

*Dallas-area high school students work on a Wings of Hope aircraft in Experience Aviation's hands-on STEM aviation program.*



Photos courtesy of Wings of Hope

# Soar into STEM

STORY BY DALE SMITH

**WINGS OF HOPE**  
creates hands-on program for high school students

**F**or more than 50 years, Wings of Hope, a Missouri-based AEA member, has been dedicated to changing and saving lives regardless of location, race or religion – and the organization has been doing it largely on the wings of its fleet of general aviation aircraft.

“Small aircraft allow us to reach people with aid who can’t be reached any other way,” stated Bret Heinrich, the organization’s president and CEO. “Currently, we have aircraft in service in the U.S. and 11 other countries. In 2017, we flew 1,315 missions in the U.S. and at our various international field sites.

“Outside the U.S., our model is to support existing humanitarian organizations in-country with the aircraft and volunteer pilots and mechanics. Our humanitarian efforts are changing and saving lives in many third-world countries. These efforts have resulted in Wings of Hope being nominated for two Nobel Peace Prizes.”

The aviation-based, global humanitarian charitable organization, Wings of Hope, hopes its *Soar into STEM* program will motivate students to pursue aviation careers and help fulfill its ongoing need for volunteer pilots and maintainers.

Heinrich explained that while Wings of Hope is best known for its work in Africa, South and Central America, and Canada, its special-equipped aircraft provide much needed aid to patients and their families living in rural areas around its headquarters in St. Louis, Missouri.

“One of our recent patients is a 1-year-old child with burns on 60 percent of her body,” Heinrich said. “We are providing free flights for the child and her mother from rural Missouri to Cincinnati Shriners’ Hospital for Children so she can receive the specialized care from the hospital’s top-notch burn unit. And we will provide as many trips as the family needs as long as they need them – all at no cost to the family. Everything is donated.

“St. Louis is a hub of healthcare in the central U.S. We currently fly about a 600-mile radius from our headquarters at Spirit of St. Louis Airport into 26 other states to transport patients for the care they need, wherever they need it. Knowing that the patients are able to access treatment as often as they need, free of charge, is one less thing the family has to worry about during these stressful times.”

**Soar into STEM: A long-term solution to the looming pilot/mechanic shortage**

While the generosity of Wings of Hope’s volunteer pilots and mechanics helps relieve the worry from the patient’s family, that doesn’t mean that Heinrich and the organization’s board of directors don’t have some worries of their own. One of the biggest worries is the looming shortage of qualified pilots and mechanics.

“Boeing’s 2018 Pilot and Technical Outlook forecasts a demand for 790,000 pilots – double the current workforce – over the next two decades,” Heinrich stated. “And that’s not including the tremendous numbers of skilled mechanics the industry will need.”

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*A Cessna 182 used in the Dallas-area high school STEM program is now flying medical missions for Adventist World Aviation in Guyana.*



*Wings of Hope pilots and President Bret Heinrich (far right) are pictured with medical air transport patient, Payton.*

## SOAR INTO STEM

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As you can well imagine, for an aviation-centric organization like Wings of Hope, the pilot shortage, as well as the much larger, and impactful, shortage of all types of STEM (Science, Technology, Engineering and Mathematics) trained employees, sounds an alarm that can't be ignored.

"Volunteer pilots fly our airplanes," he said. "Volunteer mechanics maintain them. The anticipated shortage of either will hit at the heart of our mission. We are stepping up to do our part to address the need."

Heinrich explained that filling that widening STEM skill gap is the impetus behind the organization launching its *Soar into STEM* program in 2019.

"*Soar into STEM* is a hands-on science, technology, engineering and mathematics learning experience for students attending a high school near our St. Louis headquarters," Heinrich said. "Our goal is to ignite in young people a passion for STEM classes along with an interest in aviation as a career."

"It has always troubled me that young women are

seemingly discouraged from pursuing careers in STEM-related industries. Our program committee has put together a curriculum to help create a good STEM foundation for these young women and minorities. We are also designing a program for middle school students to hopefully spark an interest in aviation and STEM careers."

Heinrich explained that in developing the STEM curriculum, Wings of Hope has relied heavily on the experience of some of the best and brightest STEM education experts, which is being led by Dr. Deborah Holmes, Ph.D., STEMpact project manager/facilitator at the Institute for School Partnerships.

"Our team includes representatives from three local school districts, the Girl Scouts of Eastern Missouri, Women in Aviation and the Ninety-Nines," he said. "We also have executives from Maritz Holdings on our team. Maritz is a champion of STEM education efforts and has provided significant financial support."

