

Chairman's essay 2019

Since 2007, The Spikes Team 2212 have taken many steps forward in the world of STEM. Our unique combination of engineering excellence and community work enables us to further the importance of exposure, outreach, equality, and the *FIRST* community.

EXPOSURE

Thanks to *FIRST*'s constant inspiration, in 2009 we decided to spread the team's vision and *FIRST*'s message on a wider scale. Our school agrees with this vision of transforming education and helps to advance it by providing the support we need. Since 2009 we exhibit our robot in our school's open days while showcasing the team to hundreds of potential students and their parents. We continue on Spikes Day (22.12) where we expose 600+ students and teachers to the team. These two events prove the potential of our school community; not only do we spread *FIRST*'s values, but our team's enrollment has jumped from 15 kids in 2007 to 45 kids in 2019.

In 2017, our determination to push STEM studies impressed our principal so much that she invited us to administrative conferences where we advocated for *FIRST* and gave presentations to hundreds of participants on how we can instill a love of STEM in today's students.

The strength of our partnership with our school enabled us to reach new heights. We opened a robotics club at our school. Our initial focus was to expose kids to the world of robotics and *FIRST*. In 2018, we used simple Lego bricks and the EV3 controller to demonstrate simple physics concepts. The students were also exposed to FRC. They were also included in Spikes exhibitions, which led them to get hooked on *FIRST*. Our success is reflected in the 20+ 9th graders who joined the team.

In 2019 we took it one step further. The two seniors managing the club decided to enrich it by teaching more complex tasks involving practical physics and electronics.

Since 2018, we have taken our robot to 3 elementary schools in Lod, where hundreds of kids had fun playing with it. In 2019 it was taken one step further by our electronics crew with their new initiative called Science on the Road. They travel to places in and around Lod where they create interactive activities that are designed to introduce kids to electronics and encourage them to engage in STEM. It is no exaggeration to say that hundreds of kids have seen our Science on the Road initiative.

Starting in 2018, we created holiday experiment kits. We visited elementary schools in Lod where by using our kits the students experience the excitement and enjoyment of STEM, something many kids in Lod would never experience otherwise. So far we have handed out 2500+ kits in Hanukka and Purim.

In 2019 we took it one step further by translating the instructions into Arabic so the Arab pupils of Lod could enjoy our science experiments during their Christmas holiday. This exposure was met with enthusiasm and we were told that they definitely want us to return for the next holiday.

OUTREACH

1. Spikes Tykes

In 2013 the Spikes Tykes project was created to help children with physical therapy treatments that are often painful and dull. In 2018, we expanded our use of Spikes Tykes by helping kids with behavioral problems as a form of self-control. "It's great to see how better the kids communicate with others since the Spikes Tykes project," says Mali Z. Principal of Maapilim Elementary School.

2. Learning Center

Our 2013 vision of our Learning Center was to help underprivileged kids with their homework. Our learning center was opened off campus with 10 kids. In 2016, it grew to 25+ kids. In 2017, we joined forces with our school to facilitate the growing number of Lod pupils. As a result, the center became more than just enrichment-it became a core facility, where even students from our school could get help. In 2018, it was expanded to include 15 Arabic speakers wanting to improve their Hebrew proficiency. As a result, kids that once couldn't cope with homework now show academic excellence. This was reflected when 4 kids from the learning center were accepted to our school in 2018. In 2019, we have 80+ children who come twice a week.

In 2019, we took it one step further. We noticed that many kids were lacking a foundation of reasoning skills. So we expanded our center to include an hour of logical thinking. In the few months that we have been doing this, we have seen a huge improvement. Through this new initiative, the fields of science and math don't seem so out of reach. The learning center has become a facility where kids don't just get help but are taught life skills.

EQUALITY

1. LIGHT

In 2018, we initiated LIGHT, our girl empowerment conference. We invited Israeli women, business leaders, university scientists, and FRC alumni to lecture about their growth as women in STEM. Our goal is to inspire girls to engage in STEM and follow their dreams.

In 2019 we took it one step further and added our poster panel. In order to raise awareness of lesser-known inspirational women in STEM, we encouraged team members to prepare a short presentation about these women. Eight team members lectured about these women and their accomplishments. The panel was a success and it exposed the guests to lesser-known women in the fields of STEM.

