

***The Santa Fe Alliance for Science:
The First Eight Years***

***Bob Eisenstein
Santa Fe Alliance for Science***

***NSF Large Facilities Workshop
Very Large Array***

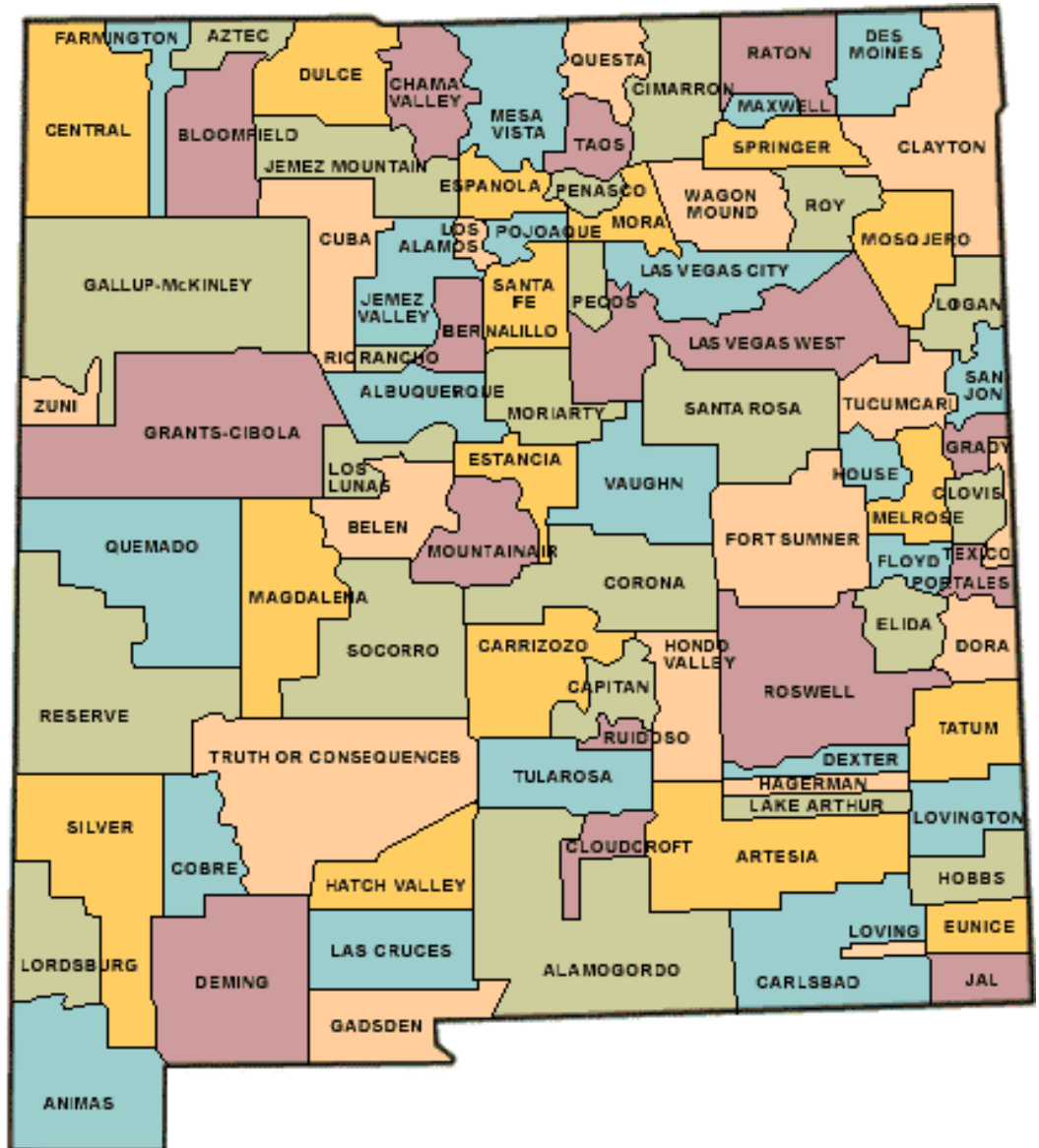
April 23, 2013

New Mexico

**The Land of Enchantment ...
But what does its future hold?**

New Mexico Demographics

- ~2,060,000 people (36th)
- 45% Hispanic, 41% Anglo
- 10% Native American
- 22 indigenous pueblos
- NM is effectively bilingual
- PCI: \$27,644 (46th)
- \$8200/yr/student (26th)
- ~10,000 STEM professionals (3rd p.c.)



