

**HISTORICAL DOCUMENTATION OF  
STEAM LEGACY GRANT RECIPIENTS AND PROJECTS**

**2020-2021 STEAM LEGACY GRANT RECIPIENTS AND PROJECTS**

**Dunwoody Springs Elementary**

Sponsor: Jessica Fronk

Project Name: After-School STEAM Club

The STEAM Club will enhance the understanding of the Next Generation Science Curriculum for students in grades 3-5 with a 1–1.5 hour investigation each week into additional STEAM experiences. These experiences will include science experiments relating to the curriculum, robotics, and parent involvement projects. In addition, students will prepare to participate in the 2021 SSEF STEAM Showcase. The STEAM Club will provide students with a positive, learning centered, after-school activity focusing on encouraging students’ interests in STEAM skills and careers, while fostering curiosity and inquiry.

**Heards Ferry Elementary**

Sponsor: Yuri Strom and Sarah Severson

Project Name: Go Green (Screen)!

The film industry is now the biggest industry in America(especially in GA), and we want to inspire students to be the next generation Steven Spielbergs, George Lucases and James Camerons! Film makers such as these helped the imagination of inventors and artists by pioneering new technology to tell visual stories through film. The goal will be for our students in the STEAM Club to create a movie that encompasses all of the elements of STEAM with the theme of “Go Green”.

Students will learn:

- SCIENCE through “green” initiatives such as forest conservation or reducing pollution,
- TECHNOLOGY by using film-making technologies such as green screen special effects or stop-motion animation and learn technical skills such as video editing,
- ENGINEERING through set building and other physical problem solving,
- ARTS by enhancing creative writing and expressing artistry through the use of visual design elements or musical sounds, and
- MATH by calculating timing and managing their time and life skills such as working in teams.

**High Point Elementary**

Sponsor: TBD

Project Name: TBD

**Ison Springs Elementary**

Sponsor: Alison Tripp

Project Name: Coding Club

Students will be using devices to meet the objectives of building wireless circuits that control student created robots. They will also learn basic drone knowledge and flight patterns, along with basic coding language and how to create simple computer games using code.org and scratch.mit.edu.

**Ison Springs Elementary**

Sponsor: Michelle Jackson-Golden and Jenate Morris

Project Name: Rubies Dance Team

Students will be exposed to various performances, events, genre of dance techniques, history of different dances and theater. Students will collaborate and bring all of the art forms together into a single cohesive project to show how the arts transcend disciplines and come together to inspire

while also utilizing what they learn to prepare for the pathway to the North Springs HS Magnet Arts Program. Students will study and strengthen their craft through live performances throughout the school year and will also track their movements on butcher paper by drawing out their steps (utilization of visual art skills). Finally, the dancers will express movement and emotion with the incorporation of chorus and drama club students to bring the overall narrative to life.

### **Lake Forest Elementary**

Sponsor: Katie Pierson

Project Name: After School STEAM Club

The STEAM Grant will enable the continuation of the After School STEAM Club focused on the enrichment of student understanding of the Next Generation Science Curriculum in grades 3 – 5 through hands-on activities, guest speakers, field trips and community involvement. The STEAM Club will participate in the Atlanta Science Festival’s “Imagining the Future Program”, exhibit at the SSEF STEAM Showcase, lead activities at the Lake Forest Family STEAM Night and attend the Atlanta Science Festival. The goal is to inspire student interest in STEM fields, develop STEM skills and create excitement about potential STEM careers.

### **Sandy Springs Charter Middle School**

Sponsor: TBD

Project Name: TBD

### **Spalding Drive Elementary**

Sponsor: Giuliana Sargent

Project Name: Full STEAM Ahead

The STEAM Grant will enable the continuation of the “Full STEAM Ahead” after school program. The clubs included in the STEAM program will be: Drone, Art, Robotics and Photography. The Drone Club will give students the opportunity to fly and maneuver drones. The Art Club will allow students to be creative while making take home pieces of art. In the Robotics club, students will learn how to design, build and code robots. Lastly, in the Photography Club, students will use a digital camera to take photos around the school campus and then learn how to edit them with photoshop software.

### **Woodland Elementary**

Sponsor: Cheri Mills

Project Name: (no name given)

The project goal will be to encourage students to put the aspects of scientific discovery to work by solving real STEAM problems. Using LEGO bricks, sensors and motors, students will ignite their creativity, develop critical thinking skills, explore career possibilities, and get hands on STEAM experience. The club will help abstract engineering and science concepts become concrete, and improve students’ collaboration, problem solving and computational thinking skills. Students will apply the curriculum to create inventions that inspire the wave of the future.

### **Ridgeview Middle School**

Sponsor: Samuel Bell

Project Name: Viral Hijackers: Biomedical Engineers

Biomedical engineering is a multidisciplinary STEM that involves biology and engineering and utilizes engineering principles in medical services and general health-care provision. Biomedical engineering improves human health by applying engineering principles and methods to medical problems. Students will learn how viruses invade host cells and hijack their cell reproduction mechanisms in order to make new viruses like COVID-19, which can in turn attack additional host cells. Students will also learn how the immune system responds to viral invasions, eventually defeating the viruses – if all goes well. Finally, they will consider the special case of COVID-19, in

which the virus' host cell is a key component of the immune system itself, thereby severely crippling the immune system and ultimately leading to viruses. Students will not only learn about viruses, but will engage in a hands-on simulation illustrating virus spread among a population and then determine who the initial bearers of the virus were. They will conduct physics and science experiments to gain an understanding of the career field, as well as engage in activities designed to inspire students to learn more about science, bioscience engineering and biomedical engineering.

