

Chairman's Award - Team 1629

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2022 - Team 1629

Team Number

1629

Team Nickname

Garrett Coalition (GaCo)

Team Location

Accident, Maryland - USA

Describe the impact of the *FIRST* program on team participants within the last 3 years. This can include but is not limited to percentages of those graduating high school, attending college, in STEM careers, and in *FIRST* programs as mentors/sponsors.

GaCo has built a strong STEM foundation for the 5 graduating seniors. The *FIRST* community will be gaining many mentors and advocates; 15% of our alumni volunteer or mentor *FIRST* programs and the number keeps growing. GaCo is proud to have 100% of alumni continue their education past HS, 85% in a STEM field. With only 60% of local students going to college, this is an accomplishment! That is more than 80 students who have been inspired to become STEM professionals and inspire younger students.

Describe your community along with how your team addresses its unique opportunities and circumstances.

We are blessed to live in Garrett County. It is a beautiful tourist destination, sparsely populated, rural, and remote. We identify with West Virginia more than the urban areas of Maryland. Our vision of STEM Ready kids has made a difference in Garrett County and that drives us to find other rural communities like ours across Appalachia to make a similar impact. BEING SELF AWARE of our community, its strengths and weaknesses, empowers GaCo to make a difference in other rural communities.

Describe the team's methods, with emphasis on the past 3 years, for spreading the *FIRST* message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?

Everything GaCo does supports its vision of STEM Ready kids. Lessons are scalable to make a difference to an entire grade level, an entire school, and/or a school district. Even if we make a difference to just one student, it's worth it. GaCo is sustainable through our results. Our students are mastering the art of telling our story to all those who would like to partner with us - helping us towards our vision as well as helping them towards theirs. Thus, making *FIRST* a most valuable partner.

Please provide specific examples of how your team members act as role models within the *FIRST* community with emphasis on the past 3 years.

Our team members are enthusiastic about making a difference and modeling STEM education. They have experienced the joy and satisfaction of engaging a child in a STEM encounter. They are anxious to share their passion and are ready to help others have the same joy. We seek every opportunity to present at educational conferences, workshops, community events, and *FIRST* events. It's what we intentionally model for other teams to observe and HOPEFULLY TO EMULATE!

Describe your team's initiatives to Assist, Mentor, and/or Start other *FIRST* teams with emphasis on activities within the past 3 years.

FIRST programs are essential to establishing our vision. We formed a partnership with the Appalachian Regional Commission (ARC) which provides \$60K in matching federal funds to start FIRST programs, including FRC, similar to the GaCo Model. Since 2019, we have visited over 20 schools among 4 states (MD, WV, PA & GA) to demonstrate the power of FIRST to impact schools and school systems. We are supporting and/or mentoring 34 FLL and FTC teams this year among 27 public & 7 nonpublic school teams.

Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and innovators? What results have you seen from your efforts in the past 3 years?

GaCo exists for one purpose -to make STEM Ready Kids! Our STEM Waypoint lessons demonstrate the power of the GaCo Model. We have saturated our county's school system teaching our Waypoints to every 3rd, 4th, and 5th grader for 6 years demonstrating the positive impact of our lessons in schools across Appalachia. GaCo's passion for teaching inspires younger students to follow in our footsteps -one reason why superintendents and principals want a program based on the GaCo Model in their systems.

Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic entities, etc.) and what you have accomplished together with emphasis on the past 3 years

GaCo covets win-win partnerships and looks for partners with a vision similar to ours. Together we can do more. We are proud of our partners and we want our partners to be proud of us - especially those that provide funding for our vision, such as the ARC and other community-based foundations that match our ARC funding. Over the last 3 years, our partners have enabled us to visit 20 schools and support 33 FIRST programs as well as establish ourselves as leaders in STEM education.

Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.

As a rural county in Appalachia, GaCo is as diverse and inclusive as our school system and the community we serve. GaCo consists of students from both our county's high schools, span across all social-economic subgroups, and at least half of our team members are female. Many of the schools we serve are in high poverty with at least half their students qualifying for free and reduced meals. GaCo is sensitive to reaching out and being inclusive to all student subgroups in our outreach efforts.

Explain how you ensure your team and the initiatives you have created will continue to run effectively for the foreseeable future

GaCo is sustained by our relationship and commitment to our partners. GaCo is responsive to our partners and seeks to support them as they support us. We are intricately connected to our school system with ongoing support from its General Operating Budget as well as having established official Policy & Procedure for GaCo's function within Garrett County Public Schools. Moreover, GaCo's mentor base crosses two generations with the younger generation as committed to GaCo's vision than the older.

