FIRST Impact Award - Team 6014

2025 - Team 6014

Team Number

6014

Team Nickname

ARC

Team Location

Istanbul, 34 - Türkiye

Describe the impact of the *FIRST* program on team participants within the last 3 years. Think about percentages of those graduating high school, attending college, in STEM careers, leadership skills, and serving as mentors/sponsors in *FIRST* programs.

97% of our graduates, inspired by their FRC journey, pursue STEAM fields & attend top world universities like Stanford, Yale, Brown, UCL, Johns Hopkins, Cambridge, Imperial, Cornell & work at leading tech companies such as Apple & Tesla. We also give back to the FIRST community through other FIRST events: This year 5 ARC members/graduates volunteered/judged at events like FTC Championships & FRC Off-Seasons. With our continuing FRC experience, we aim to become leaders in innovation & technology.

Describe your community along with its unique opportunities and circumstances. Think about your geographic region, diversity of town/school, language barriers, socioeconomic barriers, and cultural expectations.

Our team consists of members from 9 cities across Turkiye and members from the earthquake region. We value giving back to our small communities, especially to the more underserved areas. We created two Dragon Kits & initially distributed them to children in the earthquake region & afterwards extended our efforts to other cities. We introduced FIRST to Bayburt, one of our member’s hometown and the last city in Turkiye without a FIRST team, thus inspiring more students to get involved with STEAM.

Describe the team's methods, with emphasis on the past 3 years, for spreading the *FIRST* Mission in ways that are effective, scalable, sustainable, and creative.

We aim to spread the FIRST mission through innovative products and platforms. Our first product, Dragon Kit 1, educated kids on simple machines through applicative learning. Afterwards, we launched a second kit to teach kids the hydraulic principles. With FIRST4Her, we taught young girls in our school mechanics and programming, providing them with the necessary knowledge to join FRC. In 2024, we scaled up and launched Girls Connected, an international female community with 20+ teams joining us.

Describe your team's goals and the progress you have made towards them to fulfill *FIRST’s* Vision.

We aim to inspire young people to embrace STEAM & innovation, thus empowering future leaders. In 2024, we organized a robot design competition for primary & middle school students to spark their creativity & introduce them to robotics. With LEGO WeDo training, we fostered kids’ creativity, collaboration & engineering skills while teaching them WeDo, Scratch, and MINDSTORM. We launched an educational YouTube series, “Engineering Wonders”, to explore how familiar tools & machines were invented.

What impact has your team seen from your efforts described in the above question? How does your team measure impact?

Our robot design competition reached 300+ students from various cities; we kept in touch with teachers to track & evaluate our impact. We received positive feedback regarding the kids' growth after our LEGO WeDo training with LIONS Turkiye. We're now working to collaborate with them for another project this summer. We keep track of our impact from distinct projects by analyzing social media reach on different platforms. For example, the "Engineering Wonders" series was tracked via YouTube views.

Please provide specific examples of how your team and team members act as role models within the *FIRST* community with emphasis on the past 3 years. How do you share these best practices with other teams?

In 2024, we created ARCINATOR, the first free FRC chatbot. It's a RAG (Retrieval-Augmented Generation) Chatbot powered by OpenAI, accessible to the whole FIRST community in 150+ languages. ARCINATOR reached 12K+ FIRST community members by guiding teams, translating game manuals & more. In 2025, we launched "Dragon Scout" to facilitate scouting organizations. Allowing teams to centralize scouting, our app ensures 100% scouting coverage of all matches. It's available & free on iOS and Android.

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

We mentored Tubitech 9694, who went to the championship last season. We mentored Ladybug 9647, who won the Rookie All-Star award. With FIRST Aid, we formed a mentorship chain, encouraging 13 Veterans to mentor 13 Rookies. With Girls Connected, we reached 20+ teams from 3 continents around the world. We're mentoring FTC team ConScience, who went to the FTC Turkiye Championship. Until 2025, we assisted 70+ teams & mentored 20+ teams. We conducted 30+ outreach meetings in the last 3 years.

