporate at least one hands-on, inquiry activity into their classrooms. Their model is to work with districts over

several years, increasing the amount of teacher participation. This year they are focusing on the gap in student performance on multiple choice and constructed response items as a way to show teachers the importance of giving students opportunities to practice process skills. They have updated materials to incorporate elements of constructed response questions as found on the SBA.

Project GUTS and Supercomputing Challenge: Irene Lee and Betsy Frederick

The Growing Up Thinking Scientifically (GUTS) Project and Supercomputing Challenge (SCC) focus on computational science, using computer models to investigate complex, real problems. SCC is a year-long program for high school students; student-driven research projects are entered into a competition. GUTS is a middle-school after-school club as well as a week-long summer camp for students. Together, they offer a summer teacher institute—2 weeks during which teachers learn the basics of computational science and carry out their own mini-research projects.

Discussion

In discussion after the presentations, several points were raised:

- How do we measure the impact of these types of programs?
- How can we make successful programs available to more schools/students?
- Teachers who are well-trained may become administrators; long-term support can be developed this way
- Are there more teachers who want to participate than do? How do they generate commitment for multiple weeks during the summer?
- How do we scale something like this?
- Experiences of “train-the-trainer” have not been highly successful; the information doesn’t seem to transfer well.
- It seems like some programs overlap and do the same thing in the same area. It would be beneficial to have some sort of clearinghouse of programs for educators and administrators.
- Mentoring requires time to build a relationship; support for STEM professionals to do this has dwindled.

Science Activity

Mary Jo led the Council in a science activity on sound as a context for discussing inquiry in science, the role of science laboratory experiences and research that indicates current lab experiences in the US are generally poor. In pairs, council members made “giggle cups” and explored variables that affected the sounds they created. The experience generated a lot of noise, human as well as “mechanical” giggles, and thoughtful comments.

Race to the Top Initiative

Melissa Lomax reported that Dr. Catherine Cross Maple will be using a structure to organize the writing of the Race to the Top proposal that has been used for the Career and College Readiness Policy Institute. There will be a small leadership group and a larger state-wide working group. Rick Scott is on the leadership group; Melissa asked MSAC members for names of individuals who could serve on the larger working group to represent the STEM perspective. Council

members who want to serve were asked to give their names to Felicia (note-taker). The final RFP for the Race to the Top has not been published yet.

Meeting Dates

There was some discussion about moving the date of the next meeting, but it was decided to leave it unchanged. MSAC will meet November 20th in the Socorro area; final location to be determined.

Meeting Evaluation

Plus:

Pre-planning for small groups—assigning members and designating a chairperson

Science activity

Presentations were informative

Delta:

More time per presentation/presenters should have prepared to stay within time

Missed opportunity to foster partnerships between projects; should have kept them in the room to collaborate after presentations