Describe your team's innovative strategies to recruit, retain, and engage your sponsors within the past 3 years

This past year we have new sponsors as a result of our alumni engaging their employers and professional contacts. We will continue to engage our alumni in securing future sponsorships. Our sponsors inspire us, provide awesome mentors for our students to emulate as well as allow our program to continue to grow. We engage our sponsors by recruiting mentors from them as well as showing appreciation through annual events in which we celebrate them. Our sponsors are the heart of our GaCo family!

Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.

Social media is our weakness, so we now have an active team that is responsible for updating the world on what we are doing. Our goal is to share GaCo's story and what we are about with as many people as possible. Social media is a valuable platform for us to share our initiatives and projects. We're a small team on a mission to become STEM education leaders. We love submitting for the Chairman's Award (CA) and the self-reflection process that submitting for the CA award provides.

Describe your team's goals to fulfill the mission of *FIRST* and the progress you have made towards those goals.

Through establishing FIRST programs we are working towards our vision of "STEM Ready Kids." 100% of teachers who have responded to our impact survey agree that we have moved students closer to being "STEM Ready". The mission of GaCo is also more than just about robots - it's to become a leader in STEM Education. Thanks to our partnership with FIRST and our school system, we demonstrate to educators the power of FIRST and the GaCo Model as we teach our innovative STEM lessons across Appalachia.

Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique or particularly noteworthy.

COVID did not stop GaCo. It forced us to look at every aspect of our program and made us better. FIRST represents an opportunity for us to build a better future. We're not only building competitive robots, but more importantly, we're building STEM READY KIDS! FIRST provides a framework that develops our FRC students for real world challenges as well as empowering us to change the world one child at a time. It sets FIRST apart from the other robotics programs. We do FIRST to make a difference!

Essay

Building the Future

An architect's rendering is the project's vision; everything project managers and contractors do revolves around that vision. FRC Team 1629, GaCo, has a vision not of a physical structure, ours is a vision of something we call STEM Ready Kids. To have every student complete 5th grade having developed skills essential to success in STEM - Science, Technology, Engineering and Math.

Blueprints guide the process to make the architect's vision a reality. The blueprint to GaCo's vision is based on 3 major components: mentoring younger FIRST teams, building meaningful partnerships and, most importantly, making a systemic impact on an entire school or school system. The last component is guiding our mission to be leaders in STEM education.

A strong foundation is essential to any structure. GaCo's foundation is evidenced-based programs, like FIRST, and researched-based, pedagogically sound principles. Research tells us that if students do not develop spatial reason skills essential for success in STEM by age 10, the window closes and those essential skills are much harder to develop.

Craftsmen are essential to any building project, the experts at creating the architect's vision. Every GaCo student is expected to be a skilled STEM teacher. Over the past 5 years, GaCo has developed a series of highly engaging, standard-based STEM lessons. These lessons are the concrete of our foundation. In 3rd grade, GaCo instills a deeper understanding of multiplication by building LEGO Top Spinners - our own design. In 4th grade, we introduce binary numbers with our GaCo number guessing cards. We follow up in 5th grade with our Key to the Universe in which students build a set of LEGO Calipers that determine the Golden Ratio. A great lesson in science, math, art, and proportionality is how GaCo puts the "A" in STEAM.

Over the last 5 years, GaCo has given away over 6,000 LEGO Top Spinners, 5,000 sets of GaCo Cards and 3,000 LEGO Golden Ratio Calipers - in either 1:1 encounters with eight to ten year olds or through teaching our STEM Waypoint lessons. In addition, at least 3 other FIRST teams have used our LEGO Top Spinners to teach GaCo's STEM Waypoint lessons in their own schools and communities. In 2018 the Creation Museum near Cincinnati learned about our Key to the Universe Lesson and continues to teach it through daily student workshops. Our STEM Waypoints are the concrete we use to build STEM Ready Kids and the more FIRST programs, schools and organizations that teach them, the better!

These lessons help to cement GaCo as a STEM Education leader, but other building strategies have emerged. Sometimes, when working on a project contractors must "rent" tools - especially expensive tools or equipment. Over that last year GaCo has realized the need for a Resource Center, a free rental center for instructional materials that immerse students in STEM. Things that are too expensive or large for any one school to own or maintain.

GaCo's collection of instructional resources are shared among the schools it serves. They largely resulted in the need to find meaningful, outdoor STEM experiences. Students can engross themselves in these activities without a mask, including a trebuchet with a 12 ft throwing arm, two life-size mazes that students walk through with fun STEM twists, and drive-in movie equipment. The memories and inspiration that are made with these instructional tools will last a lifetime.

Schools can "rent" (\$0 charge) our newest instructional tool, a virtual sandbox. It projects contour lines to conform to explore topography and watersheds. Our Resource Center also includes over a dozen smaller fun and engaging STEM activities that we have ready to go for Title I Family Nights and afterschool activities. We deliver, set up and provide the expert teachers (our students) to ensure 100% success - how many rental centers can claim that!