### **North Springs High School**

Sponsor: Stefan Singer

Project Name: FTC Robotics Content – FIRST Robotics

The Robotics Team is an after school club that participates in the FIRST Tech Challenge every fall. Each year, FIRST releases new "game". Teams have a limited amount of time to design, build, program and test a robot to compete in this game. Students are required to meticulously document their design process in an engineering notebook. Once competitions begin, the team will compete against other high school teams in the Atlanta area at six separate competitions. Top performers can move on to the state competition. Robots will improve as the season progresses. The team will communicate with teams from other schools to give suggestions and receive feedback leading to design changes and adjustments to the robots and higher scores as competition matches continue.

### **Riverwood International Charter School**

Sponsor: Tim Doherty and Patti Lawrimore

Project Name: Riverwood "Save the Honeybee" Apiary

To support the school's Farm to Table Garden, Biology and Environmental Science classes, Riverwood HS will add three Langstroth beehives in a small enclosed apiary. The apiary will be housed in a fenced in area near the retention pond and maintained by the bee squad (24 students and club sponsors). The three beehives will increase the pollination of the school's existing garden and give all students an opportunity to understand the importance of pollinators to our ecosystem. While the bee squad will keep the hives alive, harvest honey and learn how to be a beekeeper, all 9<sup>th</sup> graders and 12<sup>th</sup> graders will have the opportunity to have a hands-on experience and learn about the life cycle and dynamics of a honeybee colony. The 12<sup>th</sup> graders will learn the importance and ecological role honeybees play in the environment. All students will be able to take field trips to the hive and pollinator garden as the club will be able to provide veils through the use of the grant funds.

## **2019-2020 STEAM LEGACY GRANT RECIPIENTS AND PROJECTS**

### **DUNWOODY SPRINGS ELEMENTARY SCHOOL**

Sponsor: Owen Goard

Grant Name: School After School STEAM Club

The SSEF STEAM Grant funds will be used to continue an after school STEAM Club. The STEAM Club's intention is to enhance student understanding of the Next Generation Science Curriculum in grades 3 – 5 through hands on activities, guest speakers, e.g. the Atlanta Audubon Society, the Atlanta Reptile Society, the Atlanta Science Festival's "Imagining the Future" initiative and through community involvement. The curriculum will be augmented with project based learning opportunities for students and expand the school's participation in community based initiatives, e.g. Volunteer For a Better Sandy Springs. The annual field trip to the Atlanta Science Festival will also continue.

### **HEARDS FERRY ELEMENTARY SCHOOL**

Sponsor: Sarah Severson

Grant Name: Step Up Your Game with STEAM

In 2018 Heard's Ferry Elementary utilized the SSEF STEAM Grant to purchase Hummingbird Duo kits for their project entitled, "Robots from Scratch". Students learned to wire and code a Hummingbird motherboard focusing on the theme of "Space". The SSEF STEAM grant funds this year will fund the newest version of Hummingbird, the Hummingbird Bit. This newer version will allow students to code their robot and then transfer the code directly to the motherboard. This eliminates the need for the project to be hard wired and connected to a laptop, thus allowing more mobility and interaction with the project. The goal this year is for students to use the Hummingbird Bit to create an interactive game for spectators to play.

#### **HIGH POINT ELEMENTARY SCHOOL**

Sponsor: Kerstin Long

Grant Name: The Hound Bowl Math Tournament

Entering its 4<sup>th</sup> year, the Hound Bowl Math Tournament is a Math Olympiad for Elementary and Middle School (MOEMS) certified math competition. Sandy Springs public school students in 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> grade will compete individually and as teams in this annual event. Through tournament preparation and participation, students learn problem solving and teamwork skills while engaging with mathematics in authentic and real world contexts.

#### **ISON SPRINGS ELEMENTARY SCHOOL**

Sponsor: Alison Tripp

Grant Name: Coding Club

Ison Springs students returning to the Coding Club will work on building existing knowledge and begin to integrate java into their work. New students will begin to learn to code using Blockly. All students will utilize Code.org, Scratch, Spheros and SAM Makers Lab in creating their final projects of interactive games, mazes and apps.

Sponsor: Alison Tripp

Grant Name: Fly Girls Drone Club

Students in this Ison Springs after school club will learn about drones, including vocabulary, safety regulations, how to fly and real life careers. All of the students in the 4<sup>th</sup> and 5<sup>th</sup> grades at Ison Springs will also be able to use the drones that are purchased with the SSEF STEAM Grant funds. The drones will be included in two science units in STEAM lab to study weather and changes in the earth.

#### **LAKE FOREST ELEMENTARY SCHOOL**

Sponsor: Katie Pierson

Grant Name: Lake Forest Elementary After School STEAM Club

The SSEF STEAM Grant funds will be used to continue the after school STEAM Club. The after school program will enrich the students' understanding of the Next General Science Curriculum in grades 3 – 5 through hands on activities, guest speakers, field trips and community involvement. The students will participate in the Atlanta Science Festival's "Imagining the Future" program. Additionally, STEAM club students will participate in the SSEF STEAM Showcase, lead activities at the Lake Forest STEAM Night and attend the Atlanta Science Festival. The goal is to inspire student interest in STEAM fields, develop STEAM skills and create excitement about STEAM careers.