Education in New Mexico

- *NM ranks nearly last in reading and math (4th and 8th grade).*
- *Barely 60% of freshmen graduate high school in 4 years.*
- *Employment prospects are diminished.*
- *Hard to attract business. Schools are often stated as a reason.*

Things My High School Didn't Have

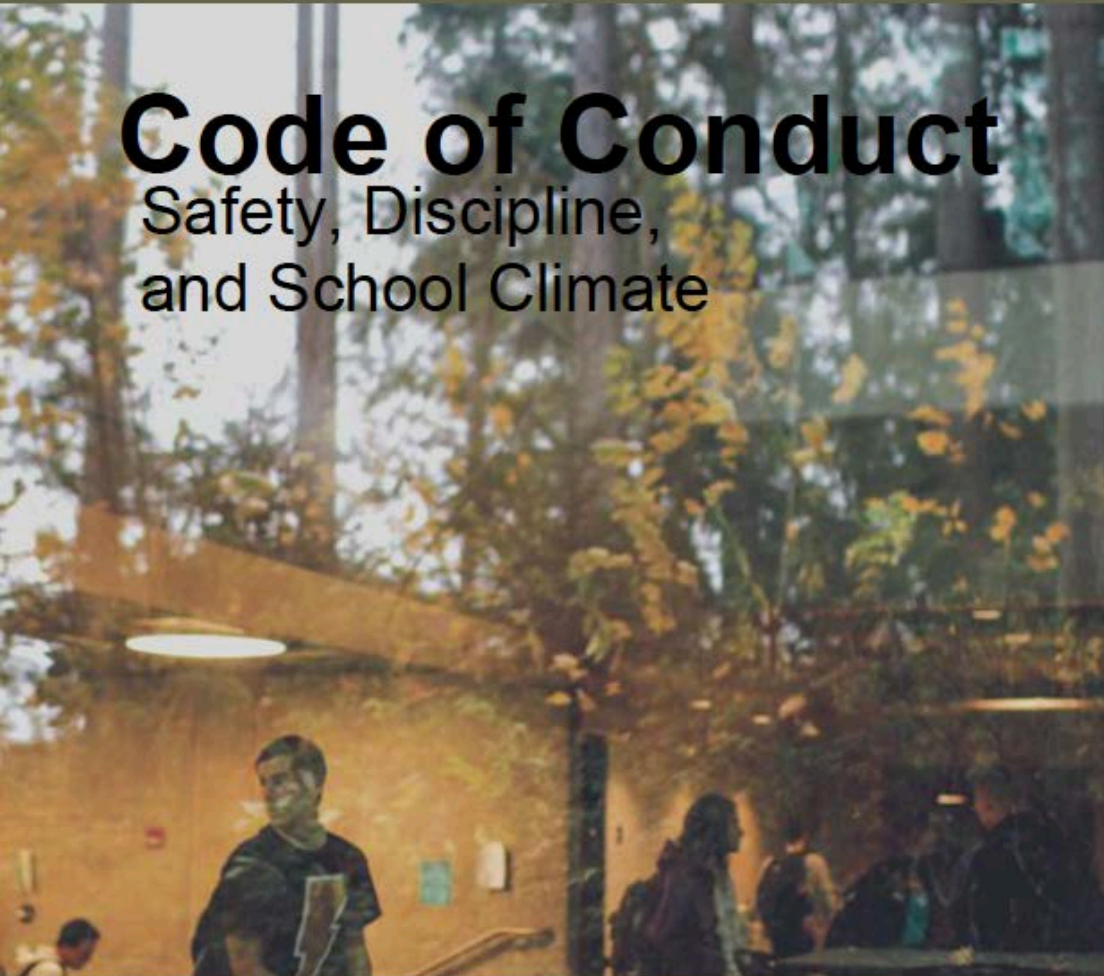
- *Serious security-safety issues.*
- *A serious drug problem.*
- *A day care center for the infants of students.*
- *Many students from fractured homes; a significant number are homeless.*
- *Most students with non-existent elementary math skills.*
- *Students with little interest in studying and homework.*
- *Poor parental support.*
- *A community culture of "blame the teachers & school."*

