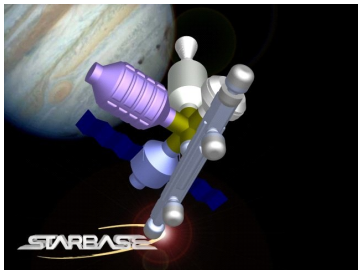
Remember to visit our website:

www.starbaserobins.org

In This Issue…



STARBASE ROBINS

May 2017 **2016 – 2017 School Year**

Director's Corner by Wesley Fondal

From the Director:

The school year is quickly coming to an end. STARBASE ROBINS had a record breaking year for our fifth grade program as well as our STARBASE 2.0 Clubs. We have had 79 classes and over 1,600 5th grade students come through our doors and receive our 25 hour curriculum instruction. We now have 12 STARBASE 2.0 Clubs and an experimental STARBASE 2.0 where we are seeing all the middle school students at Sacred Heart Catholic School.

In the midst of all of the activity this year and this semester, we were able to host our annual Central Georgia FIRST Lego League Super Regional Robotics Tournament and our Super STEM Saturdays. We also began our partnership with the Museum of Aviation in regards to a NASA grant received earlier this year. The Central Georgia Super Regional was well attended and went well, even with a delay due to a Tornado Warning. We would like to say thank you to all the volunteers and the teams that participated in making it a successful event. Our Super STEM Saturdays also turned out to be a hit for some of our students who participated in our 5th grade program and STARBASE 2.0 program. These STEM Saturdays covered electronics, robotics, criminal investigation

See Director, page 2

What is DOD STARBASE? Please visit www.dodstarbase.org to find out.

Director's Corner, Cont'd

science, agriculture STEM and rocketry. We look forward to programming future Super STEM Saturdays for next school year.

I would like to thank all the administrators and teachers that worked hard this year to get their students here in a timely manner and to our teacher sponsors and mentors who participated in our STARBASE 2.0 Clubs. I think the hardest part is sometimes getting students here and to the club meetings. Once we get them where they need to be, the STARBASE ROBINS' staff can capture their attention and bring the excitement of STEM to their world.

We are looking forward to our summer academies. We feel that we have a lot to offer students this summer and are working hard to put together a dynamic curriculum for all of our academies. Please make sure to take a look at our academy offerings in this issue.

As always, we are always looking for mentors and career guides for our programs. Please let us know if you know anyone that would love to mentor or volunteer for our STARBASE ROBINS program or STARBASE 2.0 Clubs.

"The function of education is to teach one to think intensely and critically. Intelligence plus character-that is the goal of true education." -Dr. Martin Luther King, Jr.

Dooly County Outreach by Dawn Pannell

Persistence pays off and it did for one fifth grade Science teacher in Dooly County. Due to her persistence, our STARBASE ROBINS' instructors headed there recently for a planned outreach at the elementary school. In regards to distance, Dooly County is about forty miles south of our location at the Museum of Aviation in Warner Robins. It turns out that this particular teacher used to work in the Bibb County school system and had been a participant in our STARBASE ROBINS' program. The timing was a good fit for our staff because most of the counties that we serve are in the middle of state mandated testing.

To enhance interest in STEM, each STARBASE instructor hosted a learning station that involved students (along with teachers, parents, and grandparents) working to solve a problem or to be "wowed" by what they saw happening. It was a fun-filled evening.

Can Crush was demonstrated by Demetria Smith as students were taught about states of matter and air properties. This was a great "wow" moment for all who watched as they saw the cans crush by the high air pressure. (For those long term STARBASE employees, you will remember the excitement of having done this with your students.) Tornado Tubes were used in the demonstration as well as for students to have some hands-on experimentation.

See Outreach, page 3

Outreach cont'd

Hosted by Audra Hubbard, Pentominoes was predominately the mathematics' challenge for the evening. This was all about teaching spatial awareness. Students and adults had to use various shapes from a packet to create a design that was displayed. Shapes had to be turned and twisted to be able to duplicate the design given. One interesting observation noted by Audra, "The younger students did better at completing a design than older elementary students and adults."

One of our stations was the Pipeline led by Janae Holbeck. It is a great team building and engineering challenge. The PVC pipes are cut into halves and are 2 feet long. Depending on the space and number of people involved determines the amount of pipes used. A marble will be placed at one end and must run its course along the pipe path until the marble can be dropped in a bucket. The difficulty is that there are always fewer pipes being used than distance to the bucket. So the team members have to strategize how to extend the pipe path to the bucket. Oh, and the marble cannot stop rolling once it starts. Janae had a continuous line of people ready to attempt the Pipeline. According to Janae, there was one young student who was nicknamed "Control" due to the fact that each time he participated he knew how to communicate to others how to make it work. At STARBASE, we are not familiar with having kindergarten aged students join us for activities. Janae learned that age does not define our capabilities in displaying great teamwork. One young kindergarten girl participated in the Pipeline over and over, and along with "Control" always managed to successfully place the marble in the bucket.

