

TEAM  **FIRST GLOBAL** 2020
CONNECTING COMMUNITIES

2020 Impact Report

FGC 2020
Team Switzerland

CHOSPAGO #16
Boy Cheese

THIS KENYAN

SCIENCE CAP
(the flag maker space)

CONNECTING COMMUNITIES

The world has greatly changed since last year. The COVID-19 pandemic pushed the world into a new reality that shifted how we interact with each other. But as the world shut down, *FIRST* Global geared up. We took on the task of inspiring a global community by connecting youth around the world to learn, develop, and make change in their countries, signing up 175 teams for the 2020 season. As a result, this has been a year of inactivity turned into engagement, distance turned into connections, and challenges turned into opportunities. This year has reminded us of the universal nature of the challenges we continue to face as a globe, but more importantly, how we can work together as a global community to overcome them with the tools of STEM.

Over the course of three months, teams responded to various social media and technical challenge prompts, attended talks and interviews with STEM professionals, and learned new skills through technical training sessions. Teams took the theme of “Connecting Communities” to heart, and we saw the world — through their students — cooperating, collaborating, and celebrating. They formed global friendships, learned new material, and developed the skills that will help them become the changemakers who will create a better future for us all.

Being an agent of change is about more than knowing how to code, build, or drive a machine. It’s about problem solving, creative thinking, collaboration, exchange, and much more. These are universal skills that are essential both in and outside of STEM fields. From developing proficiencies in digital animation and computer-aided design, to securing the support of their governments, to implementing projects for the betterment of their communities, this season we saw how much of an impact youth can have when they simply have the opportunity and put forth the effort. They used the *FIRST* Global network as a scaffold to build a connected and collaborative global community, which has been the aim of *FIRST* Global since its founding.

The 2020 *FIRST* Global Challenge may be over, but the students’ learning, engagement, and work can and will continue on. And so will ours. In the following pages, learn more about our impact in 2020.

34 female-majority or all-girl teams

took part in the season, which lasted from 1 July to 26 September.



13 talks & training sessions

provided useful insight into STEM. Check out the [playlist on YouTube](#).

25 challenges

engaged youth around the globe in keeping active during the COVID-19 pandemic, providing an avenue for them to continue honing their skills and connecting with their peers worldwide.



280+ creations

were designed by teams, ranging from paper airplane launchers, to chain reaction machines, to inventions that make tasks easier and improve safety.



84 dishes

were made for the challenge titled, "What's Cooking?," where teams shared and demonstrated recipes of cultural significance. Check out all of the submissions compiled in the *Flavors of the World Recipe Book* at first.global/cc.

1 global machine

was created to transport a ball across the world. Teams each designed and built an overly-engineered device to transport a ball in an indirect and complex way, and we combined their submissions into [one video](#).





Through *FIRST* Global, we have learned so much more about STEM and have acquired significant life skills. We have made friends from all around the world and met truly inspiring people. In the midst of the coronavirus pandemic, we are even more grateful to have still had the opportunity to participate in *FIRST* Global. We recognize that our world is constantly filled with challenges, and we want to thank *FIRST* Global for providing us with the tools needed for us to use to overcome them. —Team Albania 2020

FOUNDER'S LETTER



Greetings to the whole *FIRST* Global community. I'm happy to say that, despite the enormous frustration of not being able to be physically together, this year the *FIRST* Global community has demonstrated that they are connected, bonded, cooperating, and collaborating in ways that should give everybody enormous pride. Teams all over the world reacted to COVID-19 by creating solutions to local problems and working with each other to help develop global strategies.

