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DoD STARBASE
A Department of Defense Youth Program

Louisiana Lagniappe

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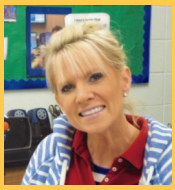
Watering the Seed

Supporting STEM at Home



Wendy "Dr. Conga" Jordan,
Instructor

Parents and caregivers play an important part in supporting a child's natural desire to learn about the world around them. STEM (Science, Technology, Engineering, and Mathematics) education has become an important outlet for students to explore interests and future career paths. Often a student's interest in STEM isn't encouraged during elementary school years. Research* demonstrates that parents play a vital role in helping students recognize the importance of STEM in a national and global workforce. Here are some ways that a child's interests and natural abilities in STEM areas can be further developed over time:

- Encourage observation and questions from your child. Have them create experiments and try to solve problems on their own.
- Incorporate tasks such as chores, gardening, repairing a bike, or even mealtime discussions that foster creativity, critical thinking and resourcefulness.
- Provide easy access to STEM-related resources—books, educational toys and games, DVDs, and websites.
- Encourage your child to participate in afterschool STEM activities. Support them by providing transportation, attending events, and celebrating.
- Join your child in learning new things about STEM. If you don't know the answer to a question, embrace the opportunity to learn about it together.
- Seek out opportunities to meet and get to know STEM teachers. Volunteer in the classroom or on a field trip.
- Establish high expectations for your children's STEM learning, as well as for the school that fosters it.

* Harackiewicz, J. *Psychological Science.* (2012). *Helping Parents to Motivate Adolescents in Mathematics and Science; An Experimental Test of a Utility-Value Intervention."*

Creating a STEM-centric Culture in our Community

Pursuing STEM In and Out of the Classroom

Kathy "Alpha" Brandon,
Director

Our community is great for recognizing its local superstars. We highlight the accomplishments of sports heroes like Terry Bradshaw and Morris Claiborne, musicians Kix Brooks, Kenny Wayne Shepherd and James Burton, and the multiple talents of William Joyce. We have many family, community, and school structures in place that support active participation and excellence in these and other related extracurricular activities, because as a community we encourage and celebrate what we perceive as important and valuable.

On the other hand, have you seen a local student earn a letter jacket for a position on the robotics team? Do the schools host pep rallies cheering their team's participation in the Science Olympiad or ECybermission? If we as a community become "STEM-centric" in our emphasis both inside and outside of the school day, this will not only translate into higher academic achievement, but will also communicate to our children that excellence in STEM is meaningful, valuable, and enjoyable, as worthy of time and effort as other extracurricular activities.

In Louisiana in 2012, there were 2.8 STEM job openings for every qualified STEM worker.[1] Our state is expecting an increase of 68,000 more STEM jobs by 2018! Projections also indicate that in 2018, 51% of *all* Louisiana jobs will require some postsecondary training beyond high school, especially in STEM knowledge and skills.[2] Yet students often lose their natural curiosity and interest in science and math as they get older. We must keep them involved, and support and nurture interest in STEM activities.

The Center for the Study of the Presidency & Congress Committee on K-12 Education recently published *A Letter on STEM Education to America's Parents.* Suggestions included helping children understand that "hard work in the classroom and involvement in afterschool STEM programs will pay off in terms of greater career opportunities and higher pay [3]". We need parents who rally behind their kids and help them participate in STEM activities and competitions—drive the carpool, mentor a group, help locate resources. This is vital for our children's future and the future of our community.

1. Change the Equation. *Vital Signs—Louisiana* @ http://vitalsigns.changetheequation.org/
2. STEM Connector. *Louisiana's K-12 STEM Ed Report Card 2011* @ http://www.stemconnector.org/sites/default/files/sbs/ASTRA%20STEMEd%20Louisiana%202011.pdf
3. http://www.thepresidency.org/storage/documents/A_Letter_on_STEM_Education_to_Americas_Parents_-_FINAL_2.pdf

A Bright and Shining STAR!

Col Kevin Wolfe, 307BW/MSG - Supporter, Mentor, and Friend

Robert "Jazz" Sayers, Instructor

In the night sky, some stars seem to shine brighter than others. The distance from Earth causes some to appear smaller while some appear brighter and larger. As in the sky, many stars shine brightly here at STARBASE. The teachers and students at STARBASE are truly shining brightly, but if you look closely you will discover that there are many other stars all around. Just as some of the stars in the universe are actually many times larger than the Sun, Col Kevin Wolfe, our Mission Support Group Commander, is one of the brightest STARBASE stars, even though he may not be noticed. He is always there in the background lending a helping hand in so many ways.