What other initiatives have you created, grown, sustained, or participated in (*FIRST* or otherwise) to help inspire young people to be science and technology leaders and innovators? What outcomes have you seen from your efforts in the past 3 years?

We launched our environmental action movement EcoARC, reaching 18K+ students. We grew our media reach: Collaborating with Upcycling Turkiye, we repurposed robotic waste into new products & promoted near zero waste robotics among FRC teams. In our "ARC's Music: CoEd's Sounds" project, we created & published a melody with the sounds from our workshop, inspiring more teams to combine art & STEM. Our active members have participated in 3000+ hours of community service as volunteer STEAM educators.

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

We partnered with TEMSA to build our practice field, creating a close relationship with our mentor through the last season. We're currently working together with TURMEPA and STH Foundation for our AquARC water analysis report. In Solution FIRST: Environment, WWF, Reflect Studio and Byqee hosted workshops and GSK delivered speeches, inspiring 15 participant groups to create sustainability projects. We collaborated with the LIONS Turkiye and organized a LEGO WeDo training for their students.

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

With FRC4Inclusivity we empowered kids with special needs; we designed special education toys for Hayriye Kusun Kindergarten students. We hosted workshops to support hearing-impaired people in FRC and taught 6 of our members Sign Language. With FIRST4HER, we trained girls from our school in STEAM areas & prepared them to participate in our team. We started Girls Connected, brought Turkish and international teams together to complete challenges and create a supportive community for girls in FRC.

Explain how you ensure your team and the initiatives you have created will be sustainable.

As ARC, we set high yet realistic goals. DragonKit 1, sketched in the summer of 2023 & launched in 2024, has evolved into DragonKit 2, launched in January 2025. In our international women's chain Girls Connected, we designated specific responsibilities to ambassadors, thus sustaining our impact in different regions. We created ARC's Branding Standards Document, a sustainable resource for future members. ARC alumni always mentor current members to sustain the team's knowledge across generations.

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

One area for improvement is our AquARC water analysis project where we collected samples from various regions of Turkiye to analyze water quality. We were challenged by logistical constraints and we lacked the necessary lab equipment. To overcome this, we created our own resources and used our school's diverse student body to help. Students collected water samples from the cities they visited, allowing us to gather a wider range of data and thus create a better report of Turkiye's water quality.

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, particularly noteworthy, or had a large impact.

To work more efficiently, our team is divided into 4 subgroups. However, we have a strong sense of teamwork & are motivated to work together. Despite being in different subgroups, we like to collaborate for most tasks. We even brainstorm on the FIRST Impact essay and presentation together as a team. We have produced numerous collaborative projects like ARCINATOR, Dragon Kit, Dragon Scout, and Engineering Wonders series. We've seen that our different skill sets allow us to reach better results.

Judge Feedback

> **As ARC 6014, we want to accomplish a lot throughout and before the season, but struggle to choose which projects to allocate our time to. Which ARC 6014 initiatives and activities do you think were most valuable or not as important as the others?**
>
> **An area the team has an opportunity to improve.**
>
> **Something that really impressed the judges.**

Essay

Symbiosis (biology): The interaction between two different organisms living in close physical association, typically to the advantage of both.

As ARC 6014, we're one of the living parts of our ecosystem. Parallel with FIRST's values discovery and impact, we utilize the resources surrounding us and benefit our environment in return. In all our efforts to be role models in STEAM, we prioritize the needs of fellow inhabitants we share our ecosystem with. We engage in mutually beneficial, symbiotic relationships. Whoever our focus group is, we aim to understand them deeply, rendering the most beneficial interaction possible. With this approach, we flourish as a team and cultivate our ecosystem as we grow.

