

New Mexico Supercomputing Challenge

challenge.nm.org

PO Box 30102
Albuquerque, NM 87190

History

The New Mexico Supercomputing Challenge is a school-year, statewide, mentored program in which teams of middle and high school students implement science projects using the methodology of computational science that links mathematics, science and computing.

Each team of up to five students and a sponsoring teacher defines and works on a computational project of their own choosing. It is required that these projects are based on "real world" phenomena and have measurable components.

Scientists, mathematicians and other experts from higher education, laboratory and business mentor the student teams.

New Mexico colleges and universities participate on the governing board, find local mentors, and provide facilities and materials for regional judging events.

Legislative Request

Inflows

Registration Fees	\$10,000
Grants	\$39,900
From Businesses	\$13,200
Scholarships	\$90,000
In-Kind	\$97,000

State of NM \$425,750

Total \$875,850

Expenditures

Salaries	\$482,000
At Risk & Outreach	\$76,900
Event Costs	\$50,200
Materials & Supplies	\$15,400
Office Expenses	\$7,050
Professional Fees	\$46,300
Scholarships	\$102,000
Students & Teachers	\$21,000
Travel & Housing	\$75,000

Total \$875,850

"I believe the Supercomputing Challenge is a great opportunity for students to show their creativity and intellect using computers to solve today's problems. This is important because today's Supercomputing Challenge contestants are the forerunners of tomorrow's innovative technology."

Daniel Parrot, student, Las Cruces High School



1% African American
27% American Indian
7% Asian
7% Declined
15% Hispanic
4% Multi
39% White



New Mexico Supercomputing Challenge

challenge.nm.org

PO Box 30102
Albuquerque, NM 87190

Computational Modeling Science Math



Critical Needs



The pipeline for scientists and mathematicians is dwindling in the United States. The NM Supercomputing Challenge is nurturing the development of future scientists and mathematicians. We believe the Challenge serves as an economic boost to the state by:

1. urging students to take math and science classes,
2. offering post-secondary educational opportunities,
3. using technology in schools,
4. increasing the high tech talent pool in NM,
5. increasing the quality of education in the state,
6. and by making NM more attractive to big business.

The Challenge partners with all the colleges and universities in New Mexico.

Many sponsors hire Challenge alumni because they are qualified to deal with real and relevant problems. More than 100 alumni work at Los Alamos and Sandia National Laboratories.

Standards



Students in the Challenge “understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.” They will “use mathematical concepts, principles, and expressions to analyze data, develop models, understand patterns and relationships, evaluate findings, and draw conclusions.” (Benchmark III)

The Challenge works with an evaluator to quantify how we make a difference in academic science and technology.

Survey data reveals that the comparison of Kickoff and Expo data proves statistically significant gains in computer modeling, hypotheses evaluation, research, and interpretation of computer simulated data.

Skills gained from participating in the Supercomputing Challenge are transferable to the classroom context.

Outreach



The Challenge reaches out to mid and high school students and teachers. We have learned that students who participate in school workshops and tutorials have an increased probability of finding “real world” problems to investigate, excel at conducting research, and developing working models and more fully comprehend computational programming based upon an underlying mathematical model.

This type of outreach develops confident, articulate problem solvers.

The Challenge’s outreach is a long-term effort that must be sustained over time if systemic change is to be seen. The Challenge has found that outreach workshops coupled with teacher attendance at Summer Teacher Institutes increases the level and quality of student work.