#### **SPALDING DRIVE ELEMENTARY SCHOOL**

Sponsor: Giuliana Sargent

Grant Name: Full STEAM Ahead

The SSEF STEAM Grant funds will support the continuation of the "Full STEAM Ahead" after school club program. The clubs included in "Full STEAM Ahead" program will be: Drone Club, Art Club, Robotics Club and Photography Club. The Drone Club will give students the opportunity to fly and

maneuver drones. Art Club will allow students to be creative while making take home pieces of art. In the Robotics Club, students will learn how to design, build and code robots. Photography Club students will use digital cameras to take photos around the school campus and then learn to edit the photos using software programs.

### **WOODLAND ELEMENTARY SCHOOL**

Sponsor: Cheri Mills

Grant Name: Little Bits Inventors

The goal of this program will be to empower tomorrow's change makers through invention and creativity. Using the littleBits STEAM kits, students will be invited and inspired to extend beyond the lesson by turning their ideas into inventions. This will develop foundations of independent thinking and creative problem solving skills essential to success; students will better understand the world around them and how it works. The STEAM student sets make engineering design fun and engaging while also covering cross curricular information in a hands-on learning setting. The students will apply the curriculum to create inventions that inspire the wave of the future.

### **RIDGEVIEW MIDDLE SCHOOL**

Sponsor: Samuel Bell

Grant Name: Music Meets Physics with BeatsMakers Lab using littleBits

The SSEF STEAM Grant funds will be used to facilitate fun STEM/STEAM workshops. All students enjoy listening to music – the universal language in which a variety of sound frequencies combine to excite our sense of sound. Now these sounds can also excite our sense of vision! Students will explore what happens when two audio tones of slightly different frequencies are played simultaneously. The result is a rhythmic pulsing of the sounds – a phenomenon called “beats” in the world of physics. Students will hear and see beats using the littleBits modules from Synth Kit and the Arduino module. In addition, students will discover the differences between “square” and “saw” waveforms.

### **SANDY SPRINGS CHARTER MIDDLE**

Sponsor: Jenell Tanksley

Grant Name: Seaperch – Underwater Robotics Program

SeaPerch is an innovative underwater robotics program that teaches students to build an underwater Remotely Operated Vehicle (ROV). Students will build the ROV from a kit comprised of low cost, easily accessible parts which follow a curriculum that teaches science, technology, engineering and math with a marine engineering theme. Throughout the project, students will learn engineering concepts, problem solving, design skills, and teamwork. In addition, they are exposed to all of the exciting careers that are possible in naval architecture and marine/ocean engineering. Students will attend the regional ROV competition.

Sponsor: Daniel Huntley

Grant Name: Drones for Good

Drones for Good is a drone club for students in grades 6, 7 and 8 which culminates in a drone competition at Grady High School. Through this after school STEAM program, students will build their own drone, program the drone, research about how drones can be used to solve current issues, as well as learn the rules and regulations of flying drones. Students will increase their problem solving skills, communication skills, collaboration skills and research skills.

The SSEF STEAM Grant will support the 4<sup>th</sup> year of competition for the Drones for Good Club in the Grady High School drone competition. This year, all three of the drone teams competed successfully in each category of the competition. Each team won a category award, including one team winning the Champion's Award.

## **NORTH SPRINGS CHARTER HIGH SCHOOL**

Sponsor: Stefan Singer

Grant Name: FTC Robotics Competition (FIRST Robotics)

The Robotics Team is an after school club at North Springs that participates in the FIRST Tech Challenge every fall. FIRST is an organization with the goal of promoting STEM education in schools. Each year, FIRST releases a new “game”. Teams have a limited amount of time to design, build, program and test a robot to compete in the game. Students are also required to meticulously document their design process in an engineering notebook.

As the robotics season progresses, the robots improve. The first competition of each season is a chance for teams to see what works and what improvements can be made. Teams communicate with each other and improvements and adjustments are made to the design of the robots. By the end of the season, the robots are improved and competition scores increase.

This past year, our Spartabots II team won the Motivate Award and were invited to compete in a postseason competition.

## **RIVERWOOD INTERNATIONAL CHARTER HIGH SCHOOL**

Sponsor: Scott Kent

Grant Name: Riverwood MakerSpace Local Computer Network

In the MakerSpace, Riverwood HS will have dedicated space for computer science. Students will work in groups with teachers and community mentors to build and structure two system networks with two workstations each. The servers will run UNIX operating systems. The workstations will run LINUX. These operating systems will allow students to learn the fundamentals of network engineering and will run equipment in the MakerSpace allowing students to update, change and run various programs.

In addition to supporting the functioning of the MakerSpace, the students in Intro to Digital Tech, Computer Science Principles, AP Computer Science Principles and AP Computer Science A, along with students interested in exploring computer science will be placed on teams managing one server. Teams will be encouraged to test the other team’s security and network configuration. This process will allow students to understand the fundamentals of network engineering, cyber security and system management; vital skills needed in our community and nationally.