New Mexico

State Highlights 2013

Code of Conduct

Safety, Discipline,
and School Climate



A Special Supplement to *Education Week's*
QUALITY COUNTS
2013



Education Week

www.edweek.org/ew/index.html

Quality Counts 2013

- Discusses education within a societal matrix
- “You can’t think of fixing the schools in isolation” – Chris Swanson, project director

QC State “Chance for Success” Indicators Include Three Measures:

- **Early Foundations**

- *Family income, parent education, parental employment, linguistic integration*

- **The Schooling Years**

- *Preschool enrollment, kindergarten enrollment, elementary reading, middle school math, high school graduation, post-secondary education*

- **Adult Outcomes**

- *Educational attainment, annual income, steady employment*

Providing Opportunities for Success

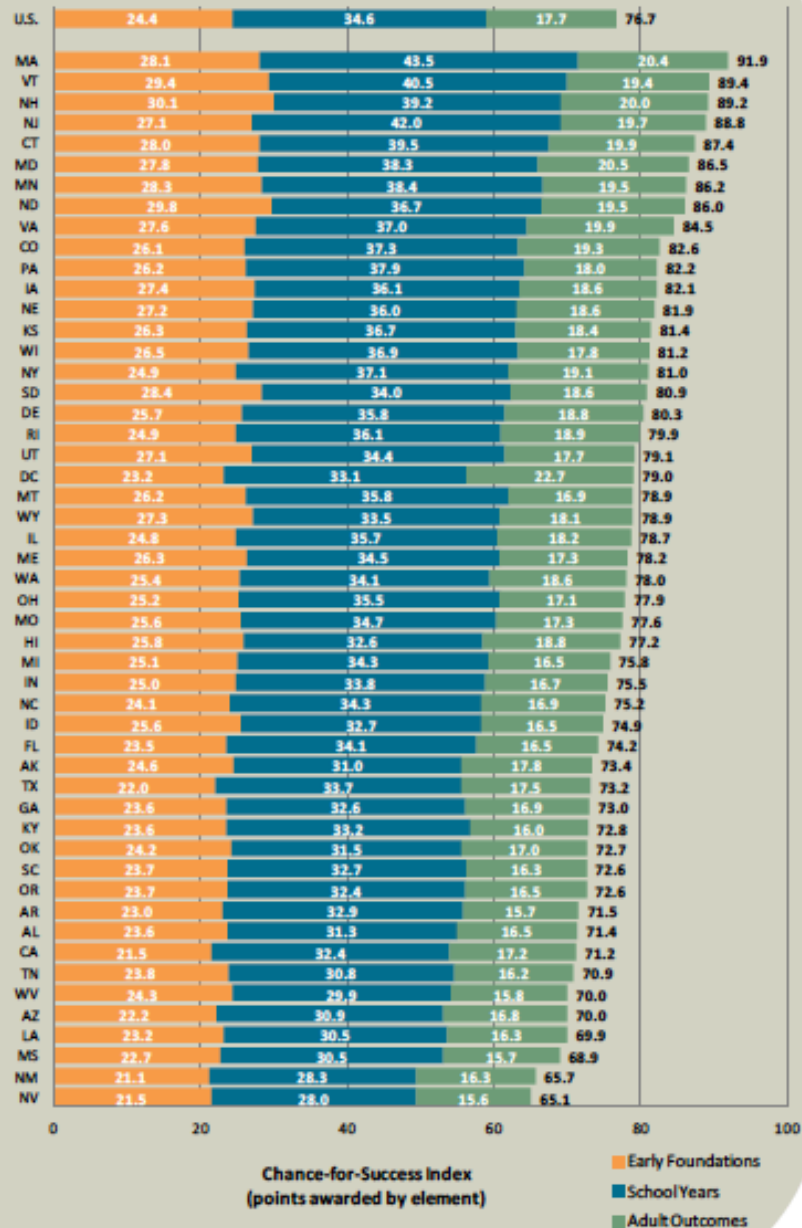
The Chance-for-Success Index captures the importance of education in a person's lifetime from cradle to career. Its 13 individual indicators span a variety of factors, including preparation in early childhood, the performance of the public schools, and educational and economic outcomes in adulthood.