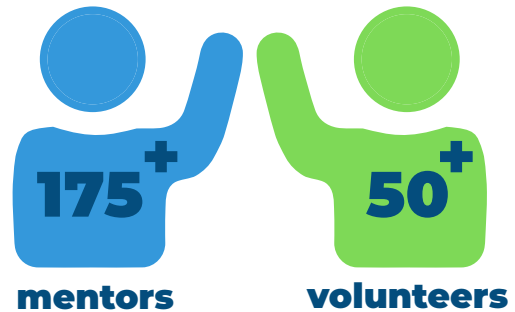
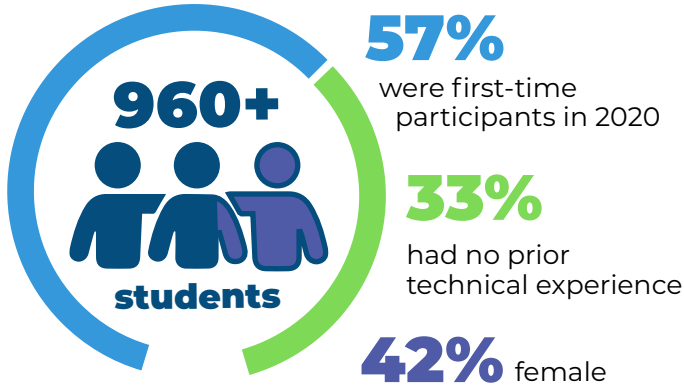
There's always a lesson to be learned in a situation like this. I think one of the strongest lessons ought to be a reminder that we need more technology, developed more quickly, and distributed more effectively in order to deal with these global problems. I think it should reinforce among the whole *FIRST* Global community the importance of collaboration and developing, earlier and earlier in the lives of students, an ability to use technology, to adapt it to work across borders, and to deploy it for the betterment of humanity.

I want to thank every member of the *FIRST* Global community for what you've been doing, even in this very trying year. One of my favorite all-time quotes comes from an anthropologist, Margaret Mead. She said, "Never underestimate the power of a small group of committed people to change the world. In fact, it is the only thing that ever has." Year after year, we prove this by pulling off the momentous task of bringing the world together, and this year is no exception. We weren't able to gather in person, but each of the teams turned this challenge into an opportunity to serve as small groups of dedicated changemakers in their communities. And combined together, that's a world of impact.

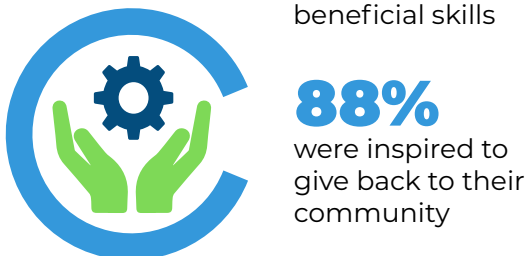
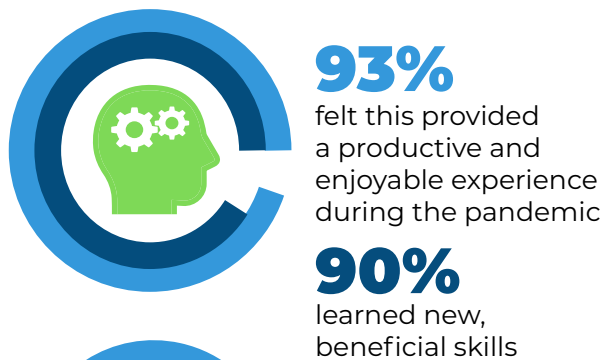
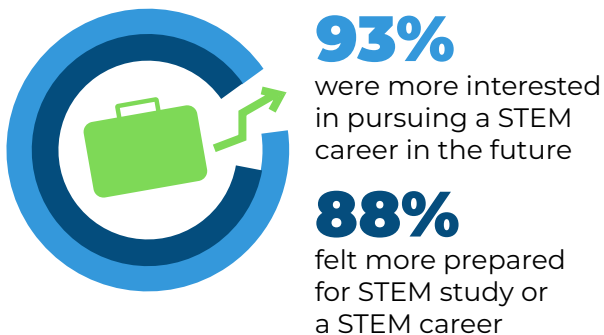
Across the world, we are developing an ever-stronger network of kids — and through them, parents, teachers, mentors, sponsors, and government leaders — who are already showing that we can create a connected global community that will change the world. Stay involved with each other and with *FIRST* Global. Help us go even further and faster to prove that, by collaborating and working together, we at *FIRST* Global will set a standard for the world.