## **2018-2019 STEAM LEGACY GRANT RECIPIENTS AND PROJECTS**

### **Dunwoody Springs Elementary – After-School STEAM Club**

The funds will be used to initiate an after-school STEAM Club. The club will enhance student understanding of the Next Generation Science Curriculum in grades 3 through 5 via hands-on activities, field trips, guest speakers and community involvement. The club’s focus will augment the school curriculum with project-based learning opportunities for students and help expand the school’s participation in community-based initiatives. The club will work in close cooperation with the existing Drone Clubs at Dunwoody Springs Elementary and Sandy Springs Charter Middle School, as well as build a team to participate in the Math Hound Bowl, Science Olympiad and Fulton County Science Fair.

### **Heards Ferry Elementary – Building Robots from Scratch!**

To expand on the first year success of the STEM Robotics Program, the grant funds will be used to change incorporate arts into STEM programs. Art and science will combine to create a curriculum that infuses art and creativity into building robots. Students in grades 3 through 5 will receive Hummingbird Robotics kits (along with Scratch as their programming tool) and will be challenged to

make original pieces. The goal will also be to increase the number of students entering the county technology competition with their original projects.

#### **High Point Elementary – Math Hound Bowl**

The grant funds will be used to continue an annual math competition event sanctioned by Math Olympiads for Elementary and Middle Schools (MOEMS). The 2018 “Hound Bowl,” entering its third year, will involve 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup>-grade student teams from Sandy Springs elementary and middle schools. Students will increase their math proficiency through practice during the school year as they prepare for the rigor of the competition as individuals and as collaborative team members.

#### **Ison Springs Elementary – Coding Club**

Grant funds will be used to support the after-school Coding Club where students in grades 3 through 5 will learn basic coding skills to lead robots through a set of tasks. Students will learn how to use the software, practice computer skills and guide their robotic vehicles. Students will be immersed in inquiry-based and exploratory learning as part of the process, while also strengthening their collaborative work skills aligning with the school’s Project Based Learning (PBL) focus.

#### **Lake Forest Elementary – After-School STEAM Club**

The grant funds will be used to continue the after-school STEAM Club. The club will enrich student understanding of the Next Generation Science Curriculum in grades 3 through 5 through hands-on activities, guest speakers, field trips and community involvement. The club will focus on inspiring student interest in STEM fields, develop STEM skills and create excitement about STEM careers.

#### **Spalding Drive Elementary – Full STEAM Ahead**

The grant funds will be used to continue STEAM after-school clubs for 4<sup>th</sup> and 5<sup>th</sup> grade students. In the Coding Club, students will code Lego Mindstorm robots to move, make sounds and light up. In the Art Club, students will collaborate and create artwork to display at school and at the STEAM Showcase. The grant funds will also allow for the start of a new Drone Club where students will learn to code and fly drones through various obstacles.

#### **Woodland Elementary – Woodland Drone Club**

Students in grades 3 through 5 will learn about the various applications of drones and then apply that knowledge to program devices using the Tickle app on iPads. Students will complete various projects. For example, they will fly the drone over a disaster scene made of Lego structures to learn about the concepts of flight and disaster management. They will also use the drones to create high tech games, learn new math skills and learn about natural and technological science while sharpening estimation skills. Students will learn and reinforce content skills through interactive, hands-on projects while solving real-world problems.

#### **Ridgeview Charter Middle School – Music Meets Physics with Beats Makers Lab**

The grant funds will be used for STEM/STEAM workshops focusing on the physics of sound and music using littleBits. Students in grades 6, 7 and 8 will explore the rhythmic pulsing of sound – a phenomenon called beats in the world of physics. Students will hear and see beats using the littleBits modules from the Synth Kid and the Arduino models and discover the differences in waveforms and understand the characters of waveforms.

### **Sandy Springs Charter Middle School – Lend a Hand and Drones for Good Clubs**

**Lend a Hand:** Grant funding will support 7<sup>th</sup> grade students learning about how biomedical engineers create assistive devices for persons with fine motor skill disabilities. Students will learn about types of forces, the relationships between form and function and the structure of the hand. They will design, build and test their own hand “gripper” prototypes and bring their prototype to life by creating an assistive hand device using 3D printing technology.

**Drones for Good Club:** The Drones for Good after-school club will be funded by the grant. Students in grades 6, 7 and 8 will build their own drone, program the drone, research how drones can be used to solve current issues and learn about the rules and regulations of flying drones. Students will increase their problem solving skills, communication skills, collaboration skills and research skills. The students will also continue their participation in annual drone competitions.

### **North Springs Charter High School – Audio Video Technology/Film Club**

Grant funding for the Video Technology and Film Club will give students the opportunity to apply skills they learn in all levels of video technology classes. Students will work on special projects for the school and/or community. The club will also participate in film competitions within the school district and the state. Creating film projects will allow students to write scripts, consider basic electrical needs for production, edit layers of video/audio and complete frame editing. As a collaborative art, this will also allow students to develop teamwork skills, planning skills and to troubleshoot as filming is completed and in production.

### **Riverwood International Charter School – Maker Space and Project Based Learning**

The grant funding will be used to purchase a Designjet printer and a Scan and Cut machine as part of the larger initiative of creating a Maker Space. The Maker Space production lab will have modern tools and equipment allowing students to become creators. Students will engage in STEM-related activities to help them build the problem-solving skills and the capacity for content exploration needed to succeed in the working world. The goal is to increase, by at least 35%, the number of teachers using effective inquiry or project-based learning assignments and to actively engage at least 500 students in STEM-related projects for their classes through the Maker Space technology. This engagement will take place before/after school, during lunch and free time, as well as subject class periods.

