



## *Internet Science and Technology Fair (ISTF) Student Team Winners Announced*

*Wednesday, June 23, 2017*

Since October 2016, pioneering teachers enrolled one hundred and thirty student teams (representing 453 students) in this year's ISTF competition. As of the end of February 2017, 83% of the student teams completed their final project websites that present their research findings. Following the preliminary round of judging, 49 teams advanced to the final round of judging with ten student teams emerging to capture top awards in the 20th annual [Internet Science and Technology Fair \(ISTF\)](#). These student teams will be receiving "Meritorious Achievement" certificate awards from the Director of the ISTF program.

The ISTF program challenges students to research how [National Critical Technology \(NCT\)](#) applications may be used to solve real-world problems. They use information technology tools while adhering to guidelines based on national science content standards. Students develop critical thinking, research and reading/writing skills as they work on-line with practicing professionals and publish their final research findings in a website format for preliminary and national rounds of judging.

The ten student teams that won our ISTF program's highest honor are outlined below.

- A team from Don Bosco Preparatory High School in Ramsey, NJ, explored if "combining spider silk and goat milk and using a graphene base with nanoceramics/nanotubes" might be used "to create a stronger composite."
- Three teams from the Tesla STEM High School in Washington, were selected as:
  - One team researched the design of "a foot and ankle prosthetic that mimics the features of a real foot".
  - A second team explored "changing a prosthetic that will enable the functionality of the pivot joint in the lower arm", and
  - A third student team investigated design of "thermal energy powered hearing aids, powered by body heat, will effectively address battery challenges".
- A team comprised of three students (one from Burr & Burton Academy, Manchester, Vermont; one from the Carribean School, Ponce, Puerto Rico and the a third student from Puerto Rico Home School, Ponce, Puerto Rico) researched "robotic coffee harvesting" as a solution to a possible labor shortage.
- A middle school team from George Washington Carver Middle in Miami, Florida, investigated how solar energy might be used to power their school's weather station.

- And finally, four student teams from Winter Park High School in Winter Park, Florida, were selected as:
  - One team explored the possible development of an app for a Preemie monitoring system,
  - A second team investigated how a compact air purifier might be designed to “prevent the development and spread of respiratory diseases among the animals” in a kennel.
  - A third team researched a possible “convenient solution to regulate folic acid levels in pregnant women” and
  - A fourth team explored a possible synthetic solution that might regulate the “buildup of plaque in the brain” related to persons born with Down Syndrome.

In addition, nine additional teams earned Honorable Mention Certificates. All finalists, award recipients, and links to winning projects from this year and past years are viewable on the [Winners](#) page.

Since its inception, the ISTF challenges students to work as a team and learn how to communicate on a long-duration project. As seen below, the students learned some very valuable lifelong lessons.

*We quickly realized that if we were going to efficiently create a product, we would have to put aside our differences and listen to each other. We continued to use this idea of an open mind in our countless team meetings, communications with teachers, and the discussions with our advisor. - We discovered that this project could not succeed without communication because it was very collaborative and required cooperation and input from all team members. - We set up multiple meetings every few weeks to track the progress being made, as well as use the time to brainstorm as a collective and put our ideas and perspectives together in one place. - We used Google Docs to collaborate, brainstorm, and research information needed for the project/investigation. Overall, we learned the value of communication and how communication is necessary to solve world problems.*

At the same time, students learned about what it means to engage in research that leads to innovating possible new products and processes. The following is some feedback based on what the students experienced via their project assessments.

*We learned that solving a real world problem requires a balance between practicality and purpose. - We also learned that it is important to not censor your ideas; your first idea is usually not the end product, and true innovation is in the ideas that take a dynamic puzzle of thoughts to create. - Through this project we realized that science isn't an individual activity. It takes everyone's ideas and melds them together in order to find new discoveries and new solutions to everyday problems. - Because we were able to participate in a project that stimulated problem-based learning, we were able to expand our problem-solving skills and our ability to look at current innovations on the market and think to ourselves, “what can we do better?” - Each component posed new difficulties for the team members. Form creating an economic forecast to developing an entirely new degree, each team member was able to expand their boundaries within this project.*

In the end, it was the lessons learned that will make a difference in these students’ lives.

*We have learned essential time management skills that we will use throughout our lives. - How to apply classroom knowledge in a problem-based scenario with an engineering approach of creating a product. - Communication is one of the most important qualities for a group to have when working together and will be an important skill for later in life. - A plan was needed for this project to make sure that every component and every task was completed. - Through this project our group mastered the skill of working together, employing the qualities of patience, perseverance, and participation.*

The ISTF experience is made possible by the pioneering teachers and educators who support the students who participated in program. Their dedication and continued commitment (with some who have participated for

multiple years involving hundreds of students) recognize the ISTF program as a learning experience that combines both theory and practice in a way that complements classroom and after school activities. The following review is from some teachers that best sums up their (and their students) ISTF experience.

*I have had nothing but a great experience with this program, in past years and now. The main constraints to success are the motivation and work ethic of the students. - This is a great competition and the students get a lot out of it! - This program has become irreplaceable in connecting the learners to their world. - The students have a great appreciation of research and different ways to use the internet as a resource. - It has been a great experience for my students. They had never worked on a project that required them to go through so many steps and not only research but contact people in this fields. I feel it was highly empowering for them. - It is great in helping students understand the real world process of creating and application to problem solve. - Definitely helps a lot with general inquiry and helps a lot with getting used to internet based research and quality presentation using information technology tools. - It is very motivating mostly because of increased student interest to do well on standardized exams required by colleges. Some parts of this project also show direct relevance of physics studies in engineering.*

Our ISTF program continues to be MOST grateful to the many scientists, engineers and other technical professionals who shared their expertise and support. Their contributions in the form of technical guidance such as responding to student questions, assisting students in locating appropriate technical information and reviewing their final project websites were critical to the students' success. We are also very grateful to academic faculty, their students and practicing professionals who continue to support the ISTF preliminary and final rounds of judging. We are proud to report that some have participated for multiple years and provided invaluable insights to help improve the ISTF program.

The 21st annual ISTF competition officially starts in October 2017. Interested teachers, technical professionals and parents are encouraged to support students' interested in participating. Those who are new to the ISTF process should visit the [Newcomers Section](#) as it provides a good starting point to become familiar with our program.

The ISTF program wishes to thank our institutional partner, the University of Central Florida's College of Engineering and Computer Science for their continued support. The ISTF would not be possible were it not for the UCF-CECS' technical assistance. In the final evaluation, we do this for the students who participated, encourage them to consider technical career opportunities and wish them every success with their continuing education.

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