Dean Kamen, *FIRST* Global Founder

BY THE NUMBERS



Through participating,



Students improved in...



These skills are identified by the World Bank as the “most essential skills required by employers.” According to their data, over 420 million young adults around the world under the age of 25 are not well-equipped in these skill areas.

Note that percentages are representative of a sample of *FIRST* Global participant responses.

175 TEAMS

| | | | | | | | |
|---|---------------------------------|---|------------------------------------|---|---------------------------|---|-------------------------|
|  | Afghanistan |  | Brunei Darussalam |  | Czech Republic |  | Grenada |
|  | Albania |  | Bulgaria |  | Denmark |  | Guam |
|  | Algeria |  | Burkina Faso |  | Djibouti |  | Guatemala |
|  | Andorra |  | Burundi |  | Dominica |  | Guinea |
|  | Angola |  | Cabo Verde |  | Dominican Republic |  | Guinea-Bissau |
|  | Antigua & Barbuda |  | Cambodia |  | Ecuador |  | Guyana |
|  | Argentina |  | Cameroon |  | Egypt |  | Haiti |
|  | Armenia |  | Canada |  | El Salvador |  | Honduras |
|  | Australia |  | Cayman Islands |  | Equatorial Guinea |  | Hong Kong, China |
|  | Azerbaijan |  | Central African Rep. |  | Eritrea |  | Hope (Refugees) |
|  | Bahamas |  | Chad |  | Estonia |  | Hungary |
|  | Bangladesh |  | Chile |  | Eswatini |  | Iceland |
|  | Barbados |  | China, People's Republic of |  | Ethiopia |  | India |
|  | Belarus |  | Chinese Taipei |  | Fiji |  | Indonesia |
|  | Belize |  | Colombia |  | Finland |  | Iran |
|  | Benin |  | Comoros |  | France |  | Iraq |
|  | Bermuda |  | Congo, Dem. Rep. of the |  | Gabon |  | Israel |
|  | Bhutan |  | Congo, Rep. of the |  | Gambia |  | Italy |
|  | Bolivia |  | Cote d'Ivoire |  | Georgia |  | Jamaica |
|  | Bosnia & Herzegovina |  | Croatia |  | Germany |  | Japan |
|  | Botswana |  | Cuba |  | Ghana |  | Jordan |
|  | Brazil |  | Cyprus |  | Greece |  | Kazakhstan |



Due to varying circumstances, not every team that signed on was able to participate in all season activities.



Team Gabon with their governor.



Team Guyana with the Prime Minister.



The President of Paraguay video message.

54+ government officials

supported their country's *FIRST* Global team, including the presidents of Paraguay, Suriname, and Namibia.



Team Mongolia with the Department of Education.



The President of Suriname video message.



To me, *FIRST* Global means more than just a STEM challenge, it means an opportunity. Not only an opportunity to learn more about STEM and robotics, but an opportunity to develop and prepare myself for the future. *FIRST* Global gave me the opportunity to be able to think, to be able to create, to be able to discover and expose skills I never knew I had. And also to be able to work with people to solve difficult problems, and I'll forever be grateful to *FIRST* Global for this opportunity.

—Female student from Team Nigeria 2020

MADAGASCAR: HOW ONE CHALLENGE CREATED NATIONAL STARS

For Team Madagascar, the 2020 *FIRST* Global Challenge was a chance for the students to broaden their horizons. They had to collaborate remotely, facing a lack of stable internet access and sometimes electricity outages. However, the team didn't give up, and put in all of their effort to submit each challenge on time, working all night long to meet some deadlines.

And then came the challenge titled "Contact Your Government." As part of making STEM education accessible to more students, we posed an ambitious prompt to teams: to reach out to their government with a detailed pitch for how their officials can build access to STEM education in their country. Several teams received supportive responses, and some even met with officials to discuss the topic further. But for Team Madagascar, this challenge was life-changing.

