

**Student**

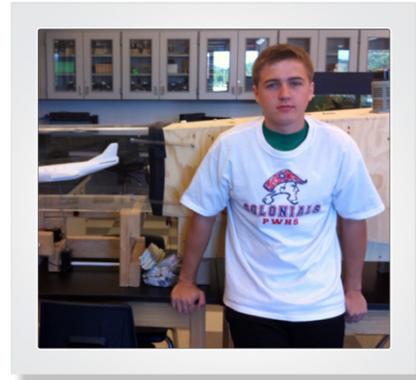
Richard Stanton  
Lafayette Hill, PA

**Summary**

Intrigued by the idea that golf balls with dimples fly twice as far as smooth balls, a high school student builds a wind tunnel to explore the world of aerodynamics.

**Budding Engineer Takes Flight**

As a senior in Lafayette Hill, Pennsylvania, Richard Stanton was searching for an interesting engineering project when he came across a fascinating phenomenon: the dimples on a golf ball allow it to travel about two times as far as a smooth ball. This strange fact, a combination of sports science and physics, inspired Richard to learn more about aerodynamics. Aerodynamics can be hard to visualize, however, and at his teacher's suggestion, Richard decided to build a wind tunnel to help him explore how air flows around an object in flight.



For more than 100 years, scientists and engineers have been using wind tunnels to simulate flight conditions. Even the Wright brothers used a wind tunnel when developing the world's first successful aircraft, the Wright Flyer, so when he decided to build his own, Richard was in good company! Using Science Buddies' "How to Build a Wind Tunnel" guide as a blueprint for constructing a do-it-yourself wind tunnel—one appropriate in size and scale for school use—Richard created a detailed plan for his project, including a timeline, budget, and materials list. With his plan in place, he began building the various parts of the wind tunnel at school, often with the guidance of a math, engineering, physics, or woodworking teacher. According to Richard, the flexibility of the Science Buddies guide allowed him to understand the steps of the wind tunnel construction process but also gave him the opportunity to carry out some stages of the project in his own way. Richard carefully tracked his project in an online journal, noting decisions he made, progress he achieved, and even minor setbacks and challenges he encountered. For engineers, this kind of detailed log is an important part of the design process!

Richard is now studying mechanical engineering in college, with a concentration in aerodynamics—a decision he credits to his experience with his senior-year wind tunnel project. Richard's wind tunnel stayed behind at his high school where other students will be able to use it to explore aerodynamics. Says Richard, "I'd like to believe that with the help of my project, my high school will recognize how valuable the engineering department can be, and hopefully the engineering program can receive more funding."

Richard didn't test the aerodynamics of a golf ball in his wind tunnel, but he says his wind tunnel did reveal something equally interesting. "I discovered that the wings of a \$1 Styrofoam airplane do in fact generate moderate lift!"