Col Wolfe has volunteered to speak at many of our STARBASE Graduations. He is always ready to come to our aid, even at the last minute when other speakers have had to cancel. When he talks to the students, he shares the three Air Force core values, which are: 1)integrity, 2) service before self, and 3)excellence in all you do. Col Wolfe truly practices what he preaches This man exhibits integrity (doing the right thing when no one is looking) in everything he does. He always makes sure that our finances and resources are managed honestly and accurately according to Air Force regulations. If you call on him to complete a task or solve a problem, you can be assured that he will complete it and will do the job well. He is the personification of service before self. For example, he has come in on holidays (his day off) to be the guest speaker at a graduation, or has many times given up his lunch to be a career resource speaker. Everything Col Wolfe does is always far beyond what the average person would do, further exemplifying "excellence in all you do". We are so thankful not only to have him as our main contact at the 307th but also as a mentor of character and values.

A STARBASE educational facility seems to run smoothly and effortlessly when watching lesson after lesson progress throughout the course of the day. In truth, you are witnessing the fruit of much planning and preparing. Next time you come to STARBASE, take a close look around. Everything you see is a result of the labor of many people. The nice facilities, our "mule" cart , our computer assets, and many other things that you may not even notice were provided by the 307th with Col Wolfe's help. We at STARBASE Louisiana are always amazed at his ability to juggle his responsibilities and yet still help us with our requests.

We are sad that after a long and successful Air Force career, and being a supporter and friend of STARBASE for all of our 14 years, Col Wolfe will retire in May. We know that our program would not be what it is today without his continuing support. For this we want to extend an enduring thank you. All of us at STARBASE will dearly miss you, friend!

It's STEMtastic!

New T-shirt design for 2013 - Our most popular EVER! Get yours now!

For ordering information contact:

amanda.williams@us.af.mil

The History of Service-Based Learning

Learning by Doing

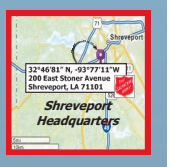
Katie "Boots" Saravia,

Instructor

Service learning is an increasingly important part of formal education, in that it ties classroom concepts to real-world applications. The idea of incorporating community service with schools began circa 1905 when William James and John Dewey developed the intellectual foundations to service-based learning and promoted models of "learning by doing." Several federally funded programs were created in the years that followed such as VISTA (Volunteers in Service to America) and the Urban Corps.

In 1971, the White House Conference on Youth released a report detailing the need for linking service and learning. At the same time, the National Center for Service-Learning was established. By 1989, more than seventy organizations had collaborated to produce the ten principles of service learning that were outlined in the *Wingspread Principles of Good Practice in Service-Learning*. This brought about the National & Community Service Act passed by Congress and signed by President Bush in 1990.

As more awareness was brought into light about service-based learning, it began to spread on the internet via the Colorado Peace Studies Center and in 2001 the first International Conference on Service-Learning Research was held. These events are just a few highlights on the historical timeline of the development of service learning. STARBASE is proud to play a key role in helping classroom teachers integrate service learning into their curriculum. By providing a plan and guiding teachers through steps to implement their service learning project, STARBASE Louisiana is becoming an important part of the history of service learning in our community.



Students from Legacy Elementary learned about mental health issues from their career mentor at STARBASE. Through research, they learned that the Salvation Army assists people with physical and mental/emotional needs. They then utilized Lat/Long coordinate points to locate the international, national, and local offices for the Salvation Army , and provided holiday stocking stuffers for them to share .

A Legacy of Learning

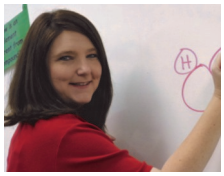
A Look Into the Future of Former Students

Our time with the students is short - merely one day a week for five weeks. Apart from some random encounters around town, our physical time with the students is over. Reflectively, we wonder what lasting impact we have had on the academic and personal lives of our students.

The program does not measure its effectiveness solely by classroom assessments or standardized test scores. The STARBASE program was designed to create and promote a desire for STEM learning among students that would continue beyond the classroom and into the American workforce. We recently contacted former students and asked them to report back on the lasting effect STARBASE has had on their scholastics and future plans.

STARBASE graduates Catherine Marcalus, 7th grade, and Marie Marcalus, 8th grade, siblings from St. John Berchmans Catholic School, have together competed several years in the National Science Olympiad for their school. They have won first in the state and taken 7th in the nation. Catherine believes that STARBASE fostered in her a greater love and understanding of science. She is grateful for the exposure to STEM concepts. Marie admits that STARBASE LOUISIANA helped make her more interested in STEM. During her time at STARBASE, she was introduced to basic robotic programming. Later, she used the concepts she learned to participate in state-wide robotics meets. Both acknowledge that STARBASE helped interest them in becoming involved in the National Science Olympiad competition.

Catherine and Marie also represented their school and STARBASE Louisiana, in Washington DC at the Business and Industry STEM Education Coalition Congressional Reception. They had the opportunity to meet our Congressman, Dr. John Fleming, and visit with other congressional members and staffers.

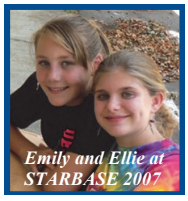


***Christy "DeeJay" Bucker,* Technology Coordinator**

Although it's been seven years since she was in a STARBASE classroom, Byrd High School honor student Ellie Davis knows that STARBASE gave her the confidence to study Biology at college next fall. She stated that her interest and understanding in math and technology increased "ten-fold" during her time at STARBASE.