The team first approached the Ministry of Youth and Sports with their proposal to expand an existing project called "Coder Bus," which involves traveling with a bus full of computers and whiteboards all over Madagascar to provide free programming courses. The initiative has so far benefited more than 300 youths, and the goal is to expand their reach to even more students. The Ministry responded positively, and shortly thereafter, the Ministry of Culture



and Communication reached out to the team to meet with them and express their support as well. Minister Lalatiana Andriatongarivo was immediately impressed and took a stand to support them fully for the rest of the season.

"It is a national pride to have Malagasy young people excelling in innovation and STEM," she said. "The Ministry of Culture and Communication will support the team with full-board accommodation, any equipment they might need, and, most importantly, moral support and encouragement, which are critical to face this kind of international competition. Their determination, hard work, and grit are values that need to be nurtured."

Within a week, the 2020 *FIRST* Global Challenge was in the headlines of all major newspapers in the country. They made national news, gaining sponsorship

and support from several organizations and individuals. They were provided with a dedicated basecamp, supercomputers, full internet access, and a data plan. An engineer even offered the team free lessons in SOLIDWORKS' CAD software.

The team was also provided with a platform to advocate for STEM with their own dedicated television show titled "Gasy Robotika" (Malagasy Robotics). It aired during prime time on national television twice a week on a channel reaching all regions in Madagascar, even remote and rural areas. On the show, the team shared their journey taking part in the *FIRST* Global Challenge; they discussed their passion for robotics, *FIRST* Global, and their hopes for winning the competition.

"We want to win on behalf of all Malagasy children and young people so they know that they, too, can achieve their dreams, no matter how hard and difficult the path is," the team said. "We would have already won if we can inspire others to never give up on their dreams and to invest in robotics to better their communities. Because that's what the *FIRST* Global Challenge is about: connecting communities."

As their following grew, their social media posts gained thousands of engagements.



The team meeting Minister Lalatiana Andriatongarivo.



People from all over the country expressed their pride and support for the team.

As the season came to a close, the nation marked their calendars for the final celebration announcing the award winners. The Ministry organized a special live viewing with hundreds in attendance; everyone sat in anticipation, wondering if and when the team would be featured. So when Team Madagascar was announced at the end of the broadcast, the room erupted in applause. They ranked fifth out of more than 100 teams, and had also won third place for the Sofia Kovalevskaya Award for International Journey.

In just a few weeks, Team Madagascar made STEM a national topic and rose to serve as STEM role models to other youth in their country.

"The whole country has taken interest in the *FIRST* Global Challenge and principles of connecting communities. Our hope is that this momentum will inspire more young Malagasy people in getting into STEM fields. We also plan to leverage this institutional support to advance our aspiration to expand robotics and STEM to reach as many young kids in the country [as possible]. Thank you so much *FIRST* Global for making this happen in our country."



Team Zimbabwe trash cleanup.



Team Sudan's water filtration system.



Team Libya trash cleanup.

72+ community projects

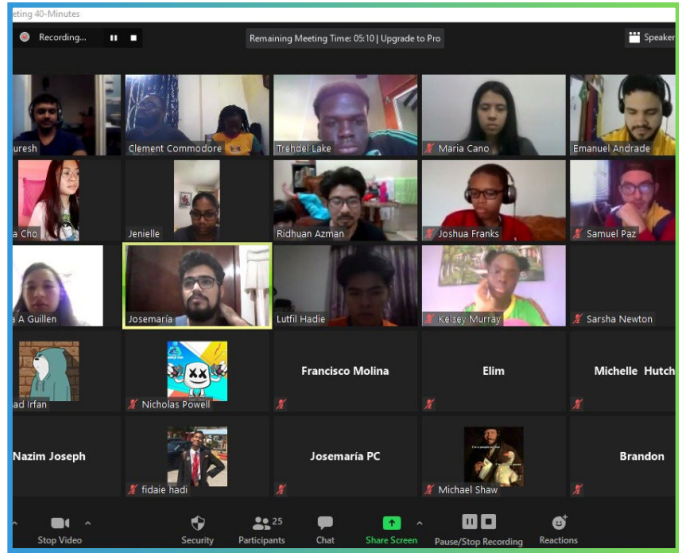
were organized and executed by teams within their locality, ranging from trash cleanups, to water purifying systems, to educational initiatives, and more.



