

(Ethan Li, 15years old , high school student who enjoys robotics, AI, science, and technology. I especially good at robotics , enjoy playing the piano and doing science experiments . Senior volunteer with STEM Plus Youth, a nonprofit organization that provides STEM learning opportunities to underprivileged children. Over 8 years experiences of Robotic bulid and Drive.)



Is Robotics Really Worth It for Kids?

A Competition Student' s Honest Answer

Author: Ethan Li

Whenever parents find out that I do competitive robotics, one of the first things they ask is usually something like: “Is robotics actually worth it?” Sometimes what they really mean is, “Will this help my kid get into a good university?” Other times they want to know if all the money, weekends, practices, competitions, broken parts, and stress are actually worth it.

I understand why parents ask. Competitive robotics is not a small commitment. A robot can take months to design and build. Teams spend hours practicing after school and on weekends. Competitions can mean waking up at 5:00 in the morning, driving for hours, carrying boxes of tools into a gym, and then spending the entire day surrounded by robots, noise, and people running everywhere. And after all of that, you can still lose. So is it worth it?

For me, yes. But probably not for the reason most people think.

I used to think the best part of robotics would be standing on a field after winning a match or bringing home a trophy. Now , after spending years building robots, going to competitions,

working with teammates, fixing things that constantly break , and practicing for hours, I realize those are not actually the moments I remember the most.

The moments I remember are usually the messy ones. I still remember the feeling before an important match when something suddenly went wrong. A mechanism that had worked during practice started jamming. Everyone was looking at the robot, trying to figure out what happened. There were only a few minutes before we had to go onto the field. At that moment, nobody cared about grades or who was “the smartest” person on the team. We just had a problem to solve.

Sometimes we fixed it. Sometimes we did not. That is robotics. In school, there is usually an answer. If your teacher gives you a math question, someone already knows the solution. If you do a chemistry lab, there is usually an expected result. Robotics does not work like that. You might design a mechanism that looks amazing in CAD, build the whole thing, and realize it does not work in real life. Maybe there is too much friction. Maybe the motor is not strong enough. Maybe

the pieces keep bending. Maybe it works perfectly when the robot is sitting on a table but completely fails once you start driving.

Then you have two choices. You can complain about how much time you wasted. Or you can take it apart and try again. I think that was one of the first big lessons robotics taught me: being wrong is normal. Before robotics, I probably thought being good at something meant getting things right quickly. Now I think being good at something often means being willing to get something wrong twenty times and still come back for the twenty-first try.

Robotics also completely changed how I think about teamwork. When people see a robot at a competition, they usually just see the final machine. They do not see all the arguments behind it. And yes, robotics teams argue a lot. One person wants the robot to be faster. Someone else wants more torque.

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