Emily Ilgenfritz, also a Byrd honor student, agrees that STARBASE not only influenced her class work, but also her desire to pursue a career in the field of science. Opening her eyes to new scientific concepts, STARBASE gave her the desire and assurance to explore new subjects and accept challenges that are preparing her for her future academic pursuits.

Ellie and Emily are both part of the Science and Medicine Academic Research Training Program (S.M.A.R.T.) at LSU Health. This program provides academically talented high school seniors interested in careers related to medicine, scientific research, and biomedical engineering opportunities to engage in intensive research with medical clinicians and researchers. Emily recently had the opportunity to present her research project on genetic markers relating to invasive cancer at the Junior Science and Humanities Symposia in Baton Rouge, LA.



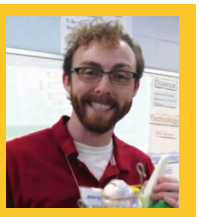
Emily and Ellie at STARBASE 2007

Conner Jenkins, a STARBASE graduate in 2002, will complete his engineering degree at Louisiana State University in May with a major in Construction Management. He attributes the rocket building and launching and the applications of Newton's Laws as the activities that initially stimulated his interest in physics and math. "The activities at STARBASE helped me view science and math as fun challenges instead of just tasks or subjects in school. Looking back now I can genuinely say that STARBASE really sparked a sense of wonder in me that I don't know if I've recognized until recently." Conner plans to return to Shreveport after graduation to work with a firm specializing in new construction.

Clearly, STARBASE has had an influential role in the current and future academics of many of its graduates. Despite the brevity of time with the students, the STEM curriculum has made a lasting connection. By providing an exposure to STEM investigations and concepts and success in application and problem solving, STARBASE has facilitated their future studies in science, technology, engineering, and math.

STARBASE Extends Reach with 2.0

STEM After School



***Benjamin "River" Williamson,* 2.0 Coordinator**

In October 2012, STARBASE Louisiana launched a new initiative known as STARBASE 2.0 at Cope Middle School in Bossier City. This after-school 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.

One sixth-grade team won the introductory engineering design challenge.

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".

Though creating a new program from the ground up is a daunting task, the teachers involved with the students firsthand are already seeing its impact. Personally, I find it extremely gratifying to be a part of this new segment to our program. These students remind me why STEM is such an inspiring approach to learning.

In the future, we plan to expand the program to additional middle schools in the area. We are looking forward to the wider impact on area students and expanding our outreach within our community.

Resource Staff

Call us if you need us!

***Amanda "Shutterbug" Williams,* Program Asst.**

***Teresa "Jersey" Johnson, Bea "Fantasma" Rodriguez,* Classroom Assistants**

$TEM PAY$

Contact your senior counselor or the STARBASE office for information on the STARBASE Alumni Scholarship!

starbase@us.af.mil

Science Education for the Next Generation

Understanding the New Common Core Science Standards

Laurie "Deuce" Ilgenfritz,

Deputy Director/ Instructor

For the United States to remain globally secure and competitive, our students must have a firm foundation in Science, Technology, Engineering, and Mathematics (STEM). To address this urgent need, the National Research Council (NRC) selected a committee of Nobel laureates, cognitive scientists, and science education researchers to draft a *Framework for K-12 Science Education*. This *Framework* describes a vision of science proficiency in the new millennium. After extensive review and feedback, experts from 26 states used the *Framework* to develop the Next Generation Science Standards (NGSS). The development was also guided by an in depth study of the science education systems in countries that scored in the top ten on international tests in science and math. The NGSS is currently in final review.

How do these new standards differ from what we currently use? With fewer core concepts, all levels delve more deeply into each topic. Fundamental skills, such as modeling, communication, critical thinking, and data analysis are now embedded with the core concepts. The NGSS are designed to reflect the interconnectedness of science in the real world. Each standard has three dimensions: Science and Engineering Practices (inquiry process), Crosscutting Concepts (flows throughout all science disciplines such as cause-and-effect, etc.) and Disciplinary Core Ideas (crucial to building content knowledge). The most drastic and noticeable change from the old standards is that the NGSS fully integrates engineering and technology into the structure of science education, and raises engineering design to the same level as scientific inquiry. The core ideas of engineering and technology are afforded the same status as the core ideas of science.

These new standards will lay a solid foundation upon which each state can build their own curriculum. Adoption of the standards is optional, and once the NGSS is released in early 2013, Louisiana must decide whether or not to adopt them.

Important Dates >>>

Spring Break—March 25-29
State-wide Testing—April 8-12
NSTA Conference— April 11-14
Memorial Day—May 27

Online Resources for Parents:

http://www.sciencegamecenter.org/gamesmedmyst
www.stemup.org
http:www.pbslearningmedia.org/
http://explore.org
http://forensics.rice.edu/

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