

Upcoming Events:**Modern Math Workshop**San Antonio, Texas
October 2-3, 2013**SACNAS National Conference**"Strengthening the Nation Through
Diversity, Innovation & Leadership in STEM"San Antonio, Texas
October 3-6, 2013**Dynamics of Seismicity,
Earthquake Clustering and
Patterns in Fault Networks**Research Triangle Park
October 9-11, 2013**Social Network Data:
Collection and Analysis
Workshop**Research Triangle Park
October 21-23, 2013**E&O: Undergraduate Workshop**SAMSI, Research Triangle Park
October 24-25, 2013**Field of Dreams Conference**Phoenix, Arizona
November 1-3, 2013**Annual Biomedical Research
Conference for Minority
Students (ABRCMS)**Nashville, Tennessee
November 13-17, 2013**Character Varieties and
Geometric Structures
Workshop**Howard University, Washington, D.C.
December 16-20, 2013**Computational Methods for
Censuses and Surveys
Workshop**Bureau of Labor Statistics in
Washington, DC
January 8-10, 2014**SIDIM XXIX**Pontifical Catholic University of
Puerto Rico in Ponce, Puerto Rico
February 28- March 1, 2014

Partner Spotlight: Reasoning Mind

When Max began second grade in the Dallas Independent School District in 2010, he struggled with the same issue as many of his peers: he did not like math. His Iowa Test of Basic Skills results from the previous year showed that he had fallen behind his grade level, a problem that could have serious consequences for his academic future.

The district had partnered with **Reasoning Mind**, a nonprofit organization that provides a mathematics learning system that combines a rigorous, internationally proven curriculum with unparalleled teacher support delivered through an innovative, engaging online platform. As Max's understanding of mathematical concepts increased, he began spending extra time at home on his math lessons. His outlook on math changed completely in one year. On his second-grade Iowa Test of Basic Skills assessment, Max tested at a 4.3 grade level, a full 2.5 levels higher than the previous year – and in the gifted/talented range.

Reasoning Mind was chosen as the first nonprofit organization to partner with the Math Alliance because of its dedication to the field of mathematics and students like Max, who represents just one example of the impact in classrooms across the country.

Reasoning Mind's curriculum is created by mathematicians working with master teachers to tailor international best practices in math education to American students. Currently, the curriculum is for students in grades two through six.

Reasoning Mind fosters in students an appreciation for learning, a strong academic vocabulary, and the confidence needed to succeed in studying mathematics.

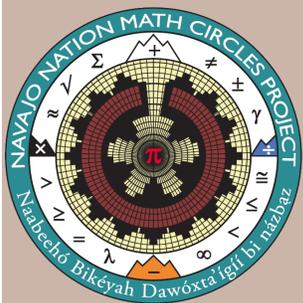


Dr. Paulette N. Willis, a mentor with the Alliance, is a mathematician at Reasoning Mind. "I entered the mathematics field in large part thanks to the support I received as a student from the Alliance," Dr. Willis said. "At Reasoning Mind, we work to help students improve their math skills and gain confidence. We are creating the next generation of Alliance scholars."

Although future Alliance members are a few years off, the results indicate that the Reasoning Mind approach is working for teachers and students. Ninety-four percent of teachers said the Reasoning Mind training increased their ability to explain mathematical concepts, and 87 percent said it increased their effectiveness at teaching math. The research also indicates that students not only are grasping mathematical concepts but are also becoming more excited about learning math.

Reasoning Mind will have a table at the Field of Dreams conference, so stop by to learn more about the partnership with the Alliance and the organization's vision of math education. You may also contact Dr. Paulette N. Willis directly at paulette.willis@reasoningmind.org.

The Navajo Nation Math Circle Project



Capture the flag, the game of set, tesseract, solar ovens, the braid group, water balloon fight!!! It is the Navajo Nation Math Circle (NNMC). Middle school and high school students from all over the Navajo Nation are encountering math from a new angle these days. The program, which has been very successful in other areas across the country, is finding success on the Navajo Nation as well.

Math circles are a very effective way to build communities, to encourage people to explore mathematics, and share the joy of mathematics with others. The goal of the Navajo Nation Math Circle Project (NNMCP) is to develop and demonstrate the math circle concept in the Native American community in order to attract more Native Americans into STEM fields, specifically the field of mathematics.

The NNMCP includes three major components: after school programs at a number of schools on the reservation, teacher development programs, and a two-week summer program. The program is co-directed by Tatiana Shubin (San Jose State University), Henry Fowler (Diné College), and David Auckly (Kansas State University). Tatiana spent the Fall of 2012 on the reservation, where she launched five math circles at four schools: Tsehootsoo Middle School, Chinle High School, St. Michael Indian School (SMIS) Middle School and High School and Many Farms High School. Sr Joan of Arc of St Michael's Indian School started leading after-school math circle sessions in the Spring of 2013. In order to sustain these circles the program directors are arranging a number of teacher development programs that will help teachers understand this method of mathematical interaction. The team also provides scripts and activities that the teachers can use. We are very hopeful that we will be able to recruit more local teachers to lead such programs. School year activities for the students included a logo contest, and problem of the week contests. Over one hundred middle and high school students took part in these after-school mathematics activities.