The Engineer/Builder activity allowed students and parents to learn the importance of "how to" make things work. The Engineer has a packet of 10 Lego pieces that matches the one used by the Builder on the other side of the table. The Engineer uses these Lego pieces to create a structure. Once built, the Engineer must give details and instruct the Builder across the table how to build a duplicate of this structure. In between the two participants are small cardboard boxes used as dividers, so the work is done solely from verbal communication. Dawn Pannell assisted with this activity, very often having to give prompts on the directives, especially for the younger students. Several families expressed their desire to continue with this activity at home. One young girl who had built with her father was super excited because she has "lots of Legos" at home.

Dooly County's fifth graders were slotted to come for our regular program this past school year, but a conflict in scheduling prevented that from happening. Plans are being made now to add them to our 2017-2018 school year, so that we can continue our connection with a new Georgia school district.

Equipping Students with Tools and Learning Strategies
By Audra Hubbard

When working with our 5th grade students we enjoy watching that moment when they "get it" finally. Our hands-on curriculum is an avenue that leads kids to that "ah ha" moment; because they are actually taking part of the experiment, instead of just reading and talking about what happens. But what do they do with that information once they have completed the activity/ experiment? The STARBASE ROBINS' team wants to not only teach the curriculum, but we also want to teach our students how to think for themselves and utilize the information gained through our program. This school year we implemented the method of "Questioning Claim Evidence Reasoning" (**QCER**) with several of our experiments. This strategy builds from what we want to know (**Questioning**) to what we know (**Claim**) to how we know it (**Evidence**). Finally, students have to explain how or why the evidence/data supports their claim and which scientific principles are important to the claim and evidence (**Reasoning**). Students are forced to think through the information or data obtained by the experiment and how it relates back to the topic(s) we have studied.

Like any new subject being taught there was a learning curve for instructors and students. The evidence was the easiest part to explain to the students and they were quickly able to apply it. The ability of the students to connect the scientific principle to the evidence was the hardest part for many of them. Putting their thoughts in writing is becoming more of a challenge each year for 5th graders. Because of this we often had to talk through the reasoning as a class. Even with the learning curve we were able to see student growth in the five days they attended. The students weren't the only ones affected by the use of QCER; classroom teachers expressed an appreciation for our use of QCER. Not only did we encourage the students to think through the information we also encouraged them to apply writing skills that the classroom teachers are already using. Teachers saw this skill as another asset of attending STARBASE ROBINS especially those teachers specializing in English/Language Arts. As some of our teachers commented on our surveys we were able to see the effect in the classroom:

"One concept that has been implemented more thoroughly in my classroom is the use of making a claim in science. I have been more cognizant of using that language with students."- Classroom Teacher

"…after participating in the experiments at STARBASE ROBINS, my students curiosity toward science investigations heightened. They better understand the necessity of writing down results and sharing evidence and data from their experiments. Their comments during investigations sounds more purposeful, and goals and hypothesis are clearer…"- Classroom Teacher

Overall, QCER is an asset to our program that we will strive to prefect, for the benefit our students and teachers.

STARBASE 2.0 and the FIRST Lego Leage
By LaTondra Oliver

Every year, FIRST LEGO League releases a Challenge, which is based on a real-world scientific topic. Each Challenge has three parts: the Robot Game, the Project, and the Core Values. Teams of up to ten children, with at least two adult coaches, participate in the Challenge by building, testing and programming an autonomous robot to score points on a themed playing field (Robot Game), developing a solution to a problem they have identified (Project), all guided by the FIRST LEGO League Core Values. Throughout their experience, teams will operate under the FIRST LEGO League signature set of Core Values, celebrating discovery, teamwork, and Gracious Professionalism.

Get ready. Get set. Roar! Or you could bark, quack, or squeak, because the 2016 ANIMAL ALLIES season is all about our furry, feathered, and finned friends. In the 2016 FIRST LEGO League Challenge, more than 28,000 teams of students age 9 to 16 from over 80 countries will look into the eyes of our ANIMAL ALLIES. What might become possible when we learn to help each other?

