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### Ten80 FAQ

1. Who is Ten80? Ten80 Education is a team of engineers, scientists, teachers, professors and parents all dedicated to a single mission. We have joined forces to help students and teachers understand STEM subjects, STEM careers and how they affect the world around us. Over a decade ago, our founding educator invited local science, engineering and technical professionals into her middle school classroom. She wanted to offer students a broader perspective of math and science at work in the world. Beverly Simmons didn't realize that this initial group of volunteers would later become the first Ten80 teams that develop engaging, real and challenging supplemental curriculum and programs for students anywhere between kindergarten and Calculus.
2. What does Ten80 mean? Ten80 is 1,080 which is equal to  $3 \times 360$ . If you've ever ridden in a gyroscope (like the ones in science centers), you know that by rotating on 3 circular axes (a circle is 360 degrees), you can see in every direction. That is how we at Ten80 approach education – from every perspective including the student, educator and employer's perspectives.

3. Who partners with Ten80 to support the Student Racing Challenge? Schools, businesses, organizations and governmental organizations from all over the U.S. (and a few other countries) partner with Ten80 to meet the goal of helping today's, tomorrow's (and yesterday's) youth understand, enjoy and achieve in STEM subjects. National business partners include NASCAR, SolidWorks, Texas Instruments, Bank of America and Horizon Fuel Cell. Educational and trade societies include Society of Manufacturing Engineers (SME) Education Foundation, State 4-H agencies and 100 Black Men. University and college supporters include California State University, Indiana State University, Georgia Tech, UNCC, Daytona State College, Central Piedmont Community College (CPCC).
4. How does the education community support Ten80 Student Racing Challenge? The Ten80 Student Racing Challenge provides an education and career path for young people who might not otherwise have discovered an interest in and pursued education and careers in science and technology. Ten80 and other partners work closely with schools at every level to transform both the perception and reality of education in science and technology. School districts, schools, universities and colleges support Student Racing Challenge and its students by providing scholarship opportunities, sponsoring teams, and providing mentorship, equipment, and facilities.
5. How can I or my organization get involved? There are a lot of ways including becoming a mentor, starting a team, hosting events, sponsoring with cash or in-kind donations.

If you are a business or organization seeking to get involved with youth STEM education, Ten80 can be a strong, innovative partner and build a custom approach that leverages your unique resources.

- Download a full list of ways to volunteers and/or sponsor at a link on the bottom right corner at this page [www.StudentRacingChallenge.com/GetInvolved.html](http://www.StudentRacingChallenge.com/GetInvolved.html) . (The Student Racing Challenge website is still under construction by NASCAR)
- Call Ten80 at (NY) 518-588-7895 or (NC) 704-756-9348 or toll free at 1-855-Ten80Ed
- Email Ten80 at [info@ten80education.com](mailto:info@ten80education.com)

### **Ten80 Student Racing Challenge – NASCAR STEM Initiative Questions**

1. How is the FastTrack RC related to the Ten80 Student Racing Challenge – NASCAR STEM Initiative? Ten80 Student Racing Challenge is the new name of the program formerly called FastTrack RC. The renaming is part of the bigger launch as a NASCAR partner. If you see materials or references to the "FTRC", it is the same program.
2. What is the Student Racing Challenge? It is a supplemental STEM curriculum and annual competition league that help young people practice being future professionals, with a strong emphasis on careers based on science, technology, engineering and mathematics (STEM).