BEES & FLOWERS: STEAM EDUCATION A bee drinks nectar from flowers while spreading pollen from plant to plant. Just as bees spread their pollen to the world, we share our knowledge with our environment as we carry the FIRST values wherever we go.

In 2024, we launched Dragon Kit 1: "Simple Machines" and in 2025 the Dragon Kit 2: "Hydro Kit" to provide kids with an interactive learning experience. With Dragon Kit 1, we carried engineering principles to multiple cities in Turkiye,

by offering hands-on experience with simple machines varying from pulleys, inclined planes and lever systems. With Dragon Kit 2, we merged environmental technologies with hydraulics, offering real-life applications of green technologies: mechanic arm and green truck. As a part of the Dragon Tech Labs, we conducted Dragon Kit workshops with children and gifted Dragon Kits to the Mediterranean, Anatolian regions and earthquake zones.

To improve the mechanical designing skills and creativity of primary school and middle school students in Turkiye, we organized a Robot Design Competition that reached 300+ students. We gifted the winners 3D versions of their robots, inspiring them in their engineering journeys. In 2024, with the LEGO WeDo training, we fostered kids' creativity, collaboration, and engineering skills while teaching them WeDo, Scratch, and MINDSTORM.

After introducing robotics to different regions in Turkiye with our Anatolian FIRST Movement, we brought FIRST's mission to the only city without a FIRST program in Turkiye, Bayburt. We conducted LEGO workshops with 400 students in Bayburt, and are in contact to launch the first FLL team. Over the last three years our members engaged in STEAM education projects, volunteering 3000+ hours in 10+ cities across Turkiye. We launched the educational YouTube series, "Engineering Wonders", to explore how real-life tools and machines were invented. In this symbiotic relationship, we continue spreading our pollen to disadvantaged communities to flourish them.

LEGUME PLANTS & NITROGEN-FIXING BACTERIA: ECOARC While legume plants provide shelter for the nitrogen-fixing bacteria, the bacteria convert nitrogen from the atmosphere into ammonia, allowing for the legume plant to grow. This mutualistic relationship mirrors our environmental movement EcoARC, where we act as the bacteria, giving back to our environment.

Through Upcycle with ARC, we repurposed robotic waste into usable products, shared a waste separation guide that reached 5K+ people, and promoted a minimal waste mindset with eco-friendly robot designs. We implemented upcycling in our workshop and created a dragon statue out of our waste materials. We organized the "Solution FIRST: Environment" event where young people explored the possibilities of sustainable robotics through workshops held by NGOs and brands like GSK, Byquee, and Reflect Studio. Through this initiative, we nurtured the next generation of environmental protectors.

Educating only the next generation wasn't enough for us; we believe the climate crisis concerns all generations. To achieve this, we created the "Environmental Dictionary" to raise awareness and help people of all ages connect with the environmental challenges our planet faces. We started the 'fARC Yarat!' podcast where we focused on environmental issues by hosting influential environmental activists from associations like FridaysForFuture, which allowed EcoARC to reach 18K+ people.

HUMANS & HONEYGUIDE BIRDS: OUTREACH In nature, humans and honeyguide birds share a remarkably symbiotic relationship. While honeyguide birds lead humans to bee nests, humans, in turn, help the birds access their nutrients. This partnership enables both species to achieve more together than they could alone, highlighting the power of cooperation in reaching their full potential.

Much like this responsive relationship, we strive to extend our reach to the whole FIRST community. We have assisted 70+ teams and mentored 20+ teams until 2025. In the past 3 years alone, we have conducted 30+ outreach meetings to assist teams, including 6 international ones. We also launched our sustainable mentorship chain, FIRST Aid in 2023. FIRST Aid allowed 13 Veterans to mentor 13 Rookies. We mentored Tubitech 9694, who attended the FRC Championship last season. We also mentored Ladybug 9647, Rookie All-Star Winner in Istanbul Regional'24, and FTC team ConScience, who went to the FTC Turkiye Championship.