The first teacher workshop took place in December at Diné College. Tatiana Shubin led two two-hour sessions. The second teacher workshop took place in April. Amanda Sereney (Executive Director of the Riverband Community Math Center, IN) ran several sessions related to mathematical problem solving, and the Common Core State Standards in Mathematics. The third teacher workshop took place in July, with sessions led by Dave Auckly, Tatiana Shubin, and Amanda Sereney. It included Teacher programs (for current as well as future teachers) which are critical to capacity-building, to support the teachers' abilities to facilitate open-ended problem-solving and to increase the mathematical knowledge for teachers. Because the new Common Core Standards for Mathematics emphasize mathematical practices of reasoning and problem solving, which are also practices supported by math circles, hosting both teacher math circles and teacher Common Core Workshops in conjunction works well. The new standards give us a way to change the way people approach mathematics. To take advantage of this, the NNMC also included a program for pre-service teachers at Diné College.



The two-week summer school served 26 mainly high school students from across the Navajo Nation. Each day students were transported from across the reservation to Diné College. After breakfast, students would work on problems, play mathematical games, and try various puzzles (Three sons and two fathers are each to be given exactly one of three feathers. How is this possible?) The students then split into two groups for a mathematical exploration led by one of the visiting mathematicians. These mathematicians included Dave Auckly, Matthias Kawski (Arizona State University), Amanda Sereney, Tatiana Shubin, and Nandor Sieben (Northern Arizona University). The morning mathematical session would be followed by a hot lunch, then an educational/cultural activity such as traditional Navajo games, foods and cooking, or constructing solar ovens. (Natural pockets in canyons have been used as solar ovens for centuries.) There was also significant time for non-mathematical fun and games. Henry Fowler, Forrest Randall, Kamile White, Edison Leonard, Dawnlei Ben, and Barsine Benally were local educators who helped run the math camp. One activity they brought taught the Navajo names for two and three-dimensional shapes by having groups of four students make the shapes with their bodies.

The team also brought role models to the camp. Robert Megginson is a mathematics professor at the University of Michigan. He is also of the Oglala Sioux tribe. He gave a presentation about the use of mathematics to understand and address climate change. He also pointed out that indigenous peoples have a unique perspective on climate change and places to look for further evidence and methods for adaptation via their cultural traditions. John Herrington of the Chickasaw was the first Native American in Space. He described his path to becoming an Astronaut, and encouraged the students to be confident and trust people who believe in them.

The program certainly is generating enthusiasm from the participants. One of the youngest campers, Ellisan Cly, asked Nandor if she could skip lunch to keep working on the activity that he introduced. Another student, Albert, is studying with a math teacher and a practicing medicine man, Damien Jones, to be a medicine man. One afternoon, he gathered a group of students to tell them about the mathematics that he just learned. Most of the students who were at the math camp this summer have agreed that it's been a wonderful experience that they would recommend to their friends. They hope to come back next year.

This past May, *Math Alliance News* featured the Newark Area Math Circle. The math circle model is a great way to build supportive communities of people who explore mathematics together. If you are interested in joining or forming a math circle look at www.mathcircles.org or send questions to info@mathcircles.org.

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Field of Dreams

November 1-3, 2013
Phoenix, Arizona

The Math Alliance would like to thank all our mentors for nominating their scholars for the 2013 Field of Dreams Conference. We would like to extend a warm welcome to all the new scholars and thank everyone who submitted their application materials for consideration to attend the conference. There was a huge response to the conference and our selection committee is currently looking over the applications. You will be hearing shortly from us on your selection status. We hope to see you all in Phoenix!

Math Alliance Research Study: Student Survey

Just a friendly reminder that the Math Alliance Research Study would like your feedback on your involvement in the Alliance! If you could kindly take some time out of your busy schedule to fill the survey out when you receive the e-mail that would be wonderful! Thank you.



Gaius Charles Bolin Dissertation and Post-MFA Fellowships

These fellowships are for graduate students in the later years of their graduate career, and are designed to promote diversity by encouraging students from underrepresented groups to complete a terminal graduate degree and pursue careers in college teaching. They are two-year residencies at Williams College, where the first year would be dedicated to completing dissertation work. The second year is spent on academic career development. Each year, the Bolin Fellow teaches just one course. The idea would be that the graduate student would be in an area close to one of our faculty members here, and so that faculty member could mentor the Bolin Fellow in his/her research, while the entire faculty could mentor him/her for teaching and other academic career development things.

Eligibility: The Bolin Fellowships are awarded to applicants from underrepresented groups, including ethnic minorities, those who are first-generation college grads, women in predominately male fields, or disabled scholars. Applicants must be U.S. citizens or permanent residents. They are intended for grad students who are far along in their graduate work (must have completed all doctoral work except the dissertation). There is an annual stipend, health insurance, a research fund, etc.