



2.0 Spotlight

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Spotlighting How Our Programs Work

This month, several STARBASE 2.0 sites from around the country shared an update about their programs now that things are in full force or close to wrapping up. Here's a little look:

STARBASE Minnesota

Twelve STARBASE mentors were greeted with hugs, high fives, and cheers at the onset of the latest STARBASE 2.0 mentoring session. Mentors help students explore the principles of rocket design, using Newton's Laws and the Engineering Design Process to guide their investigations. Eman, one of the students in the program, said, "Launching rockets is awesome, and it's fun to have mentors here to help us work harder and learn more."

Following a successful launch of STARBASE 2.0 program in 2012, STARBASE Minnesota has strengthened and expanded its partnership with an afterschool program at Pillsbury Elementary School in northeast Minneapolis and volunteer STEM mentors.



"Launching rockets is awesome, and it's fun to have mentors here to help us work harder and learn more."

-- Eman, a STARBASE Minnesota 2.0 student



"Outstanding people have one thing in common: an absolute sense of mission."

-- Zig Ziglar



Former STARBASE students can opt to join Girls in Engineering, Mathematics, and Science (GEMS) and Guys in Science and Engineering (GISE), meeting with school staff two days per week for three hours each day. GEMS & GISE is a district-wide program in Minneapolis Public Schools (MPS), funded by Cargill, that aims to promote further interest in STEM fields, and it provides an existing structure for the 2.0 program in which mentors can have a great impact.

Each fall, students in GEMS & GISE explore robotics and participate in FIRST LEGO League competitions. Topics vary each spring, such as electricity and

energy. Currently, students are exploring rocketry and performing experiments to optimize their rocket designs. STARBASE Minnesota is able to support the program by providing mentors from the Minnesota National Guard, connecting two organizations with overlapping goals.

Minnesota Adjutant General, Major General Richard Nash, has identified increasing diversity in the MN Guard and community involvement as key priorities. Chief Ray Kennedy explained, "This is a great opportunity for the National Guard to provide good role models for youth and build strong U.S. citizens. With efforts of the Guard, we are also able to have a greater presence in diverse communities." Over 50 volunteers and mentors from local STEM corporations also inspire and help educate students who participate in STARBASE Minnesota programs.

While mentoring is designed as a way to support students continued interest and excitement about STEM, the mentors also experience benefits. Senior Master Sergeant Carrie Isaacson stated, "Personally, I'm getting so much out of mentoring. I volunteered because I love the opportunity to work with kids who are young and interested in science, but I didn't realize that I would get as much out of it as the students do."

One of the most important attributes of mentors is consistency in meeting with students. Further, mentoring urban youth in areas of science and engineering requires preparation. In order to promote positive interaction with students, STARBASE provided volunteers with training and materials prior to the start of mentoring and as the program continues. STARBASE also led a district-wide training for all of the GEMS & GISE educators, helping them to bring Pro/Engineer elements into their programs; further training and professional development from STARBASE has been requested by MPS. In addition, STARBASE staff debrief with the volunteer mentors and educator coaches after each mentoring session to evaluate and enhance the program.

“ I volunteered because I love the opportunity to work with kids who are young and interested in science, but I didn't realize that I would get as much out of it as the students do.”

--Senior Master Sergeant Carrie Isaacson

Students leave STARBASE full of enthusiasm for STEM. STARBASE 2.0 capitalizes on this excitement to further develop skills and knowledge in former STARBASE students. Students' extended exposure to military careers via mentoring adds to their interactions with industry scientists and engineers at STARBASE, strengthening the possibility that they will pursue STEM careers in the future.

STARBASE Louisiana

In October 2012, STARBASE Louisiana launched their new STARBASE 2.0 program at Cope Middle School in Bossier City. This afterschool program—a partnership among Cope, Bossier Parish School Board, the Cyber Innovation Center, and STARBASE—is designed to deepen students' STEM knowledge and strengthen their desire to stay involved with STEM in the future.

Sixth and seventh-grade students split their time evenly between working the CAD modules on PTC Pro/Engineer and exploring scientific and engineering principles through hands-on experiments.