## 2017-2018 STEAM LEGACY GRANT RECIPIENTS AND PROJECTS

**Dunwoody Springs Elementary.** “I Spy in the Sky with a Little Drone Eye” - The grant funds will be used for a drone club where students will experience teamwork and grow as thinkers and innovators while learning to program a drone. Students will learn the basics of coding through the Tynker app and conceptualize the program they want their drone to fly/perform. They will design, build, implement and test the coding program necessary to fly their drone according to their specifications.

**Heards Ferry Elementary.** “Heards Ferry Elementary Technology Club” -The funds will enable the creation of a Technology Club which will meet once a week. Each month, the club will have a different focus so students can engage in a specific topic of interest or all topics that are presented. The club technology topics will include graphic design, web design, robotics, makerspace, coding, video edition and app development. The club instruction will assist the students in preparing for the Fulton County Technology Competition and the Fulton county Media Festival.

**High Point Elementary.** “MOEMS Math Olympiad Tournament” - The original 2016 SSEF STEAM Grant submitted culminated in the first annual, Hound Bowl Math Olympiad Tournament. There were 55 - 4<sup>th</sup> and 5<sup>th</sup> grade students from five Sandy Springs elementary schools who participated individually and as teams of five students. The successful “Hound Bowl” will continue in the 2017-18 academic year as a SSEF funded program with the goal of including all 7 Sandy Springs elementary schools, as well as 6<sup>th</sup> graders from the two Sandy Springs middle schools.

**Ison Springs Elementary.** “EV3 Lego Mindstorm Robotics” - Students will be designing, building and programming EV3 Lego Mindstorm robots with the grant funds received. They will be immersed in inquiry-based and exploratory learning as a part of the use of software, while practicing computer skills and constructing robotic vehicles. Project management skills will be introduced as well, as students learn how projects take multiple steps and how to sequence each step to complete the project in a timely manner.

**Lake Forest Elementary.** “Lake Forest Elementary After-school STEM Club” - Grant funds will be used to continue the after school STEM Club which meets once a week to enhance the understanding of the Next Generation Science Curriculum in grades 3 – 5. The Club will spark and nurture student interest in STEM fields, develop STEM skills and create excitement about STEM careers. Students will learn through hands-on activities and guest speakers from The Atlanta Audubon Society, the Atlanta Reptile Society and others in the community. Growth of the club’s collaboration with the Fulton County Water Department’s “Adopt a Stream” Program and the Riverwood High School Science Honor Society will continue. The students will also participate in the Atlanta Science Festival’s “Imagining the Future” Program and experience the Atlanta Science Festival through a field trip.

**Spalding Drive Elementary.** “Full STEAM Ahead” - The funds will be utilized to explore each component with after-school clubs for Science Olympiad, Programming and Coding and Art. The art teacher will lead an art focused club to explore and create art to share with the school. The TAG teacher will create and lead a Science Olympiad Club, solving real world problems and culminating in participation in the annual Fulton County Science Olympiad. A third club will continue the work from previous years focusing on building and coding Lego Mindstorm robots.

**Woodland Elementary.** “First Lego League Robotics Teams” - The grant funds will be used to grow the First Lego League Program and continue to support the school’s STEM initiative. The goal will be to establish four FLL teams of 10 students each. The teams will research real world problems and develop a solution. The students will design, build and program robots to address the solutions. The FLL Program will culminate in a FLL competition and sharing of innovative solutions among the students.

**Ridgeview Charter Middle School.** “VEX Robotics/LEGO Robotics Team” - The grant funds will be used to provide an after school club to enrich students’ experience with science, technology, engineering and math courses and allow for seamless integration into classroom projects. The club goal is to design one of the most competitive VEX/LEGO Robotic teams in Fulton County. Students will work collaboratively to build the robot. The process will encourage creativity in problem solving, require students to conduct quantitative research and enable them to engineer robot construction using feedback from each other, as well as the teachers.

**Sandy Springs Charter Middle School.** “Drones 4 Good After School Club” -The grant funds will be used to support a Drones 4 Good after school club and student participation in the Grady High School, Drones 4 Good Competition. In preparation for their second year participating in this competition, students will build their own drone, program the drone, research how drones can be used to solve current issues and will learn the rules and regulations of flying drones. Students will increase their problem solving, communication, research and collaborative work skills. The goal will be to increase the number of teams from two teams last year, to four teams this year.

**Riverwood International Charter School.** “STEAM Camp Through Experiences in our Community” - Grant funds will be used to provide a Saturday STEAM Camp for at-risk Lake Forest Elementary 5<sup>th</sup> graders at Riverwood High School. Campers will experience mini lessons in areas of science, technology, English, arts and math. Riverwood students will act as mentors and facilitators during the program. Campers will also participate in two or more on/off campus trips/experiences to enhance and expand the STEAM Camp content areas. The field trips may include: Center for Puppetry Arts, Atlanta Botanical Gardens, Fernbank Museum and Planetarium and I school Initiative Escape Bus.