The states are graded using a "best in class" rubric, where a score of 100 points on the index would mean that a state ranked first in the nation on each and every indicator.

State scores range from 91.9 (Massachusetts, earning the only A-minus) to 65.1 (Nevada, with a D). A closer examination of results shows that, while early foundations and adult outcomes do contribute to the index, indicators related to formal education (the schooling years) are the driving force behind the state rankings.

NOTE: State subscores may not sum to total score due to rounding.

SOURCE: EPE Research Center, 2013



“Chance for Success” Rankings

MA is 1st

NM is 49th

Santa Fe Alliance For Science

- *A non-profit founded May, 2005*
- *Purpose: to capitalize on the rich base of STEM talent in the Santa Fe area to help in K-14 math and science education*
- *> 150 volunteers to date*
- *Strong partnership with Santa Fe Public Schools*
- *Active in over 20 schools and community colleges so far*



Santa Fe Alliance for Science

Volunteer Scientists and Engineers in
Grades K-14 Math and Science Education



In 2011-12, ~ 65 vols donated ~3300 hours to ~5600 K-14 students & teachers.

Math & Science Tutoring at SFHS and SF Community College involved ~2,400 student interactions in 2011-12 (100% increase over previous year).

Science Fair Support: SFAFS is the judging backbone for SFPS science fairs. In 2012-13, ~1540 inquiry-based projects involving over 1600 students were judged at 28 SFPS fairs and the District Expo. In 6 years, program has grown from 9 schools to 19 and from ~640 projects to over 3,100 (total of inquiry-based + “demos”).

Science Cafés for Young Thinkers: Since November 2006, forty-one (41) diverse evening events on science and math have been presented to ~2700 grade 7-12 students, parents and teachers. Co-sponsors: SFPS; O’Keeffe Museum; SFI; Fractal Foundation.