The curriculum is meant to prepare the students for the eighth-grade experience of engineering, analyzing, and improving a slot car. They first analyze the performance of a generic car and then make improvements on the original design based on the foundational knowledge from previous years in 2.0.

The twenty-four students in the program this year are enthusiastic and are enjoying the opportunity to be the first participants of STARBASE Louisiana's 2.0 program. "Even though it deals with school-related topics, it's actually extremely fun," says Vincent Sedminik, an 8th grader at Cope. He adds, "It opens my eyes to the opportunities which lie ahead of me for my future."

In the future, STARBASE Louisiana plans to expand the program to additional middle schools in the area. They are looking forward to the wider impact on area students and expanding their outreach within their community.

“Even though it deals with school-related topics, it’s actually extremely fun. It opens my eyes to the opportunities which lie ahead of me for my future.”

--Vincent Sedminik, an 8th grader at Cope Middle School





STARBASE Battle Creek

STARBASE Battle Creek 2.0 recently celebrated the successful conclusion of their first session for the 2012 -2013 school year.

They are experimenting with conducting two, one semester programs. Each program meets weekly for 12 sessions. The first session is offered exclusively to the sixth graders who are new to Springfield Middle School. The second session is offered to all Springfield Middle School students who wish to participate. They give preference to anyone who hasn't previously attended.

The advantages of this format are

- » The college age mentors know in September and January whether their class semester schedule will allow them to participate.
- » The military volunteers are less likely to have to interrupt their participation because of deployments.
- » The students know that once STARBASE 2.0 begins it will be held weekly.
- » Students who want to participate in other semester long after-school activities can do both.
- » Mentors who do both sessions gain additional SCALEXTICS slot car building and racing experience.
- » They are engaging more students with essentially the same resources.

The number of participants has remained consistent (about 20 per program), and unless they have an unanticipated problem, they plan to continue this pattern.



“ They are engaging more students with essentially the same resources.”

STARBASE Wright-Patt 2.0 Engineers: Toothpick Bridges

The STARBASE Wright- Patt 2.0 teams recently completed their ongoing project with toothpick bridges. The STEM challenge was well received by the students and mentors.

The process began with the chance to analyze bridge design and understand bridge purpose and strength. The teams were given background investigations to complete, which included watching a DVD about types of bridges, testing virtual bridges on the computer, building sample bridges out of K'Nex, and constructing a full-size bridge that would support the mass of individual team members, as well as one entire team!



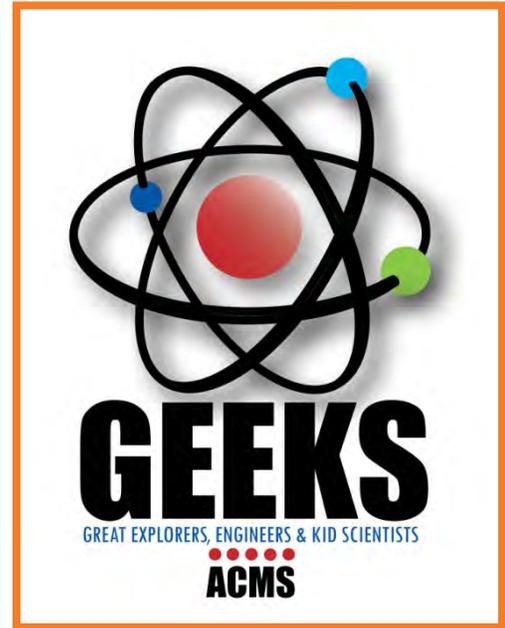
Each team formed two bridge companies and chose company names. Positions within the company were decided by the members of the company. Each company had an architect, a transportation manager, a carpenter and an accountant. With a budget of one million STARBASE dollars, the students worked their way through the Engineering Design Process as they sketched designs and purchased land and supplies. Using hot glues guns and toothpicks, the companies built the toothpick bridges.