### **2016-2017 STEAM LEGACY GRANT RECIPIENTS AND PROJECTS**

**Dunwoody Springs Elementary-** Funds are used in the school’s Project Based Learning initiative to implement an after-school program. Students will study the sun and its ability to impact their lives in new and exciting ways. They will be able to construct different objects using the “OWI Solar Kits.” These kits enable students to construct over 20 different objects that run on solar power.

**Heards Ferry Elementary-**Grant funds will be used to create a Maker Space Challenge after-school project designed to engage students in STEM related activities. Students will present a project idea or concept to improve the function of an existing system. They will create teams to work on their Maker Space project, while keeping detailed journals of their successes and challenges.

**High Point Elementary-** The original grant project was submitted for a math based after school program engaging students with mathematics in authentic and real world contexts. This after-school program will culminate in a Math Olympiad for Elementary and Middle Schools (MOEMS) Tournament which will engage High Point students. The teacher plans to set up a new MOEMS Tournament for the students in our Sandy Springs schools. Currently, three other Sandy Springs elementary schools are interested in participating in this tournament. SSEF plans to sponsor and fund this Math Olympiad Tournament separately as an SSEF Program.

**Ison Springs Elementary-** Grant funds will be used for an after-school program to allow students to design and construct a house or city with a variety of materials. They will install electricity for their construction projects to run miniature ceiling fans and other electrical features.

**Lake Forest Elementary** – The grant funds continue the after-school STEM Club, which meets once a week to enhance the understanding of the Next Generation Science Curriculum in grades 3 – 5. The Club members participate in 1) science experiments, 2) community involvement through the Fulton County Adopt-a-Stream Program, 3) guest speaker and community leader lectures and 4) school-

based projects. The Club provides a positive, learning centered after-school activity and focuses on encouraging student interest in STEM skills and careers. It also enhances student science performance.

**Spalding Drive Elementary** – The grant funds an after-school program that encourages students to learn coding programs, such as Tynker and Code.org. After learning the basics of coding, students will create interactive STEAM projects. Local programmers will visit or Skype with the students to discuss programming and coding jobs in the community. Students in the after-school club participated in the Hour of Code with students across the country and finally, students will present their projects at the 2<sup>nd</sup> Annual SDE STEAM Expo.

**Woodland Elementary** -Grant funds will enable the start of a First Lego League competition team. Guided by adult coaches, First Lego League teams research a real world problem such as food safety, recycling, energy consumption, etc. and suggest a solution. The students must design, build and program a robot using Lego Mindstorm Technology. They will then compete on a table-top playing field. The program culminates in a challenge where students compete against their peers and share their innovative solutions with others.

**Ridgeview Charter Middle**– The grant will fund an after-school program to teach students about earthquakes. With the “Earthquake Towers – Getting Started Package,” the students will build buildings and bridges. Students will test their structures to determine earthquake resistance through the use of a Tremor Table earthquake simulator and associated testing equipment. Via researching and tracking earthquakes, students will gain knowledge in both science and technology.

**Sandy Springs Charter Middle**–Grant funds will be used to purchase four data hubs for the after-school STEAM Green Club. One of their main focus areas will be to create and maintain a school community garden. The device will calculate real-time data, such as soil pH, water levels and temperature, to help students make informed decisions in their scientific studies.

**North Springs Charter High** –Grant funds will be used to fund a Spartan Mixers after-school club for Music Technology students. The school is developing a Music Technology Program to prepare students for music and industry careers in performance and production. Although the Music Technology class is initially limited to a small number of students, the after-school program, Spartan Mixers, will reach additional students with musical talent. Students in the club will create their own audition CDs. They will learn how to mix sound, evaluate recordings and create a final product.

**Riverwood International Charter**– Grant funds will be used to fund a six-week Saturday STEAM Camp for financially vulnerable Lake Forest Elementary 5<sup>th</sup> graders. Riverwood teachers and identified Riverwood students will deliver this program. Students will learn about the ecology, migration and life cycle of the Monarch butterfly and will complete an art piece, poem or story to describe it. The students will document and build a garden while collecting statistics about the Monarch butterfly migration. Finally, they will build a Monarch friendly garden at both their home school and Riverwood High School.

## **2015-2016 STEM LEGACY GRANT RECIPIENTS AND PROJECTS**

**North Springs Charter High School**– For a Maker Club in which students will participate in the Deconstruction Tournament and two additional design competitions.

**Ridgeview Charter Middle School**– For an after school RADIO-STEM project in which students will learn about AM/FM radio design and theory, the basics of digital multi-meters and circuit

troubleshooting , the basic principles of electronics and electricity, physics and magnetism and will build their own fully functioning FM radio.

**Sandy Springs Charter Middle School**– For hands on projects focusing on evolution, the study of body systems, water cycle, plant life and interaction of living things. Students will participate in an advanced pond study with a field trip to the Chattahoochee Nature Center.

**Heards Ferry Elementary School**– For a Maker Space Challenge after school project designed to engage students in STEM related activities.

**High Point Elementary School**– For an after school STEM-gineers Project which is a talent development program modeled on the School-wide Enrichment Model. Students will explore math topics and strategies and will register as grade level teams in the Elementary Mathematical Olympiads.

**Ison Springs Elementary School**– For an after school program for second grade students to work with electronic snap circuits. Student will create a working circuit board and will conduct experiments involving electricity with a goal of increasing their knowledge of electronic circuits.