Santa Fe Alliance for Science

Volunteer Scientists and Engineers in
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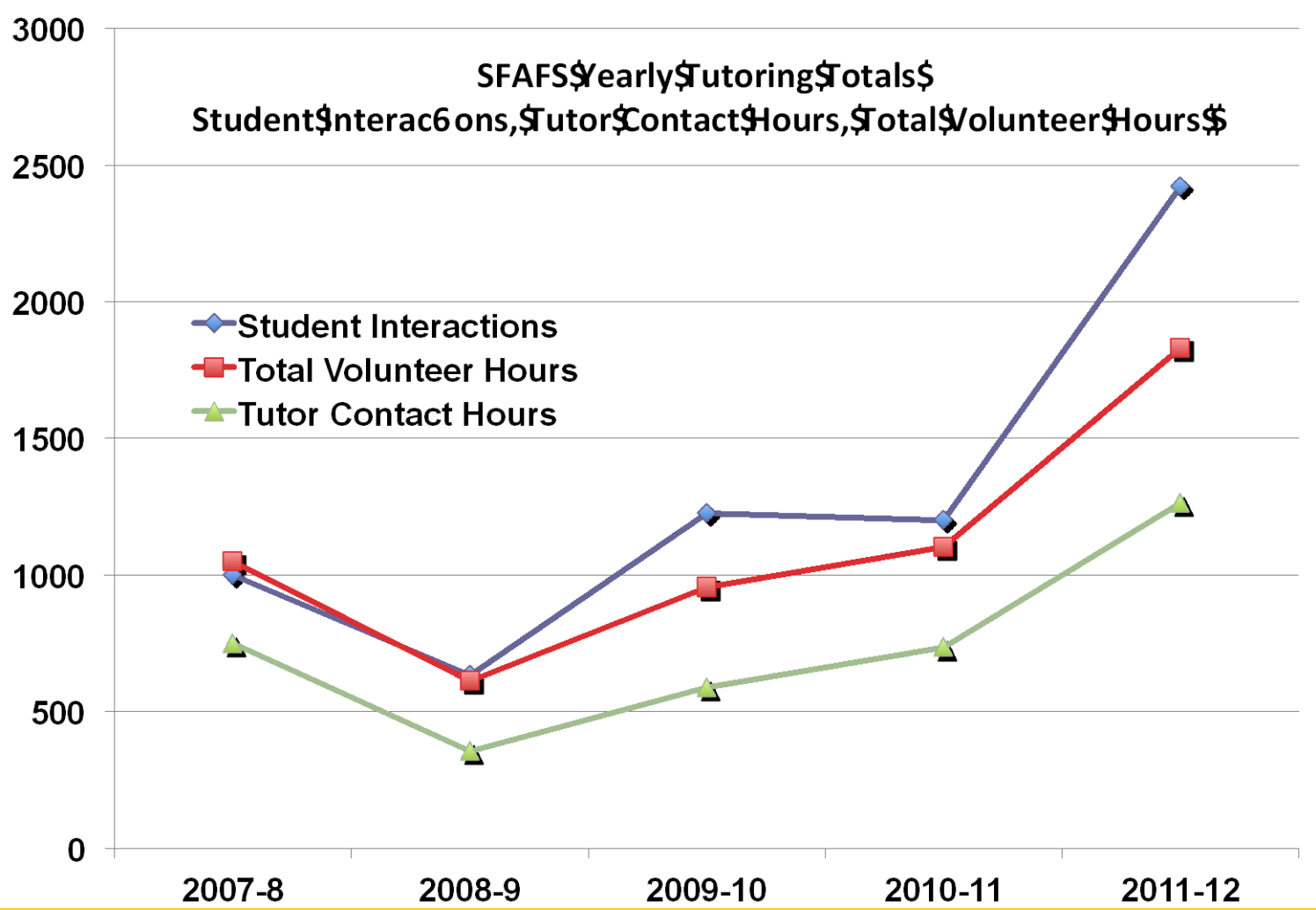


Annual Prize for Scientific Excellence: SFAFS and SFI award a \$500 prize to a science scholar at each Santa Fe area high school (13) and \$1000 to a single outstanding science teacher.