Past Challenges have been based on topics such as nanotechnology, climate, quality of life for the handicapped population, and transportation. By designing Challenges around such topics, participants are exposed to potential career paths within a chosen Challenge topic, in addition to solidifying the STEM (Science, Technology, Engineering, and Math) principles that naturally come from participating in the program. Team members also learn valuable life and employment skills which will benefit them no matter which career path they choose.

STARBASE ROBINS hosted the 12th Annual Central Georgia Super Regional First Lego League Competition on Saturday, January 21, 2017. The first two competitions were hosted as Regional Tournaments and the last ten as Super Regional Tournaments. The day made for an exciting and fun filled day for the 31 teams from across the state of Georgia. However we started with 32 teams, but a rumble of thunder and a crash of bright lightning caused one team to pull out. The day was running smoothly until the infamous tornado that ripped the roof of Wal-Mart (on Booth Road), made an appearance. The entire tournament was “shelter in place” for over 45 minutes. Over 500 students, family and friends were safe and calm thanks to the STARBASE ROBINS’ staff. Once the tornado cleared the area, the teams were ready to get back to the business of the competition.

The competition was set up as two tournaments. With this set up, we were able to award twice as many teams for their hard work and continuity. Additionally, one of our sponsors, “Zaxby’s”, on Booth Road, awarded one of the teams, “The Nerd Herd”, of St. Mary’s and Sugarmill Elementary school for their “Gracious Professionalism”. The team displayed true team spirit by cheering on other teams and motivating others when they were down. The before mentioned competition awards were distributed as follows:

See Animal Allies, Page 7

STEM Saturdays Ignite Student Interest in STEM by Janae Holbeck

STARBASE ROBINS has always been enthusiastic in finding ways to incorporate STEM into the community in unique and engaging ways. Our goal is to reach students that have passed through our STARBASE programs (5th Grade STARBASE program or 2.0 STARBASE Club) or students that have yet to experience STARBASE and want a "hands' on" experience of what STEM has to offer. We wish to extend these programs and keep the students in the community involved.

In order to reach this goal, we pursued a STEM Saturday avenue. We decided to host five "Super STEM Saturdays" throughout our school year strategically placed to fall as our 5-week sessions ended for our 5th grade program. Specific topics were chosen to excite and encourage students' involvement in STEM.
September 24 Students dived into the world of electricity with Circuitry. They got the chance to study how electricity flows through different conductors to the point of a breaker/switch. They also learned that if things are not put together correctly, it will not work. Students studied this flow of power and electricity by working with 3D Snap Circuits, Adrino Kits, and Cubelets.
November 5 Robotics drew crowds of students from all realms of understanding, from novices to those with more familiarity. Due to the short time frame of this workshop, robots were prebuilt for the students. Boys and girls worked in pairs to program the robots. Participants chose to complete challenges developed by the First Lego League (FLL) and STARBASE summer curriculum. Because of the differing levels of experience the students were able to work at his/her comfort level. This led to everyone leaving with a sense of accomplishment.
February 11 CSI Investigating was a great workshop. Students were armed with the knowledge on investigative techniques such as observations and inference. They studied Locard's Exchange (A principle that holds that the perpetrator of a crime will bring something into the crime scene and leave with something from it, and that both can be used as forensic evidence.) As a result, students viewed hairs and fibers under a microscope. Chromatography helped them determine which marker was used to write a ransom note. They learned the difference between latent and visible fingerprints in solving crimes. Fake blood was used to study how porous and non-porous materials affect shape in blood spatters. Students also had a fun water balloon demonstration that taught students about how various angles affect blood spatter. All these lessons aided them to solve a few crimes. CSI was a fully jam packed day and the students seemed to enjoy it and were very in-tuned to solving crimes.
March 18 STARBASE ROBINS ventured into AGSTEM or Agricultural Engineering for the next workshop. This is still a relatively new topic for us; we hosted a camp for the first time last summer, which was very successful. Students studied plant cells, pollen, and elodea with a microscope. They also planted a variety of fruit and vegetable seeds in Newspaper Flower Pots they made themselves. Beautiful 'Wild Flower Seed Balls' were created from clay and seeds. After a morning of activities students enjoyed learning about animals' inherited traits and acquired traits through research and Kahoot, an iPad app.
April 8 Our last, but certainly not our least, workshop was spent launching rockets! The weather was far more favorable for launching than the tumultuous weather we had earlier in the week. The sun was shining in the clear blue sky as students put their knowledge of Newton's Three Laws of Motion and PSI (pounds per square inch of atmospheric pressure) to the test. Alpha Estes Rockets were launched using small "A" engines. The students had an incredible time "detonating" their rockets with a launch pad, while practicing safety first. A 2-liter bottle rocket that contained water (about 1/3 of the bottle) and 60-80 PSI was also used with a launcher and bicycle pump to soar though the skies. These went about 200-400 feet in the air and made for a nice little splatter of water on a warm day. This was quite popular, with the students desiring to launch multiple times. The launches of both rockets also drew a crowd and entertained visitors at the museum.