Team Colombia collecting food.



Team Estonia children's program.



Countless connections

were formed between participants around the world. Beyond bonding with their own members, students had video calls and collaborated with other teams in ways they hadn't in previous years.



ETHIOPIA: OVERCOMING CIVIL CONFLICT TO CONNECT

Each year, many teams face obstacles to their participation in the *FIRST* Global Challenge. But civil conflict and unrest? This is the challenge that Team Ethiopia faced in 2020.

The *FIRST* Global partner in Ethiopia was excited to assemble students for the 2020 *FIRST* Global Challenge, but as the season started in July, the team was surprisingly silent. It wasn't until three weeks into the challenges that the mentor was able to get in touch with *FIRST* Global to tell us why — the government had shut down the internet around the country.

Throughout 2020, Ethiopia has faced social and political unrest that has resulted in ethnic division, riots, and thousands of deaths. In some regions, Ethiopians are fleeing to seek refuge in neighboring countries. In an effort to curb escalating turmoil and the spread of hate speech and calls for violence, the government shut down the internet.

There was no internet in households, and citizens were not permitted to gather in schools or internet cafes. The mentor of Team Ethiopia had a computer lab, but it had to be shut down after it was damaged in riots. The team's students were also dealing with the deaths of some family members as a result of the violence.

However, they were still determined to



participate. Although it was very difficult to get internet access without government approval, the mentor managed to secure a temporary connection at an embassy in Addis Ababa so he could get in contact with *FIRST* Global. However, it wasn't enough for the team to register or submit any challenges. While Team Ethiopia's students were safe, they still were unable to participate and had fallen far behind the other competing teams.

It wasn't until mid-August, about two-



thirds of the way into the season, that the mentor traveled outside of the country to get internet access and register the team. Despite the setback, within the week the students got to work submitting as many of the missed challenges as possible. Even so, there were several instances where the team closely escaped danger as they worked together.

For the team, the opportunity to participate in the *FIRST* Global Challenge was a chance to dream big and work toward those dreams. One team member aspires to be a mechatronic engineer, while another has his eyes set on working for NASA.

“*FIRST* Global is an amazing stage for all kinds of people because it promotes STEM education’s importance and shapes youths around the world,” said one student. “STEM helps students like us to expand our knowledge and creativity by helping us to be more critical thinkers and problem solvers. Innovation leads to new products that can help in solving so many problems in our society and supporting the processes that sustain our economy. We learn and develop skills like programming, visualizing an idea, and more that will make our future brighter.”

For Team Ethiopia, their participation provided an avenue to reach beyond the crisis in their country and connect to an international community of peers. They knew how crucial global cooperation is in shaping a better world, rising above differences and conflicts to work together for the betterment of our collective global society. *FIRST* Global is a model through which students develop connections and



life skills that are key to nurturing world peace.

“Through our participation in the *FIRST* Global Challenge, we get the chance to expand our scope by seeing different people from different countries and different cultures. It teaches us how to cooperate with each other and others from all around the world.”

In this time of division within their country, the students of Team Ethiopia are pulling even more from the lessons *FIRST* Global has instilled within them. In a climate of chaos, they stood firm in their appreciation of diversity and unity.

Despite the many obstacles, by the end of the competition the team had ranked 77 out of 175, proving to the world that no challenge is too great to overcome with the tools of STEM and determination.

