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THE SCHOOL DISTRICT OF MANATEE COUNTY FEATURES A STUDENT AND A CAREER & TECHNICAL EDUCATION TEACHER

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Sparks for the Future

Teresa Lawrence brings energy, enthusiasm, and a degree in aerospace flight technology to her Technology Education classroom at Nolan Middle School. As Nolan's lead advisor for the Technology Students Association (TSA), Teresa's objective is to ignite a spark in her students that they can carry with them forever. With a positive attitude, plenty of hands-on projects, and clear objectives, Teresa guides her students through the process of completing technology projects successfully and independently. Projects have a wide appeal and may be as diverse as constructing model airplanes, building a picnic table for the school grounds, or creating a student resume and interviewing for employment. Reading and writing skills play an important role in the technology program. As a TSA competitor, many events require a notebook with detailed information and specs in order to qualify for competition. When she sees her students take pride in their work, become self-motivated, and own their sense of accomplishment Teresa knows that she has prepared her students with the skills they need to be successful in the future.



KIDZ
Biz
 & Buzz



Tech Challenge? Call Preston!

Nolan Middle School eight grader Preston Fittro is the go-to guy when you need help figuring out a technology challenge. As a Technology Student Association (TSA) member for three years at Nolan, Preston has served previously as Vice President and is looking forward to serving on the board again this year. Last year he was also Vice President of the Fellowship of Christian Athletes and a member of the Nolan Builders Club, a school and community service organization. An avid competitor in several TSA events, Preston has narrowed his favorite competitions to the Dragster and Transportation events. In sixth grade, he brought home the Gold at the national level TSA competition in the Technology Transfer event. Last year he won both Silver and Bronze in the TSA nationals for Technology Transfer and Construction. Preston's technology talent came in handy this summer when he helped his mom, Nolan teacher Kathleen Fittro, master her new classroom technology, the eFolio and mimio board! (eFolio is the District's web-based student portfolio system and mimio is an interactive whiteboard.) If you have a technology challenge, who can you call? Preston Fittro!

InnoVators THE MYSTERY OF FLIGHT

Have you ever wondered how something as heavy as an airplane can fly? What causes such a big machine to lift right off the ground? It may not seem logical, but there are aerodynamic forces at work. Aerodynamics is the study of how air and other gases move and the effects that motion has on certain objects. In order for an airplane to take off, four forces must work together: weight, lift, drag, and thrust.

The amount of weight depends on the plane's cargo, but it acts through one point called the center of gravity and is focused down toward the earth. Weight is distributed throughout the body of the aircraft and changes as the plane burns fuel. The wings of the craft produce an opposing force called lift; it acts through one point called the center of pressure. Lift also helps to control the plane, and certain factors such as the shape and size of the plane determine its magnitude. Drag, the resistance of the airplane's forward motion, is also affected by the plane's shape and other factors—and like lift, works through the center of pressure. Finally, airplanes use a propulsion system to create thrust, the force generated by the engine which propels the aircraft into motion. This forward motion can be explained by Newton's Third Law of Motion: for every action, there is an equal and opposite reaction. Keep in mind that the wings lift the plane; engines simply help to overcome the drag forces.

If weight, lift, drag, and thrust are balanced, the plane flies at a steady velocity. Unbalanced forces cause the plane to fly in the direction of the strongest force.

Next time you see an airplane flying high above the earth, think about the forces at work. Now it's no longer a mystery!



DISCOVER
 the
Future



Career Pathways in Manatee County

Regional Careers: Here are examples of aerospace related occupations and current wages in the Suncoast Workforce Region.

Occupational	Entry	Average	Exper.
Aircraft Mechanics and Service Technicians	\$15.45	\$19.21	\$21.10
Cargo and Freight Agents	\$14.28	\$17.30	\$18.81
Civil Engineering Technicians	\$14.39	\$19.12	\$21.48
Civil Engineers	\$25.06	\$35.49	\$40.69
Commercial Pilots	\$15.09	\$18.95	\$20.87
Computer Software Engineers	\$28.25	\$42.43	\$49.52
Electrical Engineering Technicians	\$17.72	\$23.61	\$26.54
Electrical and Electronics Drafters	\$14.24	\$19.60	\$22.26
Electronics Engineers Mechanical	\$23.58	\$30.19	\$33.49
Engineering Technicians	\$20.95	\$21.57	\$21.89
Mechanical Drafters	\$15.38	\$20.14	\$22.52
Mechanical Engineers	\$25.33	\$33.05	\$36.90

Source: <http://fred.labormarketinfo.com>
 FL Labor Market Statistics, Occupational Employment Statistics & Wages Program

Career Pathway: Students desiring a career in technology can find related educational programs at these area schools*:

Nolan Middle School, Lakewood Ranch High School, Manatee Technical Institute, Manatee Community College, the University of South Florida

WEB
Wise

Check out the
 following websites:

www.grc.nasa.gov/WWW/K-12/airplane/forces.html
www.aerospaceweb.org
www.young eagles.org
www.tsaweb.org
www.floridatsa.com

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Explore
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Blast off! Make a Mini-Rocket

Launch a mini-rocket in your own backyard. This experiment demonstrates thrust, which is the force needed to launch a real rocket or plane. Adult supervision is recommended.

What you'll need:

- Empty film canisters with lids
- Alka Seltzer tablets (you can use a generic brand)
- Water

Directions:

- Place about one teaspoon of water into the film canister.
- Add 1/2 of an Alka Seltzer tablet into the container.
- Quickly place the cap on tightly, turn upside down, and step back.
- Within 30-60 seconds, you'll hear a loud POP—then watch your rocket launch!

Tip: Work quickly once you get to the second step!

Invite a friend over and hold a rocket competition. Try altering the experiment, adding hot water instead of cold. You could even add cola instead of water, and you can try adding an entire Alka Seltzer to change the results. Have a blast!



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