



# 2.0 Spotlight



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## EXAMPLE COLLABORATORS

- » 4-H Extension Office
- » Boys and Girls Club
- » Clif Bar Company
- » Cyber Innovation Center
- » Dayton Power and Light
- » Local Universities
- » National Association of Rocketry Club
- » NAVAIR In-Service Support Center Southwest
- » New Union of Cheyenne and Laramie County for the Education and Advancement of Robotics
- » Operation Military Kids
- » St. Maries Optimist Club
- » Wizards of Wright

## Spotlighting Collaboration

Alongside the chosen STEM Project, the community collaborations sought out by STARBASE 2.0 programs around the country make this expansion of the STARBASE program possible. While the nationwide STARBASE effort is a DoD program, reaching a greater cohort of students requires external collaboration with businesses and organizations embedded in local and STEM communities.

This month, we have chosen to spotlight these collaborations so that all the STARBASE 2.0 programs, established or just starting out, can benefit from the work done by your colleagues, and in turn, we can collaborate on the STARBASE 2.0 effort together.

### STARBASE WRIGHT-PATT

STARBASE 2.0 Wright-Patt is fortunate to have a wide variety of partnerships within the community and beyond. Some of the partnerships have been ongoing and a few are coordinated for later in the 2012-2013 school year.

The mentors in this year's STARBASE 2.0 program are affiliated with multiple organizations. There are Air Force members, both commissioned and non-commissioned, and civilian employees of the base. The educator mentors include STARBASE instructors and classroom teachers from two different school districts. Currently, the college mentors attend the University of Dayton and Wright State University. To round out the mix, parents, who are also spouses of military members, mentor as well. In all, there are twenty mentor and coach positions being held by seventeen volunteers.

Before this year's program began, the Clif Bar Company agreed to continue their support by again donating Kid Organic ZBars for the students and mentors as a healthy after school snack. After receiving a STARBASE 2.0 thank you letter complete



"Unity is strength... when there is teamwork and collaboration, wonderful things can be achieved." --Mattie Stepanek



with images of team members enjoying the product last school year, the company pledged to donate five cases, or fourteen hundred bars, for this year's participants.

Another partnership occurred during this year's FIRST LEGO League (FLL) season. The Hammerheads, a 5th through 8th grade STARBASE 2.0 coordinated team, visited Wright State University in Dayton, Ohio. A Biomedical Engineer from the college worked with the team as they developed their prototype of a retractable cane. The cane was an innovative idea as part of the team's Senior Solutions project portion of the competition. In addition, all three of the STARBASE 2.0 FLL teams were required to receive feedback from a senior partner. The senior partner was an individual sixty years or older. The senior partners included grandparents of team members and a STARBASE instructor.

Future partnerships include base personnel of Wright-Patt visiting during the STEM career exploration theme. These volunteers will show the students a wide variety of STEM related jobs both in and outside of the military. Wright-Patt's Educational Outreach supports the program with visits from Wizards of Wright presenters and an opportunity for teams to travel to the base to use Scanning Electron Microscopes.

Beyond the military aspect, the STARBASE 2.0 teams will receive assistance from the National Association of Rocketry Club (Team Ohio Rocketry Club). In addition to supporting the building and launching of model rockets, they have also offered to use a Rocket Sim program with the students to better explain the science behind rockets.

Locally, STARBASE 2.0 Wright-Patt has partnered with Dayton Power and Light, the area's electricity provider. As a way to educate children about energy conservation, educators are given free materials to allow testing by the students with measurable results. In addition, each child and mentor will be given a take home supply kit that includes at home testing materials and money saving items such as low water flow shower heads and compact fluorescent light bulbs.

The STARBASE 2.0 Wright-Patt programs are greatly enhanced by the support of their partners. The children and adults involved have the opportunity to have unique experiences thanks to these volunteers.



## STARBASE ATLANTIS - SAN DIEGO

STARBASE-Atlantis San Diego's success over the past three STARBASE 2.0 sessions can be directly attributed to the collaboration of our many wonderful mentor partnerships. In particular, the engineer mentors provided by the NAVAIR In-Service Support Center Southwest (ISSC), North Island have been invaluable to the program.

The In-Service Support Center North Island is located at the Fleet Readiness Center Southwest (FRCSW) Naval Air Station North Island, Coronado, California. The ISSC provides comprehensive support to the nation's aviation warfighters by overhauling, repairing, and modifying Navy and Marine Corps aircraft.