"Boeing has also stepped up in a big way with not only guidance, but it is funding the roll-out of our initial program in the 2019 school year. We have a number of current and ex-Boeing employees who have been very

generous with helping us put this program together.”

Currently, the *Soar into STEM* program’s curriculum is being built around students attending “classes” at the Wings of Hope world headquarters at Spirit of St. Louis Airport. Students will meet on four Saturdays for hands-on repair and modification of an airplane, presentations by guest speakers sharing career path information and stories, and information about the Wings of Hope mission – including medical air transport flights that fly in and out of the St. Louis hangar.

Topics covered will include an introduction to how planes fly; preflight inspections; airplane engineering, manufacturing and maintenance; flight planning for a Wings of Hope mission; and navigation and navigation instruments. At the end of the program, students will be assessed on aviation concepts and on knowledge about aviation-related career paths.

“Students who complete the program will have the opportunity to spread their wings by going up in a small aircraft on a local flight,” Heinrich said. “Those flights and the instructor time are being donated by Elite Aviation, which is located down the road from us.

“While the curriculum will include all aspects of aircraft maintenance, it will absolutely have a strong avionics component. Electronics and avionics are critical to today’s aircraft, and so many young people already have an interest in computers and electronics.”

Heinrich explained that each of the students in the *Soar into STEM* program have the opportunity to work alongside one of the volunteer mechanics to see firsthand how the various STEM skills are put to use in the hangar.

The first aircraft the *Soar into STEM* students are scheduled to work on is a Cessna 182 that’s going to be put into service flying various kinds of humanitarian missions in Paraguay.

While having new high school students working on in-service aircraft may seem a stretch to many, Heinrich explained that this is not the first time Wings of Hope has been involved with this type of student-oriented training program.

“We dipped our toes into these waters with a similar project through our partner Barrington Irving and his *Experience Aviation* program about a year ago,” Heinrich said. “We provided a Cessna 182 for students at a Dallas-area public school to work under the tutelage of an experienced A&P.

“They got a lot of great experience, and the project culminated with the students lining the runway at a local airport as a Wings of Hope pilot and the school’s administrator took off. I will never forget the excitement on the students’ faces as they saw their airplane making a circle over their hometown. That airplane is now flying medical missions in Guyana.”

Heinrich feels that this type of service-learning was key to the success of the Dallas-area program, and it will again be instrumental in the new *Soar into STEM* program.

“I can’t think of a more-powerful connection than showing students that something they worked on – a real, functioning airplane – is out in the mission field this very moment saving lives,” he said.

### **Where *Wings of Hope* gets its wings**

You’re probably wondering where an organization like Wings of Hope gets its airplanes? Well, like most everything else it uses, the organization relies on donations to meet its growing needs.

“We receive about 20 aircraft donations a year,” Heinrich said. “It’s a huge benefit for us and our partners. Depending on the type of aircraft, we either put it in service where it best fits the need or sell it to raise working revenue. We couldn’t function without these generous donations.”

The organization recently received a Cessna 185 on floats and is in the process of preparing for service in northern Canada, where it will bring much needed medical and transportation services to the indigenous Inuit tribes.

“Our donors are very close to their airplanes and are always happy that they will continue to be used to bring needed aid to deserving people,” Heinrich said. “Donating their treasured aircraft can be much more rewarding and fulfilling to the owner than simply selling it.”

### **Impacting the future of aviation**

As Heinrich stated earlier, while an obvious driving force behind the development of the *Soar to STEM* program is Wings of Hope’s growing need to recruit and retain volunteer pilots and maintainers, that’s just a part of the organization’s motivation.

“Our current volunteers are aging, so there is a bit of a selfish component to it all,” he said. “We need to fill the pipeline of pilots and mechanics that we need to keep our program going. But the bigger picture is we want to do something that has a positive, measureable impact on the lives of these young women and men.

“There is a serious shortage, especially among girls and minorities, of STEM-capable individuals to fill the STEM-focused workforce of the future no matter what industry they work in. But the students I met in Dallas affirm that there is no shortage of youthful idealism, and it is a powerful force. We would be remiss if we did not harness that power to engage our next generation of scientists, engineers, IT professionals and, of course, aviators.” □

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*To learn more about Wings of Hope and its new Soar into STEM program, visit [wingsofhope.ngo](http://wingsofhope.ngo).*