**Lake Forest Elementary School**– For an after school STEM club which is designed to enhance understanding of the Next Generation Science Curriculum in grades three through five. The STEM experiences will include science experiments relating to the curriculum, robotics, and community involvement projects.

**Spalding Drive Elementary School**– For an after school STEM in Action program designed to align with the school’s STEAM focus. Students in the third through fifth grade will participate in a Science Club, Technology Club, Engineering Club and Math Club. They will participate in numerous competitions.

**Woodland Elementary School**– For the Lego Wedo Robotics program. The school will purchase 15 Lego Wedo robotics kits to be used in the technology classes and in their after school program for first and second graders. The program is part of the school’s goals to be a STEM certified school.

### **2014-2015 STEM LEGACY GRANT RECIPIENTS AND PROJECTS**

**North Springs Charter High School**– Grant funds will be used to fund a Science Olympiad team. The competition consists of skill/academic tests and building events. Funds will be used to construct, test, and perfect designs and prototypes for the building events, which is the focus of this year’s competition. Students will gain a greater understanding of robotics and engineering through this club.

**Ridgeview Charter Middle School**– Grant funds will be used for a Math Olympiad team. The objective of this project is to engage students in the study and practice of mathematical problem solving through participation in the Math Counts national program and the Mathematical Olympiads for Elementary and Middle School competition.

**Sandy Springs Charter Middle School**– Grant funds will be used for a Science Explorers After School Club. Students will explore a variety of topic from all of the sciences through hands on experiments resulting in authentic learning. Activities range from working with polymers that would allow students to produce “fake mucus”, to exploring the properties of carbon dioxide by creating lava lamps, to observing an exothermic reaction between hydrogen peroxide and yeast in elephant’s toothpaste. All experiments are designed to be fun as well as educational.

**Ison Springs Elementary School**– Grant funds will be used to fund an afterschool science club focused on robotics to raise awareness of innovation through empowering students to make their ideas a reality by giving them the tools to start, refine and realize that with teamwork a vision can become reality. The students will have an opportunity to learn about programming and robotics with the goal of creating a robot that they can present in a robotics contest and/or science fair.

**Lake Forest Elem School Lake Forest Elementary School**– Grant funds will be used for a Lego League/STEM Club. This will include robotics activities as well as a focus on STEM activities. The plan is to focus on a science concept each month, such as, biology, ecology, water quality testing, etc. to integrate the other areas of STEM into the afterschool program.

**Woodland Elementary School**– Grant funds will be used for an afterschool STEM Club with Robotics. Students will participate in engineering design tasks utilizing LEGO WeDo STEM kits designed to teach the fundamentals of programming. Students will learn the basics of robotics and will develop necessary collaborative skills to enhance their creative and critical problem solving abilities.

### **2013-2014 STEM LEGACY GRANT RECIPIENTS AND PROJECTS**

**Riverwood International Charter School**– Grant funds will support the current RoboRaiders Robotic Team. The Robotics club engages students in designing and building robots to compete in the FIRST Tech Challenge. The objectives of the program are to promote leadership qualities, team spirit and cooperation while developing engineering and technological skills to inspire students to seek careers in science and technology.

**North Springs Charter High School**– Grant funds will be used to pilot a Computer Science club. The purpose of the club will be to allow students to experience hardware, programming, prototyping, and hands-on electronics experience to increase and cultivate interest in electronics, computer science, and creativity.

**Ridgeview Charter Middle School**– Grant funds will be used to start an after school science and math initiative that funds a “hands on” learning lab experience for all students. While offering equity and access for all, the initiative will place an emphasis on inviting and attracting at risk girls. This after school program, offered two days per week, will be fully equipped with supplies to embed hands on learning labs to inspire the young scientist and mathematician.

**Sandy Springs Charter Middle School**– Grant funds will be used to fund an evolution/classification/body system science unit as part of the Science Exploration enrichment program for the After School All Stars program. Students will dissect and study the anatomy of the dogfish shark in order to gain a better understanding of the major organ systems, as well as the classification and the evolution of the species.

**Ison Springs Elementary School**– Grant funds will support a robotic after school club providing students with an engaging activity that integrates science, technology, science and math. Funds will be used for equipment as well as First Lego League registration fees for team competition. Funds will support students in all grade levels at the school.

**Lake Forest Elementary School**– Grant funds will be used to implement an after school robotic club to prepare fourth and fifth grade students to compete in the First Lego League. The goal is to recruit Riverwood high school students who have robotic experience to teach these elementary school students the fundamental robotic production and programming responsibilities.

**Spalding Charter Elementary School**– Grant funds will be used to offer an after school First Lego League opportunity to their 3rd through 5th grade students. Funds will be used to for equipment as well as First Lego League registration fees for team competition. This initiative will engage students in team competition as well a serve as a feeder program to the middle school.

**Woodland Elementary School**– Grant funds will be used to start an after school STEM program which will target 4th and 5th grade students as a testing ground for a STEM lab program school wide. The plan is to engage students from North Springs high school to partner with the students to work on robotics, business planning, design, engineering as well as a medical component. Each project will last 7-8 weeks followed by a presentation.