For more than 21 years, NAVAIR North Island has paved the way as a STEM community outreach leader in San Diego. The NAVAIR Science Enrichment Program (NSEP) enlists the talents of more than 40 volunteer engineers and scientists who reach out to thousands of students every year. NAVAIR North Island has partnerships with elementary, middle, and high schools across San Diego. The primary focus of NSEP is to motivate and inspire fifth-grade students through interactive science workshops.

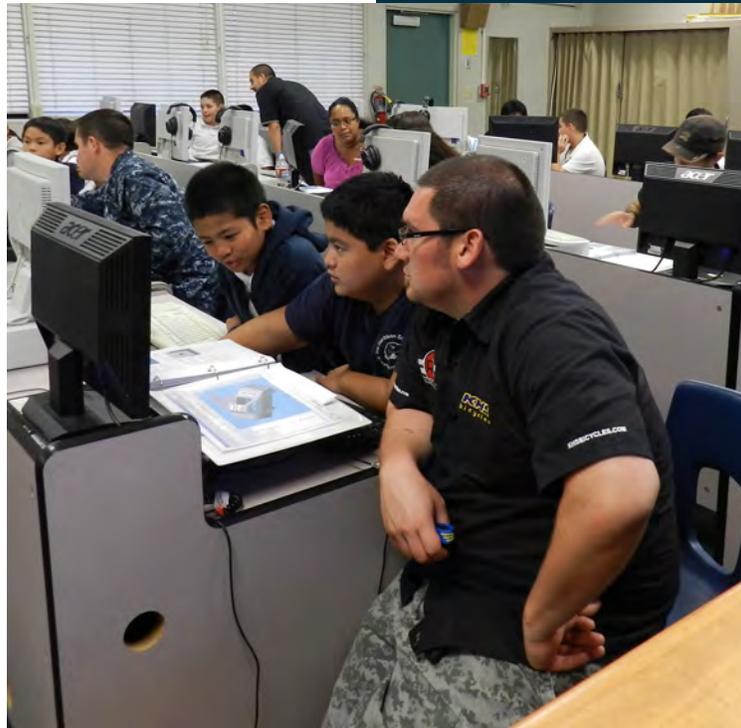
ISSC has provided six engineers in support of the 2012-2013 STARBASE 2.0 after-school, mentoring program. The mentors have dedicated themselves to assist 22 students to design, build, and race CO<sub>2</sub> race cars. Their expertise in team-building, Computer Assisted Design (CAD) engineering software, physics, and mathematics inspire and motivate our SB 2.0 students.

We could not have succeeded without the help of Ms. Claudia Garcia, STEM Site Coordinator for ISSC. Her unflagging support of the DoD STARBASE 2.0 program and determined efforts in assisting with the recruitment of highly qualified engineer volunteers has resulted in the providing 72 students with an enriching and motivating STEM experience.

The NAVAIR role models have demonstrated core values and enhanced our students understanding of what careers in STEM fields can lead to. They have inspired them through this team-building experience to achieve success in their study of STEM related subjects.

## STARBASE LOUISIANA

In October, STARBASE Louisiana launched the next stage of STEM-powerment – STARBASE LA 2.0 – through a pilot project with Cope Middle School in Bossier City. A team of six teacher/mentors, three military mentors, one corporate sponsor/mentor, and three STARBASE instructors have assisted twenty-four sixth, seventh, and eighth grade students with hands-on STEM activities and investigations. Sessions are divided by grade level and include 45 minutes of hands-on investigations and debrief and 45 minutes of PTC CAD software training on select project modules.



Duncan Aubrey, a seventh-grade 2.0 participant is really excited about the projects. "It is fun and a great learning experience full of cool experiments!" he explains.

Designed for continuity and student retention, the program maps out a carefully crafted curriculum that unfolds over the course of three years, culminating in the national STARBASE Scalextric competition. Sixth graders are initially exposed to key concepts that establish a base for future engineering activities. Topics include the Engineering Design Process, center of gravity, aerodynamics, energy, forces and motion, electrical circuits, scale/ratio, and gearing. Seventh-graders build on previous investigations of the STEM applications that are instrumental in good car design. Topics from the sixth grade curriculum are revisited and reinforced with different activities, broadening the content knowledge needed to complete the Scalextric project in eighth grade. Eighth graders apply their understanding and practical experience from their STEM investigations in previous years in 2.0 participation to design, test, analyze, and redesign a model slot car for the national Scalextric competition. Duncan Aubrey, a seventh-grade 2.0 participant is really excited about the projects. "It is fun and a great learning experience full of cool experiments!" he explains.

