Project helps school club ascend to historic heights

By Tony De Bari
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KENDALL PARK — The Tech Team at St. Augustine of Canterbury School recently made history with its first successful flight of a radio-controlled quadcopter built entirely by the students.

The flight was the culmination of a year-long project in which the team members learned about and put into practice the different skills and technologies needed to design, build, and fly a modern multi-rotor model aircraft.

The Tech Team is an extracurricular club composed of sixth-, seventh- and eighth-grade students with an interest in technology and engineering, and moderated by the school's technology teacher, Debra Knox, and technology coordinator, Tony De Bari. The club meets after school usually once a month from October to June.

Early in the school year, the project began with the printing of the quadcopter's frame on the school's own 3D printer. A quadcopter gets its name from its four helicopter-like propellers mounted on arms extending outward from a central body. To save on design time, De Bari adapted an existing 3D printable design called the "Crossfire 2," published under a Creative Commons license on the website Thingiverse (www.thingiverse.com) by Mike Bristol.

While waiting for the parts to be made, students worked on projects involving coding, 3D modeling and 3D printing in order to gain an understanding of the steps required to take an idea and turn it into a physical object. When all of the structural pieces were finished printing, the students were separated into four teams for the actual quadcopter build.

Each team worked together to assemble one of the aircraft's four rotor arms and attach it to plates that would form the main body. After all four arms were completed and attached, the four teams came back together and finished installing the elec-

Left, the St. Augustine of Canterbury School Tech Team poses with Debra Knox (back row, far right), technology teacher, and Tony De Bari (front row), technology coordinator, and the quadcopter. Below, De Bari works the controls of the quadcopter during its maiden flight.
— *photos courtesy of St. Augustine of Canterbury School*

tronic components, wiring and remaining structural parts. The final day of the build was a "test and tune" day, during which the students performed a final check of their assembly work and verified that the motors and electronics were functioning correctly. With the build complete, all that remained was to go outside and see if the quadcopter would actually fly.

On May 14, the Feast of the Ascension of Our Lord, the Tech Team members, moderators and a few spectators gathered in the open field behind the school for the quadcopter's first outdoor flight. De Bari gave the students a quick lesson on how to control the aircraft with the remote control transmitter, then he armed motors, throttled up the propellers and the quadcopter lifted up off the ground to the joy and amazement of students and spectators alike.

After a brief demonstration flight, De Bari turned the remote control over to the students, who took turns launching and flying the copter while everyone cheered them on. At the end of the afternoon, the students decided unanimously to christen their quadcopter the Ascension, in honor of Ascension Thursday.

Reflecting on the the experience, the students expressed amazement and pride in their accomplishment.

"I never thought it would go so high. It was awesome!" said Coby, an eighth-grader. His classmate, Joe, had never

flown a quadcopter before. "It was really fun," he said. "It was cool that we were able to use the 3D printer to make the parts and build it on our own."

Gabby, one of three girls in the club and the first student to fly the quadcopter, said, "Wow!"

"This was truly a monumental moment in the history of achievements for St. Augustine and the Tech Team members," said Knox, who has been involved with

the team for more than 10 years. "I am extremely proud of all our students for using their incredible God-given gifts, talents and enthusiasm to create a legacy for our team. These middle school students are the face of our STEM (science, technology, engineering, math) initiative for St. Augustine this year, and we look forward to moving full steam ahead with new and innovative projects next year."

A student helps assemble the quadcopter, which gets its name from its four helicopter-like propellers mounted on arms extending outward from a central body. The project began with the printing of the quadcopter's frame on the school's own 3D printer.