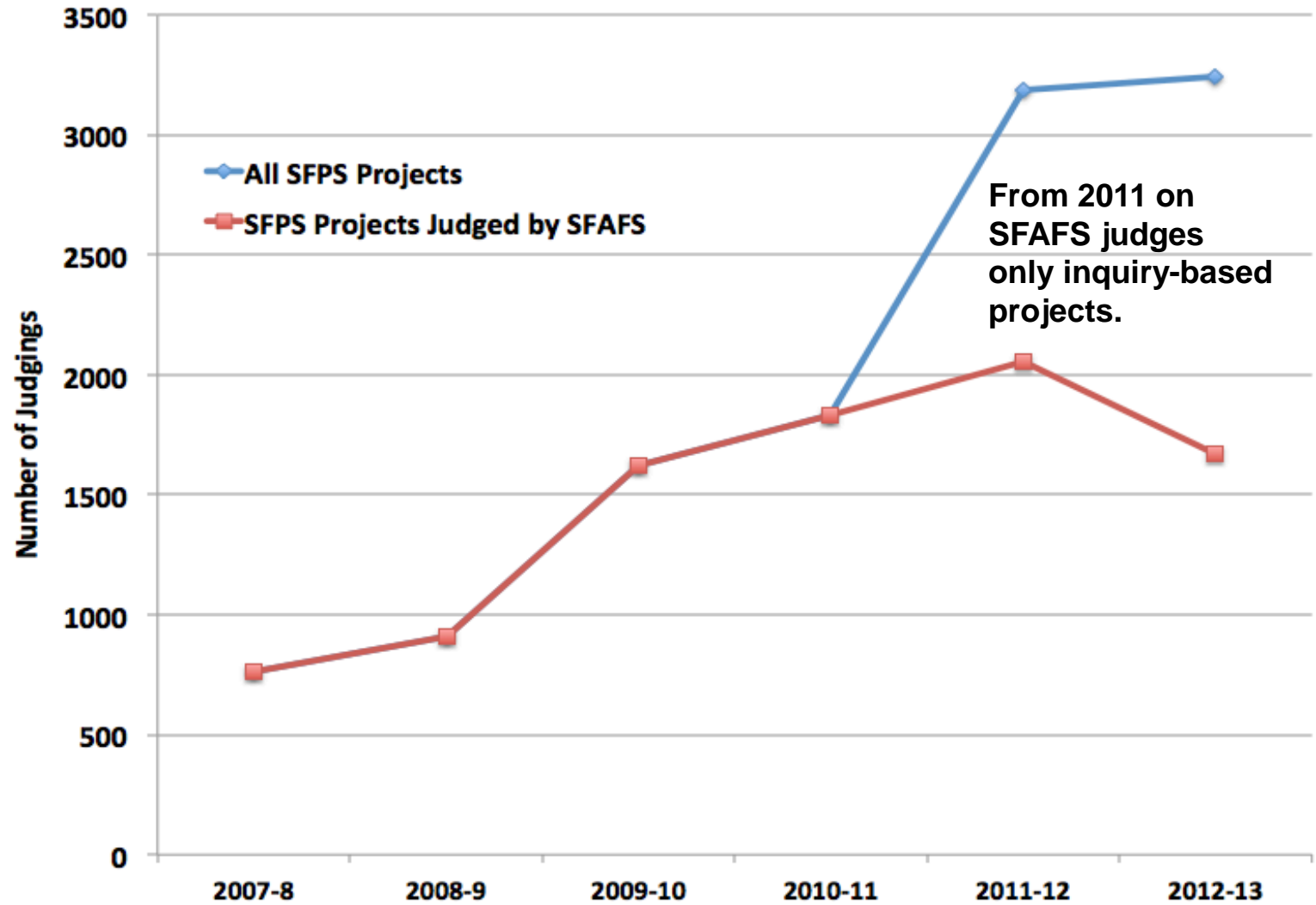
Professional Enrichment for Middle & High School Math & Science

Teachers: Since September, 2010: Thirteen 3-hour Saturday morning sessions given on diverse topics in math and science. Average attendance this year ~25 teachers.

Math Blitz: Volunteers work at 2 out of 5 middle schools, 3 class hours per week at each school (~120 students), working to bolster interest, appreciation and proficiency in math. Program in its fourth year.



SFAFS Judging of SFPS Science Fair Projects (Including Expo)





Santa Fe Alliance for Science

Volunteer Scientists and Engineers

in

Grades K-14 Math and Science Education

SFAFS is a non-profit 501(c)(3) organization of more than 100 professional scientists and engineers who work with schools in the greater Santa Fe area to help improve K-12 math and science education as well as to stimulate student interest in those subjects.

The Alliance is a partner of the [Santa Fe Public Schools](#) and the [Santa Fe Community College](#), and is affiliated with Los Alamos National Laboratory via its [Community Programs Office](#).

Next Science Café: Wednesday, April 13

Alan Nathan

University of Illinois, Urbana-Champaign (Retired)

"The Physics of Baseball"

Santa Fe Institute - Santa Fe Alliance for Science

"Prize for Scientific Excellence" Winners

[2010](#) [2009](#) [2008](#)

[Click here to ask SFAFS a question](#) about science or careers in science.