Elizabeth Vance is a seventh grade science teacher who is serving as one of the 2.0 mentors. She states, "The activities in STARBASE 2.0 thus far have been outstanding! All labs have been inquiry-based and have pushed the students to really question their ideas and reasoning behind different concepts." Sessions are mapped out through the first of May, culminating with a joint celebration with all three grades, mentors, and parents. The participating school district is so excited about the success of the project that it has already planned to implement it in additional middle schools for Fall of 2013. In creating a three-year model, STARBASE Louisiana hopes to develop a true pipeline to establish a link between the fifth-grade STARBASE program and participation in local and national STEM-related activities in High School and beyond.

The STARBASE Louisiana 2.0 program involves collaboration with the Cyber Innovation Center (CIC), a 501c3 not-for-profit corporation with the mission of development and expansion of a knowledge-based workforce throughout the Northwest Louisiana region. CIC Vice President, G.B. Cazes, met a number of times with STARBASE Director and other staff members to outline the partnership.

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Among many other STEM-related projects, the CIC sponsors high school students' participation with Louisiana Tech University's national Eco-Car competition, in which teams work together to engineer the most fuel efficient car. The STARBASE 2.0 three-year Scalextric curriculum model was designed as a launching point to serve as a pipeline to channel students into the Eco-car competition. Funding for t-shirts and the end of year celebration is being provided through the CIC, and several CIC staff members are serving as mentors.

An end-of-year review will evaluate the success of the pilot project and will determine if expansion to other schools will be implemented. The CIC is prepared to underwrite some of the costs of expansion, and provide additional resources.

## Spotlighting School Collaborations:

### STARBASE 2.0 at Johnson Junior High School, Cheyenne Wyoming

Over the last eight weeks, mentors and students at Johnson Junior High School have been researching and testing structures and utilizing Mindstorm NXT robots as a start to their STARBASE 2.0 program. Twelve to fifteen students meet every Tuesday and Thursday for ninety minutes to design, create, and test prototypes.



Other projects included using robots to move objects down the hallway, building bridges and cars out of pasta, and design a Tubeex contraption to move a ball over 50 feet without human power.

Their final project this semester was to use wind bags to create a free-standing structure they could all fit into. Two thirds of the 7th and 8th grade students attended STARBASE when they were in fifth grade. They were excited to be part of STARBASE again.



In the spring, STARBASE 2.0 will team up with the University of Wyoming Science Posse. Science Posse Fellows are pursuing advanced degrees in science, engineering and math. They are passionate about their research and about encouraging students to become the next generation of scientists. The Science Posse and STARBASE mentors will be challenging the students to design their very own Rube Goldberg device.

“ I loved building the pasta cars and testing them on an incline plane,” said Tessa. “I had to redesign a few times until it actually went down the hill the way I wanted it.”

“ I thought building a structure with marshmallows and spaghetti was fun”, said Nathan. “I had done it with gum drops and tooth picks before, but this was harder.”



They are also interested in the possibility of expanding the curriculum and incorporating it into a series of STEM elective courses embedded in the school curriculum in select middle schools.

## STARBASE ATLANTIS - PAX RIVER

The St. Maries Optimist Club has once again volunteered to sponsor Pax River's STARBASE 2.0 student t-shirts and refreshments at the conclusion of the program. Last year, they provided the shirts as well as pizza and drinks for our concluding session and awards ceremony.

The Optimists' motto is "Friends of Youth," and after seeing the great things that the STARBASE 2.0 After-School Mentoring Program provides for our "at-risk" middle school population, they were eager to continue to sponsor the extra items that make the program even more memorable for the students. We appreciate their generosity and look forward to continuing the partnership in the future.

The St. Maries Optimists backed a winning program, since the NAS Patuxent River "Galaxy Peacock" Team was the First Place winner of the national STARBASE 2.0 Scalextric4Schools competition last spring. Perhaps their continued sponsorship will produce a winner next year as well.

## STARBASE RAPID CITY

Collaboration between the local 4-H extension office and the STARBASE program began with a phone call in November of 2010. This phone call was ripe with possibilities and opportunities that have started but will expand in the future.

In the Spring of 2011, Sarah Jensen, Director of STARBASE of Rapid City and NOVA Honor, did an initial kick off of STARBASE 2.0 in two schools, Dakota Middle School and Douglas Middle School. These programs used a large variety of STEM topics that were all hands-on and interactive. The first session had over 40 kids and 10 mentors. It was very successful and had high completion rate.