In Conclusion: These workshops brought diverse students to us, and we saw some of the same students m every single time we hosted. At first, some of them were quiet, not too involved with the activities

See Saturday STEM, page 7

Saturday STEM cont'd

or their peers. We spent time each session learning about one another, bonding over different topics, and slowly saw these students grow, not just in STEM knowledge, but in confidence in themselves and their relationships with one another. Two particular students caught the attention of all our staff. A brother and sister, twins, that had come through our STARBASE 5th grade program. They were very opposite in personality (the boy quiet and shy, the girl outspoken and energetic). They stuck together, more comfortable with being around each other, than their peers. Over the five Saturdays they attended, they grew from not wanting to work with anyone, to working with their peers, especially the young boy. His growth was obvious in the last workshop. Clearly his favorite was building and launching rockets. His enthusiasm reached others as he spoke and chatted with his classmates in a way that was amazing to witness by all, especially his twin sister.

Overall, STARBASE ROBINS believes our Super STEM Saturdays were immensely successful. We look forward to continuing these exciting workshops next school year. Come out and join us, we look forward to working with your students.

Tournament #1

Robot Performance	Wolf Techs	Feagin Mill Middle School
Robot Design	Legoliers	Mount de Sales Academy
Project	Pretty Cool Lego Girls	Real Impact Center
Core Value	Huntington Horseshoe Heroes	Huntington Middle School
CHAMPION	Robo Rams	St. Peter The Apostle School

Tournament #2

Robot Performance	Turtle Troopers	Booth Middle School
Robot Design	BLT Warriors	Booth Middle Schools
Project	Legit Nonagons	The STEM Academy
Core Value	Botting Beauties	Real Impact Center
CHAMPION	The Hive	Booth Middle School

We especially congratulate 5 of our 13 STARBASE Robins 2.0 After School Mentoring Clubs and their Teacher Sponsors: (Byron Middle School **(Vicki Bennett and Stephanie Johnson)**, Feagin Mill Middle School **(Tomieka Waller)**, Huntington Middle School **(Rodney Johnson and Lisa Smith)**, Mossy Creek Middle School **(Nikki Carroll and Carol Kohn),** and Thomson Middle School **(Jessica Golden)** who advanced to this Super Regional Tournament by being the best of the Regional Tournament held in December at Byron Middle School. We would be remised for failing to mention our wonderful community of volunteers who assisted us in making this a successful day for the children and their families and friends.

As a final point, the competition and the tornado were not the only highlights we had that day. Visitors and participants also had the opportunity to participate in a stretch raffle to win a "Go Pro" and a "Drone". Both winners were overjoyed about their new "toys" to take home.

STARBASE ROBINS
At the Museum of Aviation
P.O. Box 2469
Warner Robins, GA 31099
OFFICIAL BUSINESS

RETURN SERVICE REQUESTED

STEMpowered Girls 2017 & Beyond by Demetria Smith

Since its inception in 2014, our STEMpowered Girls' Academy is embarking on uncharted territory for STARBASE ROBINS by lengthening the amount of time we have with the girls to two weeks. We feel that this will give us more time to steer the attention of the girls toward a career in STEM and allow them to see the vast variety of career choices that STEM actually offers. The possibilities seem endless with this amount of time; although in reality we know that it is definitely not. The girls will spend time doing many activities covering a multitude of STEM areas.

One of our newest activities during this summer will be to use Raspberry Pi to teach coding to the girls. We are extremely excited about the possibilities involved in working with the Raspberry Pi because it entails the girls building the computer from scratch. They will have several tasks associated with the Raspberry Pi, along with a certain time frame to complete the assignment. The girls will surely engage in CREO challenges resulting in 3D printing of the creations they make for practical purposes. The academy will include energy lessons, suiting up an astronaut, studying the upcoming total solar eclipse and many other amazing hands-on experiments and activities.

STARBASE ROBINS' always seeks to raise the standard each summer for our academies. It has become our aim to enhance each learner's knowledge into the exciting world of science, technology, engineering and math by introducing new material as well as thought provoking activities. We look forward to having "The Wow Effect" on every learner that passes our way. Now let the fun and learning begin!