### **2012-2013 STEM GRANT RECIPIENTS AND PROJECTS**

**North Springs Charter High School**– Initiated a program, Operation Hyper/Thread, designed to establish a robotics education pathway at North Springs and to thread the knowledge and experience about robotics across feeder schools in the cluster through mentoring activities. The objective is to develop a sustainable competitive robotics program at the high school while reaching out to the middle and elementary school students to develop their primary robotics skills. Grant funds will be used to purchase needed equipment to prepare for robotic team competition and mentorship activities.

**Riverwood International Charter School**– Grant funds support the current RoboRaiders Robotic Team. The team engages students in designing and building robots to compete in the FIRST Tech Challenge competition. The objectives of the program are to promote leadership qualities, team spirit and cooperation while developing engineering and technological skills to inspire students to seek careers in science and technology.

**Sandy Springs Charter Middle School**– Grant funds used to purchase Lego NXT Robotic kits to increase participation in the current after school Robotic program. Students will develop team and project management skills through participation in the FIRST Lego League competition and the Technology Student Association competitions. The program is designed to get students involved in real-world engineering, computer science, design, math and applied physics.

**Spalding Drive Charter Elementary School**– Offered the FIRST Lego League opportunity to their 3rd through 5th grade students to prepare the students to participate as a FIRST Lego League team. Grant funds will be used for “seed money” to initiate the program by purchasing equipment including robotic and field set-up kits. The goal is to create a fun, creative, hands-on learning experience which engages students in STEM activities while serving as a feeder program to the robotic program in the middle school.

**Ison Springs Elementary School**– Implemented a robotics after school club which is a continuation of the current SSEF grant-funded science club. Grant funds used to purchase Lego Mindstorm kits. Two engaging teachers with strong backgrounds in technology and science as well as Lego Robotics worked with students on activities that integrate science technology, engineering and math.

At Ison Springs Elementary School’s Science Fair, the students demonstrated projects that were paid for by SSEF STEM Grants 2011-2012. Ison Springs teacher said:

We have truly enjoyed the relationship we’ve established and cultivated with SSEF over the past few years and are especially thankful for the Robotics Grant you provided this school year. We were able

to serve 26 students in grades 1-5 via a robotics club in which they learned how to create, program, and engineer various projects. It was an unbelievable experience for our students and staff.

**Woodland Elementary School**– Developed a 4th and 5th grade First Lego League for 2012 competition year. In addition to the teams, students would participate in two enrichment days focusing on decision making, inquiry/mystery, metaphorical reasoning, and inductive reasoning. The objective of the program is to develop a sustainable robotic program which will develop an interest among students of all backgrounds for further participation in robotics and/or STEM studies in middle, high school and beyond. Grant funds would be used to bring in a robotics instructor to work with students and train the teacher.

### 2011-2012 STEM GRANT RECIPIENTS AND PROJECTS

**Dunwoody Springs Elementary**– Initiated an “Ask the Science Expert” enrichment program bringing in experts in the field to visit with the students to deliver high level, inquiry based learning lessons incorporating the use of their expanding science lab. They also will purchase portable laptop microscopes for use in the lab.

**Heards Ferry Elementary**– Created an interactive “Human Sundial” to inspire learning through outdoor experience complementing classroom learning. A Human Sundial offered hands-on learning in a range of subjects including Math and Science. Appropriate curriculum will be purchased for the project.

**High Point Elementary**– Initiated a “Flipping Out Over Flip” program for students in grades 4 and 5. Seven Flip cameras were purchased for students to develop persuasive videos. The math videos demonstrate hand on experiences/experiments of students relating real-life scenarios to math standards being taught in the classroom. Videos helped students make connections to their everyday lives.

**Ison Springs Elementary**– Implemented an “Amazing Science!” after school science extension program. Second and third graders participated in varied hands-on experiments and projects that are aligned to the performance standards. The focus of the program is to foster a deeper interest in scientific inquiry and exploration.

**Lake Forest Elementary**– Brought in an in-school field trip called “High Touch High Tech” for all 5th grade students. Program transformed classrooms into Living Laboratories in which students became scientists and learned by doing science experiments both in school and at home. Program is aligned with the Georgia Performance Standards in Science.

**Spalding Drive Charter Elementary**– Implemented a “Science...Seriously” program for students in Extended Day and Prime Time after-school programs to provide them with additional science instruction. Two highly interactive on-site field trips, Lego-Robotics and High Touch/High Tech, took place in the program. “Time for Kids” magazines were ordered for use in the program.

**Woodland Elementary**– Purchased the Moon Cylinder for their existing Star Lab. The Moon cylinder was used for four grade levels to meet Georgia Science Standards. The Star Lab is and continues to be an outstanding educational tool for all of the students in the school.

**Ridgeview Charter Middle School**– Purchased students licenses of Explore Learning’s mathematics and science “Gizmos” web application. School matched grant to offer opportunity to all 8th grade and ELL students. These interactive computerized science labs and mathematics simulations helped students make deeper connections to the instruction that they received in the classroom.

**Sandy Springs Charter Middle School**– Implementation of an after school Science Explorer’s club. The program was designed to allow students to explore the scientific world around them with fun and interactive science experiments. Program was conducted within the current After-School All-Stars program.

**North Springs Charter High School**– Implementation of a Research based after school club. The club is designed to give students who are interested in science a chance to perform experiments and communicate their results to the general public through a competition (Science Fair). The grant provided a continuous link for advanced research as students learn valuable research techniques, advance their own thinking skills and have ownership of their learning.