At the conclusion of the project, teams gathered with their companies for the testing of the toothpick bridges. The mass of each bridge was measured and charted for all to see. The bridges were then brought, two at a time, to the stage. Various items were added to the testing buckets suspended below the width of the bridge. As bridges fell, the mass of their load capacity was measured. The efficiency of each bridge was calculated by dividing the load supported by the mass of the bridge.



Site Spotlight: STARBASE Wichita

STARBASE Kansas's 2.0 program, Great Explorers, Engineers, & Kid Scientists (GEEKS), was started by Andover Central Middle School (ACMS) parents in 2010. The goal of the club is to provide an afterschool opportunity for ACMS students to explore science & technology through hands on activities, demonstrations, and field trips and to provide support for teams entering science and technology competitions such as Science Olympiad and LEGO MINDSTORMS.



Their group, who participated in bi-monthly afterschool meetings, grew from 35 students in the first year to over 70 students during their second. They have taken many field trips including Exploration Place, the Cosmosphere, Sedgwick Co Zoo, Great Plains Nature Center and the Underground Salt Mine Museum. They learned to use a "Jelly Cam" to make stop motion videos and had hands-on demonstrations and discussions by medical professionals and students from the Wichita State University Science and Engineering Educational Development for Students (SEEDS) program.

GEEKS Club students attended three different competitions during the spring of 2011 and 2012 – Science Olympiad, WSU Shockers LEGO MINDSTORMS Challenge, and the KU Engineering Expo.

In the Spring of 2012, they took two teams to the Invitational Science Olympiad at Kapaun and entered the Regional Competition at Newman University where they placed in several areas. They also had two Beginner and two

Intermediate teams enter the WSU LEGO MINDSTORMS Challenge where they received two 1st, a 2nd, and 3rd place awards. The students enjoyed many hands on experiments and talking to college students from various engineering disciplines during the KU Engineering Expo.

These endeavors were made possible through a generous grant of \$1700 from Cargill, which allowed the program to obtain the supplies they needed for the MINDSTORMS competition as well as funding some of the field trips.

STARBASE Kansas plans to continue the club as long as they have student interest and parental support.

MORE INFORMATION ABOUT THE COMPETITIONS

Science Olympiad

KANSAS:

<http://webs.wichita.edu/scienceolympiad/>

NATIONAL:

<http://soinc.org>

WSU LEGO Mindstorms Challenge

<http://www.wichita.edu/thisis/home/?u=mindstorms>

KU Engineering Expo

<http://groups.ku.edu/~kuesc/expo>



Spotlighting Our Winner: Newsletter Photo Contest

Recently, we held a contest to ask for a new image for the front page of the *STARBASE 2.0 Spotlight*. We asked our STARBASE 2.0 sites to submit an image that depicts a STEM scene with a small description about why this image best exemplified the STARBASE 2.0 program.

We received several great entries depicting 2.0 scenes from around the country. Here are just a few!

STARBASE Connecticut

"We think this photo best exemplifies STARBASE 2.0 because it shows perseverance and success in the face of challenge. The student shown here is Marquis. Marquis comes to 2.0 with a smile, no matter what he has going on in his personal life. He is so proud of what he designs as part of his 2.0 program!"



Spotlighting the Way Ahead:

The 2012-13 Call for
Participation

Throughout the 2012-13 school year, this newsletter will continue to spotlight the achievements, partnerships, and tips of the participants of the STARBASE 2.0 program.

Each month, a call will be sent out to all site participants focusing on a different aspect of the STARBASE 2.0 program.

In honor of National Volunteer Month, the April 2013 issue will spotlight the volunteers that make our programs possible. Participants are asked to send information to starbasenewletters@gmail.com.



Wyoming STARBASE Academy

"This photo was taken with an iPad of a student in an Augmented Reality session demonstrated by Alister Fraser from PTC."

And, our winner, seen on the front page, comes from STARBASE Minnesota! Here you can see a typical scene from our STARBASE 2.0 program, the interaction between our STEM Mentors, in this case a service member, and our 2.0 participants. These moments are the core of what we do everyday in STARBASE 2.0.

A huge thank you to all that submitted photos for consideration.