“To be honest, one good thing around us was the *FIRST* Global Challenge in our community,” said the team’s mentor. “Students escaped from their broken feelings when they took part in the game challenges. *FIRST* Global brought hope to us once again in these chaotic situations.”



I don't know how and with which words I can say thank you guys. You don't have any idea what an amazing opportunity you made for more than 30 Iranian students (and definitely all around the globe) and also us as coaches. My people are passing through a terrible situation... COVID-19, economy situation and sanction, and 1,000 more things, but *FIRST* Global brings a light to my students' lives every year and this year more than ever. Please accept my sincere thanks on behalf of the whole team and my country.

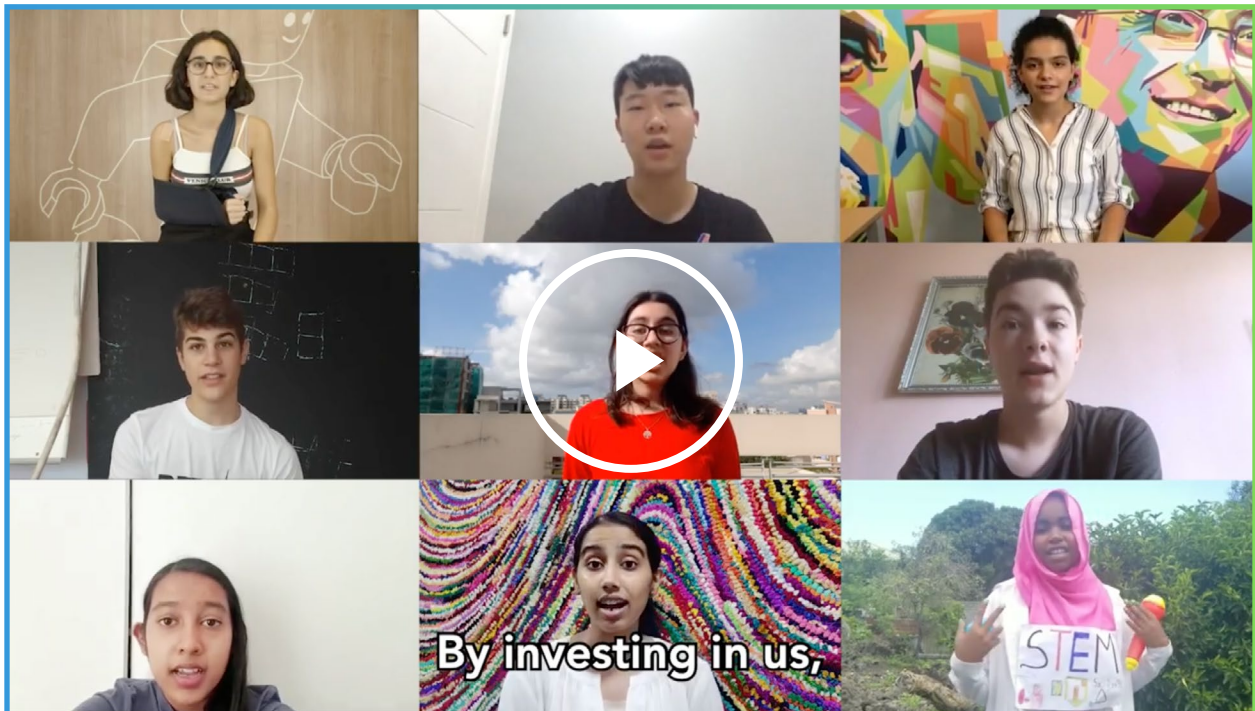
—Mentor of Team Iran 2020

2020 *FIRST* Global Challenge Celebration



For a full look at this season's activities, check out the 2020 *FIRST* Global Challenge Celebration, where we highlighted content and stories from the many teams, as well as announced the winners for the season.

We Are the Generation



When you invest in *FIRST* Global, you're investing in a lot more than a competition or STEM education. You're investing in providing youth around the world with opportunities to develop into the leaders who will build a better world for us all. We helped students combine their voices to share that message in this powerful video.

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