An architect must design according to constraints, budget, and local regulations. It's essential for a building to "fit" into its community. The "community" in which GaCo is making a difference is rural K-12 schools and school districts throughout Appalachia. This is the starting point that GaCo was given as a school-based program in rural Appalachia and where we feel we can make the largest impact. GaCo has made a difference in Garrett County through our vision and we're actively looking to make a difference in other rural schools and school districts throughout the Appalachian region.

COVID brought "Change Orders" to building our vision. Just like supply chain issues can cause a delay in brick and mortar construction projects. We have experienced obstacles and setbacks. COVID has caused us to re-evaluate our strategies and innovate new ways around COVID restrictions, pushing us out of our comfort zone, which has brought positive growth.

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In the height of the pandemic, GaCo was forced to abandon its in-person LEGO robotics Summer camps and turn to an At-Home model. We found twenty "old school" STEM activities that every elementary student should experience, like a Potato Clock and Tin Can Phones. We boxed everything students would need and delivered them to homes. These were one-week camps; each day we released videos we created to demonstrate the activities for the day and talk about the STEM behind them.

Our At-Home camps are a "Change Order" that yielded many benefits. Our At-Home camps not only benefited us by increasing our repertoire of STEM activities we can offer, but they also helped us realize the importance of family engagement. As a result, we are actively pursuing partnerships with organizations throughout the Appalachian region whose mission is to build stronger families.

Our skilled laborers worked tirelessly teaching 2 Waypoints per grade to catch us up, securing the foundation of our vision. Last summer we were able to return to in-person Summer Camps with two, one week camps, enriching 50+ students in grades 3-5. These camps went a long way to help identify students restarting our FIRST LEGO League (FLL) Challenge program and as a result, GaCo has registered 14 FLL teams that are on track to compete at our qualification event for Western Maryland on February 26, 2022. In addition to our 14 FLL Challenge teams, we have 7 FLL Explore teams which are composed of students in second and third grade and 10 FIRST Tech Challenge (FTC) teams. It's important to note that all FTC teams we support and mentor are school-based and meet during the school day. Our 10 FTC teams are spread out among Garrett County's secondary schools - two middle schools and two high schools.

In addition to our teams in Garrett County, we are actively mentoring and supporting 2 FLL teams in Salisbury, PA, and 1 FLL team in Parkersburg, WV, The Tender Defenders. The blueprint to build our vision throughout the Appalachian region is based on the GaCo Model: mentoring younger FIRST teams, meaningful partnerships, and systemic impact. The Tender Defenders, was built on the GaCo Model and have already started teaching our STEM Waypoint lessons in their elementary schools. They will be strong partners in the future as we work towards our vision.

The younger FIRST teams GaCo supports and mentors will ensure strong, skilled laborers in the future. The purpose of our mentorship is to develop strong leaders in STEM education. GaCo is set to support FTC programs only through the 10th grade, after which students are expected to use their experience to mentor and coach younger FIRST teams, making the same experience and opportunities possible for as many others as they can. This is the 2nd year of GaCo's internship program. During their senior year, students mentor younger teams during the school day. This year we have 4 students who have arranged their schedules to serve at least two periods a day for an entire semester of their senior year to support GaCo's vision of STEM Ready Kids. When it comes to skilled laborers, GaCo has many with strong expertise in STEM Education and mentoring.

Our blueprint for building our vision includes building meaningful, reciprocal partnerships. Our school system, Garrett County Public Schools, is GaCo's most valuable partner. The support our school system gives us allows us to be a valuable resource to 8 elementary schools, 2 middle schools and 2 high schools. GaCo has emerged as a jack of all trades when it comes to supporting STEM education in Garrett County, both in our public and non-public schools. Another valuable partner is the Appalachian Regional Commission (ARC) whose vision is a strong STEM Ready workforce. We are on track to wrap up a \$60,000 matching ARC grant in September.

Another valuable partner has been the WV Science Teachers Association. GaCo's students have presented at their annual conferences for the last 3 years. All of our sessions are well received and have established many contacts throughout WV. GaCo students will also be presenting at Common Ground, Maryland's premier K-12 Education Conference again this February - making it the 5th straight year of presentation.

One of the most inspirational aspects of any structure is its cornerstone. This past year, GaCo has been inspired by its favorite building material - LEGO. LEGO evolved over the years from a simple woodworking shop in Denmark to a world-renowned company, imperative to GaCo's vision. GaCo has adopted the LEGO Corporation's motto, "only the best is good enough" and is using it along with its robot as we build our vision. GaCo has also adopted the cornerstone values on which LEGO is built - Learning, Caring, Quality, Creativity, Imagination and Fun. GaCo uses LEGO to build its vision. Our vision may seem impossible with 16 team members and 14 mentors, but we have learned that if we do the things that are necessary, and then do the things that are possible, soon we will be doing the impossible.