2. #FIRSTLikeAGirl

In 2017, we joined forces with team 1902 from Florida to bring their social media movement to Israel. Its goal is to inspire women in careers in STEM by sharing stories of *FIRST* alumni. In 2018, we filmed 15+ girls from our team and teams 7112, 2230, 2231, 5987, 2066, 3339, 4590, 2096, and 5747. We are proud to be chosen by team 1902 as their ambassadors in Israel.

3. Arab Community

In 2014 we started an FLL team in an Arab school. In 2017 we met with team 5636 from Majd Al Krum to help them with community work, chairman's submission, and fundraising. In 2018 we met with 6168 from Iksal to help with prizes and chairman's submission.

In 2019 we took it one step further by inviting dozens of Arab students from 3 local schools to take part in our learning center, FLL Jr. teams and Science Holiday. A definite bridge between our team and the Arab community has been built.

FIRST ISRAEL COMMUNITY

1. Mentor Seminar

In 2013, our Mentor Seminar started as a simple FLL seminar. In 2014 we expanded it to include FLL Jr lectures and in 2017 it was expanded even more to include FTC lectures. In 2019, these seminars were attended by more than 60 mentors and team members from FLL teams: 1256, 1199, 1050, 1191, 1937, FTC team 12989 and FRC teams: 4590, 5928, and 4586.

2. Summer Workshops

Our workshops are a perfect way for newbie Spikers to learn about FRC, engineering processes and community work. Since 2009, our summer workshops have gained in popularity in the *FIRST* Israel community with teams 4590, 4661, 6738, 5635, 2096, 5961, 3388, 4416, 7112, 2231, 5951, 5747, 5990 benefiting from The Spikes' knowledge and hands-on experience in STEM.

3. Programming lectures

In 2017, our programming crew developed the SpikesLib, an online programming library which FRC teams 5747, 7112 and 5990 use. In 2018, we lectured in the conference FIRSTEVAL to over 100 attendees. By reaching 100% accuracy in computer vision, we wanted to show other teams how they can do it. Our lecture was the largest one since teams throughout Israel came not only from FRC but also from FTC. We showed how our code works, encouraged them to use it and gave them the tools to write their own.

In 2019 we took it one step further. The success of our lecture inspired our programming crew to initiate a series of lectures. These lectures were an amazing success which were attended by over 30 members from FRC teams 5928, 5990, 5635, 2096, 3835, 5747, 7112, 5951, 4416 and 3083. The success of the lectures can be judged by the fact that the teams requested another one.

4. *FIRST* involvement

a) Spreading *FIRST*'s vision is a priority, especially in Lod. In 2014 we started an FLL team in an Arab school in Lod and in 2017 we started two FLL Jr teams. In 2018 we started 3 more FLL Jr teams in Lod.

In 2019 we took it one step further and started 8 FLL Jr teams in Lod which we continue to mentor.

b) Our impact in *FIRST* can be felt across all programs. In 2016 we started an FRC team 5961 in Rehovot. In 2017 we started an FTC team 12989 in Shoham. Throughout the years we have also mentored several *FIRST* teams. This year we are mentoring FLL teams 2059,

1930, 1059, 1199, 526, 1536. In addition, in 2019 we assisted teams 7112 and 5951 with their chairman's submission. We met with FLL teams 2209, 2210, 1418, and 1256 helping them in every aspect of FLL. We assisted FRC team 3316 by giving them parts. We also assisted teams 6738, 6845, 7067, 4586, 6230, 5614, 2231, 5987, 1577, 5554 and 4757 with programming. In addition, for over 5 years The Spikes have assembled more than 80% of the FLL kits.

c) The Spikes inspire not only its members but parents to absorb *FIRST's* values. Many *FIRST* Israel administrative positions have connections to the Spikes. Two of our parents work for *FIRST* Israel and one of our alumni was the FRC coordinator.

d) Since 2007 The Spikes have encouraged its members to volunteer in *FIRST* competitions. In 2019, this core value was evident by volunteering in 100% of all *FIRST* competitions.

5. Fundraising booklet

Due to budget cuts, teams in Israel have to find creative ways to raise money. We decided to take matters into our own hands and share the issue on a global scale. We asked U.S FRC teams about their fundraising ideas, added our own, and wrote our *Contributions for Solutions* booklet which we intend to use as a financial tool to help other teams with their fundraising.

In conclusion, "A journey of an FRC team begins with a single step". In keeping with this year's theme of Deep Space, we can say that our team's progress started out as small steps which have now become giant leaps in the fields of STEM, robotics and community service. We can proudly say that step by step, The Spikes have been making a difference.