Ten80 Student Racing Challenge teams are mini-race teams that compete using a 1:10 scale electric RC car. Student teams earn points between October and May and points leaders compete in the National Finals held at a NASCAR track each May. Teams earn points and compete at Nationals in these categories:

- i. Sanctioned races (won through effective race engineering and consistent driving)
  - ii. Aerodynamic design
  - iii. Creative engineering
  - iv. Alternative energies and sustainable design (solar, fuel cell, wind, etc.)
  - v. Public Relations and Business Planning
  - vi. Graphic Design
  - vii. Team presentations
3. Why motorsports? In addition to the diversity of jobs within the industry and fan base, it is the only sport won or lost in real time with the application of science, technology, engineering and mathematics (STEM). Drivers only have a chance to win because engineers and technicians do their job well. Every change a team makes to the car creates a ripple effect of other changes – that means there is always a trade-off to optimize. Optimizing trade-offs is at the core of so many professions. For example, by changing gears to accelerate faster you are also reducing the top speed the car can go. You have to choose between high acceleration and high speed – you can't have both.

The sport provides “heroes” for STEM much as NASA inspired a generation who saw astronauts as heroes for science. While motorsports has a significant TV audience it is also one of the most popular participatory amateur sports in the US with a very wide range of series and levels of sophistication. Estimates indicate that there are some 250,000 drivers who race almost every weekend in these series. 2000 of these drivers take part in a series called Legends; a Coalition partner and source of STEM mentors. They race on local small tracks that attract thousands of fans in small towns across America.

4. How does the competition work from a team's perspective? Ten80's team has worked with schools and clubs over the last decade to create tools that support a variety of goals. Here is one typical team organization, but your strategy of earning points and competing in events can vary depending on your goals and resources.

A typical team is formed as an after school club that meets weekly for 90 minutes. They create sub-teams to earn points in the categories they're interested in (see the categories above). Some teams meet all year; others meet only between February and May. Some schools also integrate the curriculum into engineering design, science and math classes during the formal school day.

Points Race: Every time an investigation or project is completed, the team gains new followers on their networking sites or a monthly challenge has been met, the team submits evidence of their work through the team web site (moodle course hosted by Ten80).

(Face-to-Face and Web) Sanctioned Races: To earn points, teams organize and join sanctioned races. Races can be hosted locally with teams meeting at a central venue or they can be organized over the internet so teams compete in 'time trials' without leaving their school or club. The organizer picks the track, surface and 3 – 4 events. There are 10 tracks to choose from and 9 different events to choose from that reward for endurance, efficiency, and/or speed. Teams layout a track that fits into half a gym (75 x 50 feet) and compete. Events last between 90 minutes and 3 hours depending on how you design them. The 'league handbook' gives sample forms, schedules, score sheets and everything else you need to participate.

**Regional Finals:** As the league grows, new regions are being formally initiated. Beginning in 2012, in those regions there will be a regional final held at the local NASCAR track. Its format matches the national finals. Contact Ten80 to find out which regions are being formed now and in the coming years.

**National Finals:** The annual event is hosted at a NASCAR track. The challenge track and event scores are released 4 weeks in advance of the competition – not enough time to fully prepare if you haven't already got a data book with information on how your car performs in different race scenarios. On Saturday, teams compete in 7 out of 8 categories. By Saturday afternoon, new Student Racing Challenge Champions are announced – Points Race and Overall champions are recognized. Half of the field is reserved for leaders in the points race. The other half are open to teams that travel to the finals and compete in qualifying rounds on Friday.

5. Do you have to compete to take advantage of the program? No. There are a lot of schools and clubs and camps that use the curriculum but do not compete.
6. Who participates in the competition? Teams are formed by any group of students in grades 7 – 12. Each team requires an adult coach. Teams can be formed in after school clubs or as part of formal STEM courses.
7. Who manages teams and events? Teams are formed by any local adult working with committed youth of middle and high school ages. Team 'coaches' are often teachers, STEM mentors, university students and even parents. Sanctioned races during the points race are organized by teams themselves. The regional and national finals are organized by Ten80 and the Student Racing Challenge sanctioning body.
8. What learning objectives and skills does the curriculum address? The Student Racing Challenge curriculum is aligned to the NSTA/NSES and NCTM standards and many state standards. They are also aligned to the new National Core Standards with correlation tables available in Summer 2011.