While we have led the way for many teams in their access to resources, we know that there is much that we can learn from fellow teams that we share our ecosystem with. Scaling up our impact, we launched Girls Connected in 2024, an international female community with 20+ teams from 3 continents around the world who became honeyguides for each other by supporting and empowering one another. We allocated specific responsibilities to

ambassadors from different regions for them to continue expanding our mission, thus sustaining our impact across the whole world.

In line with FIRST's emphasis on giving back, we launched a new YouTube series, AlumnARC Talks where our alumni talked about how FRC contributed to them and their academic paths by giving technical lectures. We aimed to show FRC's lasting impact on community members in college life and beyond.

SQUIRRELS & OAK TREES: INCLUSIVITY In our ecosystem, each unique community grows when they're provided with the right resources. In nature, squirrels and oak trees share a symbiotic relationship: squirrels disperse tree seeds enabling trees to flourish in diverse environments that they wouldn't reach otherwise. Just like squirrels, we spread our support and create opportunities for different communities to grow and become role models in the fields of STEAM.

With the "Girls Have a Place" movement, we encouraged girls to become stronger actors in STEAM. We created resources like our "Turkish Women in STEM" Instagram series to highlight the female contribution to the fields of STEAM and encouraged 2200+ aspiring young girls to join these fields. With our projects as an ambassador of the UN's HeforShe movement, we reached 50K+ people. Recognizing the lack of female participation in our team, we launched FIRST4Her in 2022. We introduced FIRST and FRC to 20 newcomer girls in our school via a special curriculum designed to enhance their mechatronics and coding skills while trying to close the gender gap in STEAM fields. We shared our FIRST4Her curriculum with 10 FRC teams, ensuring that positive impact extends beyond our team.

Seeing that females weren't the only disadvantaged group in STEAM, we expanded our reach with our FRC for Inclusivity (FFI) movement, where we worked with children with disabilities. With FFI, we organized an 8-week-long sign language training program where professional educators taught Turkish Sign Language to young volunteers. With this training, we didn't just teach a new language but also raised awareness about hearing impairments. To continue our impact, we created the FRC Sign Language Library, a collection of videos showing common FRC terms in Turkish Sign Language, reaching 800+ viewers. This resource helped hearing-impaired individuals engage with robotics, elevating the communication barriers in FIRST.

ANEMONE & CLOWNFISH: TECH INNOVATION In the anemone-clownfish symbiotic relationship, the anemone protects the clownfish from predators. In return, clownfish keep anemones free of parasites and provide them with nutrients. Just like anemones provide shelter for clownfish, we offer resources to the FIRST community and benefit from other teams' technical experience.

We created the first free FRC chatbot ARCINATOR. Powered by OpenAI, ARCINATOR serves as a valuable resource for countless teams by answering questions, guiding them, and translating game manuals. We reached 12K+ chats across 20+ countries and made ARCINATOR accessible in 150 languages. Besides being a chatbot, ARCINATOR is also a creative companion, publishing different songs and artworks daily.

With DragonScout, we facilitated match scouting and successfully launched our app both on iOS and Android, accessible and free to everyone. DragonScout attempts to solve organizational problems that come up during scouting by putting all of a team's scouters into a pool where users can see their assigned rotations and who their peers are scouting, enabling teams to centralize their scouting efforts and ensuring scouting coverage of 100% of matches.

With art's addition to STEM, we searched for ways to use our technical skills more creatively. We collected various sound recordings from our workspace and combined them to create our first song. This song still echoes inside our workspace as ARC's Music: CoEd's Sounds. We shared our song with other teams and inspired them to use their skills for art, ultimately reaching 1500+ listeners.

As ARC 6014, we strive to build our ecosystem while improving our team. Through a series of symbiotic relationships, we respond to our ecosystem’s needs and ultimately strive to be role models for young aspiring engineers. While sustaining and expanding all our relationships, we inspire the next generation–building not just robots, but a future driven by innovation and impact. ;