Tiffany Meyer with South Dakota State University Pennington County 4-H Extension Office worked with Sarah to start the Tech Wizards in North Rapid Middle School in the late spring 2011. North Rapid Middle School is predominantly a Native American school with a very high transient population. There were issues in terms of attendance, completion, and bringing in mentors willing to work at a challenging school. The group of students was small but very dedicated.

With limited time, the first session showcased robotics. The session in the Fall 2011 utilized multi-media projects with supplies that Tiffany bought using an Adobe grant. The second semester, the students learned about LEGO NXT robotics. The year ended with 16 students and 4 mentors.

Now in their third year, SB 2.0 has stayed at North Middle School and returned to Douglas Middle School, working with an OMK (Operation Military Kids) grant that is contingent upon military participation. Douglas Middle School is close to Ellsworth Air Force Base, so it has a high population of military kids. SB 2.0 South Dakota has 40 kids and 12 mentors at the two locations. They are working on LEGO Robotics with a "WOW" STEM activity at each session. In the spring of 2013, the two sites will be working with the youth in many different programs: Celestia through NASA, nano technology, cubify, and building rockets.



## WYOMING STARBASE ACADEMY

### University of Wyoming's Extension Services in Laramie County's New Union of Cheyenne & Laramie County for the Education and Advancement of Robotics (NUCLEAR) Club

This year Wyoming STARBASE 2.0 teamed up with the University of Wyoming's Extension Services in Laramie County's New Union of Cheyenne and Laramie County for the Education and Advancement of Robotics (NUCLEAR) club. This gave students the opportunity to experience and compete in the FIRST LEGO League (FLL) Senior Solutions competition.



Team members and their mentors/coaches met at STARBASE weekly for two hours during the months of August through December to plan and implement a robot project and game, learn core values, and experience team work. FLL is an innovative program that motivates young people to pursue education and career opportunities in science, technology, engineering, and math, while building self-confidence, knowledge, and life skills.

“Robotics programming is a challenge, but I get so excited when I can program the robot to do what I want it to,” said Conner. Conner attended STARBASE in 2010. He added, “I thought I was never going to go to STARBASE again, and it feels good to be back.”

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“I was so excited when STARBASE approached me about a partnership,” said Lara Shook, coordinator of the Laramie County Extension Services. “Robotics is an exciting STEM activity and we need more groups willing to help coach teams. STARBASE 2.0 has provided us with coaches, a place to hold meetings and their robots. Just having the STARBASE name to promote robotics gets the kids excited.”

With the success of this program, NUCLEAR/STARBASE 2.0 will spend the spring assisting in an introduction to robotics program, host a robotics expedition, and tour companies that specialize in robot engineering.



### STARBASE 2.0 Partners with Boys and Girls Club

This summer STARBASE 2.0 created an opportunity for children at the Boys and Girls Club to experience the engineering design process, teamwork, and robotics.

One day a week, STARBASE 2.0 visited the club sharing their talents, iPads, robots, and lessons on engineering.

The group started out with team building. They built structures from marshmallows and spaghetti, designed bridges using pasta and Tubeez, and tested apps on the iPads for robots and building structures. Once the kids built their robots, they learned to program them to do simple tasks. The highlight of the summer was a robot demonstration. The kids designed robots to wrestle sumo style. The object was to remove the other robot from the playing field. Kids also told the others campers how they built and programmed them.



"I think learning and using the iPads was so fun. I never realized you could build LEGOs on an iPad," said Katy, an eleven year old who attended STARBASE last spring. "I like hearing the robot talk," said Ben, "I also like the sensor that keeps the robot from hitting a wall!"

Since the summer session was so successful, STARBASE 2.0 and the Boys and Girls Club continued their partnership in the fall to support their FIRST LEGO League (FLL) team. This was the first time the Boys and Girls club sponsored and sent a team to the Wyoming FLL championships.

## Spotlighting Resources: The Afterschool Alliance

Sometimes creating strong collaborations in your community is problematic solely due to the large number of opportunities available. The Afterschool Alliance, a resource created in 2000 by a group of interested parties including the Charles Stewart Mott Foundation and the U.S. Department of Education, aims to increase awareness and expand programming of afterschool programs like STARBASE 2.0.

In the "About Us" section of their website, they describe their mission:

"To engage public will to increase public and private investment in quality afterschool program initiatives at the national, state and local levels."

Visit [www.afterschoolalliance.org](http://www.afterschoolalliance.org) for more information about how to get involved with this valuable resource.



## 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.

The January 2013 issue will focus on our STEM Mentors to honor National Mentoring Month. Participants are asked to share more about your program's mentors by sending information to [jennifer.buck@mac.com](mailto:jennifer.buck@mac.com).