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www.sfafs.org

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Math Blitz

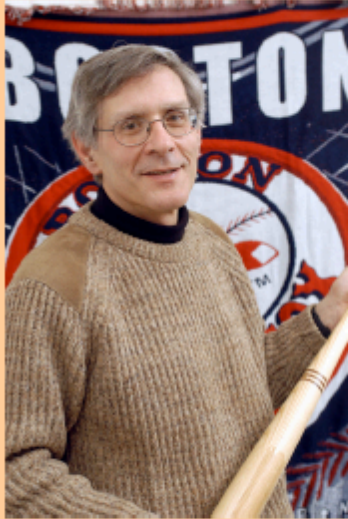
Professional Enrichment for Teachers

School Year Calendar

Science Events in NM

Educational Resources

**Questions?
Comments?**



“The Physics of Baseball”

Alan Nathan

**Professor Emeritus of Physics
University of Illinois**

Wednesday April 13

6 – 7:30 PM

**Georgia O’Keeffe Museum Education
Annex
123 Grant Avenue, Santa Fe**

Why do curveballs curve and sinkerballs sink? Why do aluminum bats work better than wood? Does a corked bat really lead to better hitting? What most affects the flight of the ball? Come hear the answers to these and other mystifying questions about America’s Pastime, baseball.

Admission is Free. Youth (ages 13-19) seating a priority, but all are welcome! Alan also will appear on the KSFR Radio Café (101.1 FM) with host Mary Charlotte at 8:30 AM that day.

Alan is a retired professor of physics. He was educated at the University of Maryland and Princeton University, and he has devoted his career to the study of nuclear physics. But he has also nurtured a life-long passion for baseball, publishing many scholarly articles on the physics behind the National Pastime. He presently is Chief Scientist of a consortium known as Complete Game Consulting, which provides analytical services to various organizations associated with Major League Baseball.



The Santa Fe Institute and the Santa Fe Alliance for Science Congratulate the Student Recipients of the 2011 Prize for Scientific Excellence and the Outstanding Teacher in Math / Science



Since 1996 the Santa Fe Institute has awarded an Annual Prize for Scientific Excellence to a graduating senior from each of the city's high schools. The purpose of this award is to honor outstanding science students in our community and to encourage them to pursue the study of science in college and beyond. Since 2008, we have been pleased to award the Prize jointly with the Santa Fe Alliance for Science.

The Outstanding Teacher award has been presented to one local teacher each year since 2005. This award acknowledges the creativity, originality, academic rigor, and professional excellence of a math/science/computer science instructor.



Photo by Laura Ware

Front Row (from left to right): **Murray Gell-Mann**, Santa Fe Institute, **Steven Mora**, Santa Fe Indian School, **Nina Lindsay**, Desert Academy, **Mitzi Florian**, SER/SFPS Career Academy, **Mariah Salyer**, Santa Fe Waldorf, **Diane Catron**, Santa Fe Preparatory School, **Ginger Richardson**, Santa Fe Institute, **Juniper Lovato**, Santa Fe Institute.
Back Row (from left to right): **Jerry Sabloff**, Santa Fe Institute, **Benjamin Clark**, Monte del Sol Charter School, **Brian Lewis**, Santa Fe Preparatory School, **Deepu Jose**, Academy for Technology and the Classics, **Andrew Wilder**, Santa Fe Secondary School, **Josh Catanach**, Santa Fe High School, **Bob Eisenstein**, Santa Fe Alliance for Science, **Meaghan Martinez-Palmer**, St. Michael's High School.
Not Pictured: **Myra Sandoval**, New Mexico School for the Deaf.

Principal Support for SFAFS

LOS ALAMOS
NATIONAL LABORATORY
FOUNDATION

McCUNE
Charitable Foundation



**Los Alamos
National Bank**

Santa Fe
Creating a better way.



Many Anonymous Individuals

Some Lessons Learned

- *You can be successful but it takes work.*
- *Trust is key.*
- *Scientists are not experts at K-12 pedagogy.*
- *Teachers are very busy. Must bring value added.*
- *Patience, patience. It's a marathon, not a sprint.*
- *Today's public school is a complex place with many issues and responsibilities.*
- *U.S. social fabric has changed hugely in 50 years.*

Physics is easy
Politics is hard.

(Albert Einstein)

Education is an issue of almost unbelievable complexity

***For many students
schools are a place of
refuge, stability and
security that they don't
have elsewhere.***

***Our schools, and
our attitude toward
education, mirror
our society***

**WE HAVE MET
THE ENEMY
AND HE IS US.**

