



Ten80 Student Racing Challenge

STEM Skills & Learning Objectives

Foster Enthusiasm

David Prigge,

*CTE Director; Richland 1 School District;
Columbia, SC*

"Richland County School District One is South Carolina's sixth-largest school district more than 24,000 students, 82% of whom are minority and 65% of whom are on reduced or free lunch. I have found that the Ten80 curriculum has sparked a renewed student interest in math and science in our district. Students flock to the race teams because they have fun while learning."

Science

Mary Elizabeth Farmer

Science Teacher; Lexington, SC

"The Ten80 Student Racing Challenge has been one of the most rewarding and effective instruction tools that I have used in my ten years of teaching. I have a strong inclination toward curriculum that supports the use of science process skills as part of students' learning experiences and FastTrack RC has surpassed all expectations in this area. My students have demonstrated the valuable skills of problem-solving, developing investigative questions, effective data collection and analysis, and creating usable products."

Diversity

Jose Guerrero

*Math, Engineering, Technology &
Science Academy; Carrollton, TX*

"Ten80 engaged a broad range of students—from those who wanted to build to those who wanted to develop a website and perform marketing tasks."

The Ten80 Student Racing Challenge meets all of these outcomes that NASA defines for its workforce development partners:

- Ethics & Lifelong learning criticality
- Hands-on, Team Building and Apprentice Skills
- Problem-Based Learning and Application
- Skills Alignment to Workforce Need

The Program is aligned to National Science Education Standards:

- Standard A. Science as Inquiry
- Standard B. Physical Science, Forces & Motion
- Standard B. Physical Science, Conservation of Energy
- Standard E. Science & Technology

Ten80 Student Racing Challenge is aligned to National Council of Teachers of Mathematics (NCTM) Standards:

- M. Measurement
- P. Problem Solving
- A. Algebra
- G. Geometry
- D. Data Analysis & Probability
- N. Numbers & Operations
- C. Communication
- CN. Math Connections
- R. Representations

Ten80 Student Racing Challenge is aligned to International Tech Education Association (ITEA) Standards for Technological Literacy (STL):

- Nature of Technology
- Technology & Society
- Design
- Abilities for a Technological World
- The Designed World



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Workforce Development

STEM is not new, but the ways we teach it today have to be new.

- Terri Stripling, Ten80 President & ChE

The Fact

In the United States, innovations generated by the Science, Technology, Engineering, and Math (STEM) fields account for more than half of the growth in gross domestic product.

- 'Rising Above the Gathering Storm', 2006, the Committee on Science, Engineering and Public Policy

The Need

There is broad consensus that the long-term key to continued U.S. competitiveness in an increasingly global economic environment is the adequacy of supply and the quality of the workforce in the STEM fields.

- National Science Foundation 2004

Our Challenge

Competitiveness in STEM fields requires a focus on the skills and the supply of those involved in STEM fields from the most complex research and development and leadership positions to production, repair, marketing, sales and other jobs that require competencies built upon math, science, engineering, and technology knowledge. This will require changes in: K-12 students' foundational preparation in math and science.

- Department of Labor report, 2007, The STEM Workforce Challenge

Ten80 Student Racing Challenge participants forge connections between the multitude of facts, lessons and procedures they're taught, cultivating a holistic approach to innovation, problem solving and teamwork.

Just as the motorsports industry represents almost every career, the Student Racing Challenge is a 'little league' for almost any profession.



STEM mentors give youth and educators confidence to try new things.

Ten80 team members:

- See science concepts & math skills as indispensable tools
- Bridge gaps between idea and implementation
- Overcome obstacles
- Learn to respect each other's ideas, interests and potential
- Manage time & resources to meet measurable goals
- Race Engineer *ex. optimize gear ratio*
- Improve design efficiency *ex. max strength:weight,*
- Document, organize & communicate
- Optimize charging with fuel cells, wind, solar
- Market their team & ideas
- Make assumptions to make solving problems possible
- Get the most out of their time and resources