Download a list of the standards and workforce development skills at the bottom right of the page, <http://www.StudentRacingChallenge.com/STEM.html> . (The Ten80 Student Racing Challenge website is still under construction by NASCAR)

9. Do you have to have an engineer or other technical mentor? No. The curriculum and resources provided are enough for students to take the lead and learn. Having said that, a STEM mentor provides guidance and insight that is not easily replaced by novices. Contact Ten80 to help you find, train and gain commitment from a local mentor. Ten80 is partnered with professional networks that are committed to helping you out.
10. What do students win? Teams compete for a series of awards honoring accomplishments in areas including Sanctioned Races (race engineer to win), Endurance Race (efficiency and control), Aerodynamic Design, Sustainable Development & Alternative Energies, Creative Engineering (meet the standards for patent consideration) , Teamwork, Business Planning & Public Relations (partnerships between schools, businesses, and communities), Team Presentations , and Graphic Design. A judging committee of distinguished professionals makes award decisions. Awards for each category are given with the two most prestigious awards being Points Race Champions and

Overall Champions. Sponsors provide a grant fund and various prizes that are divided among winners. The total amount of funding varies year to year.

11. Are there other benefits to participating? As team members and contributors, students build confidence in their academic abilities and in them. They gain valuable experience working as a team and building relationships with other students, mentors, team supporters and representatives of higher education.

In a study performed by third party and reported by the Department of Education in October 2009, it was found that:

- Participants “consistently perform at a level demonstrating substantive progress in outcomes and have shown a measurable increase in after school programs.”
- “On average, as derived from comparing pre- and post-test scores, participants improved their average by 11 points (1letter grade). Students who worked with Ten80 also experienced on average an 18 point increase in their CRCT Test score.”
- 76% of participating students showed improvement and math scores improved by an average of 12.8 points.
- In a district of high unemployment, drop-out and free and reduced lunch, 8<sup>th</sup> grade participants studied show a significant decrease in self-reported past 30 day use of alcohol, tobacco and marijuana and an increase in onset age of illicit substances.

Sponsors benefit by finding future employees and interns. Mentors and volunteers benefit from renewed inspiration and ability to give back to youth with a new set of skills in communicating between generations.

12. Why haven't I heard of it before? Ten80's engineers and educators have developed the Student Racing Challenge curriculum in classrooms and training rooms since 1996 when Beverly Simmons was working on an NSF grant with EduTech (CESIMC at Georgia Tech) and found that the RC car and motorsports theme were effective in addressing a multitude of science and math topics for a broad range of learning types and levels. Though the lessons and projects and resources have been implemented in schools for over a decade, it is only in the last three years that the Student Racing Challenge has been organized as a formal competition league. Yes, it has taken that long for people to realize that motorsports is a high-tech, high intensity sport with great potential as an educational tool. The 2010-11 school year is the 4<sup>th</sup> season after 3 pilot seasons. Five formal regions are being established this year in Florida, Indianapolis, Kentucky, California and Georgia with others being incubated for the 2011-12 year.
13. How do I get started? Contact Ten80 to talk to someone directly or download information from the Student Racing Challenge web site. All you need is a base kit which includes two cars, two team entries and the full curriculum. Download order forms and price list at [www.StudentRacingChallenge.com/GetInvolved.html](http://www.StudentRacingChallenge.com/GetInvolved.html) (bottom right corner). Contact us to talk about how many students will participate and what you need to support them. The kits are NOT CONSUMABLE this the only year you have to make the full investment. In future years, a membership fee is all that's required to get access to curriculum updates and entry to the league.

Once you have the materials, set up web training with one of Ten80's engineer-educators and you're literally off to the races.

In some regions, sponsors have set up grant funds. Contact us to see if there is one for your area.

If you need fundraising help, our team will provide you with the basic materials to present the program and opportunity to members of your community.

[info@ten80education.com](mailto:info@ten80education.com)

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